POLICY IN RESPECT OF
ROAD PLANNING AND
DESIGN

SOUTH AFRICAN NATIONAL ROADS
AGENCY LIMITED

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# POLICY FOR ROAD PLANNING AND GEOMETRIC DESIGN

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1. GENERAL

1.1 Relevance

This Policy governs the Procedures for Road Planning and Geometric Design for proclaimed National Roads. The content of the Procedures and of the Guidelines should therefore be interpreted against the background of this Policy.

The Procedures for Road Planning and Geometric Design are intended to guide and inform Applicants applying for approvals, permits or permissions required of the SANRAL, as well as provide guidance to designers working on SANRAL projects.

The SANRAL Geometric Design Guidelines are intended to provide planners and designers of SANRAL road schemes and projects, as well as associated road planning impacting on National Roads, with optimal guidelines to enable them to provide the SANRAL with fit for purpose, safe, cost effective and operationally effective designs.

This document is to be read and used in conjunction with the SANRAL Agreement for Consulting Engineering Services, the Procedures for Road Planning and Geometric Design, the Geometric Design Guidelines and the Southern African Development Community Road Traffic Signs Manual.

1.2 Philosophy

SANRAL, as the custodian of the National Road network, has a duty of care to ensure that the road planning and geometric design process enhances the safety and mobility of road users in balance with other values. In the development of road projects, social, economic, safety and environmental effects should be ranked alongside technical issues so that the final result is in the best overall public interest. Attention should be paid to the:

- Need for safe and efficient road travel;
- Balanced attainment of community goals and objectives, and hence, integrated development planning objectives;
- Needs of low mobility and disadvantaged groups;
- Costs of eliminating, mitigating or minimizing adverse effects on natural resources, environmental values, public services, aesthetic values, and community and individual integrity;
- Realistic use of financial resources; and
- Cost, ease and safety of maintaining the road infrastructure.
This requires that a facility be viewed from the perspectives of the user, the nearby community and the managers of the network.

For the road user, predictable and efficient travel, and in particular, safety, are paramount. On other hand, a roadside community is often concerned about aesthetic, social, financial and economic impacts as well as traffic flow through the community. From the road authorities’ perspective, the design of any facility should be affordable in the prevailing financial circumstances, and provide for safe travel. Therefore, individual projects must be designed to balance the system benefits with national and community goals, plans and values, and must be sustainable in the long term.

To achieve these sometimes conflicting objectives, emphasis should be placed on flexibility when using design guidelines and on innovative, site specific design.

Designs should also allow different transportation modes to work together effectively.

1.3 Application of Procedures and Guidelines

The policies in this document, the Procedures for Road Planning and Geometric Design and the Geometric Design Guidelines both inform the designer of the manner in which the SANRAL expects its work to be undertaken, and guide the designer towards sound judgment in applying standards, consistent with the philosophy described above. At the same time, other important Guidelines and Legislation should not be forgotten. Examples of these are the South African Road Traffic Safety Manual, and the Environmental Legislation.

The design standards used for any project should, where possible, equal or exceed the minimum given in the guidelines, taking into account all costs, traffic volumes, safety benefits, land requirements and socio-economic and environmental impacts. The philosophy, however, provides for the use of lower standards when they best satisfy a given situation without compromising safety.

Because design standards have evolved over decades, many existing roads may not conform to modern standards. It is not intended that modern standards be applied retroactively; neither is this always warranted or economical. However, when warranted, upgrading of existing roadway elements such as guardrails, lighting, super-elevation and re-alignment should be planned, either as independent projects or as part of larger projects. The elimination of known traffic hazards should form part of projects.
2. PROJECT DEVELOPMENT

2.1 General

The development of a particular road project should, where applicable, be sensitive to and, *inter alia*, consist of:

- community consultation and participation;
- planning transparency;
- environmental concerns;
- safety concerns;
- economic and financial viability;
- operational consistency within a particular route;
- system integration;
- network accessibility;
- land use planning;
- scheme projections; and
- forward planning.

In the preparation of designs, innovation and creativity are encouraged. Nevertheless, general uniformity in road operations is important and the drawings should embrace all necessary information, taking into account the diverse requirements of the various elements of design (geometric, structural, geotechnical and pavement) as they effect construction, and the potential of construction activities to provide much needed work to local communities.

2.2 Phases

For convenience, project development is split into four phases:

- Project proposal and assessment;
- Route location, where applicable;
- Basic planning, where applicable; and
- Design

These phases are addressed separately in the terms of reference for consulting engineers, and should all form part of an integrated and holistic project development process.

3. ENVIRONMENTAL POLICY

3.1 Introduction

Environmental management is an integral component of road infrastructure development and road
management. A sustainable road network that meets the requirements of both people and the environment requires innovation to face the challenges. There needs to be a drive to find a balance between the interests of the road user and the roads authorities on the one hand, and environmental interests, including socio-economic interests, on the other. The planning and geometric design of roads should be undertaken with the environment being considered with each step of the process taken.

3.2 Aims of EIA Process

The Environment Conservation Act, 1989 (Act No. 73 of 1989) regulates the control of activities which may have a detrimental effect on the environment. These are listed in Government Notice R1182 of 5 September 1997. One of the listed activities is the building or upgrading of roads and, generally, no work may commence until written authority is obtained. Approval, which may be granted conditionally, will only be granted once the regulations are complied with. Government Notice R1183 sets out the procedures to be followed and documentation required to be completed when undertaking an Environmental Impact Assessment (EIA). Certain maintenance works are exempted from these requirements, and designers are advised to obtain clarity from SANRAL prior to commencing with their work.

The main aims of the environmental assessment process, in the context of a proposed road scheme, are:

- To ensure full consideration by the SANRAL and the relevant environmental authorities of the potential environmental impacts associated with the road project;
- To ensure that the SANRAL and the relevant environmental authorities are able to make informed decisions when considering environmental impacts;
- To assess the potential environmental impacts in the planning of the road in a way that enables the importance of the potential impacts and the proposed mitigation of the impacts to be evaluated; and
- To obtain contributions of Interested and/or Affected Parties (including relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented and carried forward in the EIA process.

The EIA process must ensure that environmental consequences are considered at all stages of the project, as this will allow the SANRAL and its service providers to design a road based on sound environmental principles. Assessment and design should be an integrated process. It should be remembered that the term ‘environment’ in the context of an EIA refers to both biophysical and socio-economic issues.
4. ACCESS CONTROL

4.1 General policy

Control of access to National Roads is achieved by restricting rights of access to the roadway from roadside developments, properties and the surrounding road network. In general, access to National Roads will only be allowed for:

- The complementary and surrounding public road network, via intersections and where freeways are concerned, via interchanges;
- Roadside service and rest areas catering for light and/or heavy motor vehicles;
- Roadside trading enterprises (in limited cases); and
- Public transport stopping places.

In rural areas, provided that the road is not a freeway, one access per farming unit traversed by a National Road will generally be allowed. Several properties will be regarded as a farming unit if the combined properties are operated as a single unit. Where several farms operate as single units and it is not possible for safety or road capacity reasons to provide an access for each, a service, or frontage road should be provided by the farming units themselves.

On freeways, direct access from private properties is strictly prohibited, with the exception of service and rest areas.

Properties immediately adjacent to the road are served by streets connecting to interchanges and, in certain cases, by frontage roads. Frontage roads or servitudes alongside freeways in the Building Restriction Area must, as far as possible, be surfaced. Along other major roads, surfacing of frontage roads is preferable, but will depend on local traffic, the dangers posed by dust, the need for an all-weather surface and safety concerns.

In designing accesses on National Roads, the Geometric Design Guidelines should be followed. Reference should also be made to the “National Guidelines for Road Access Management in South Africa”, developed by the Committee of Transport Officials in 2001. The requirements of other relevant authorities and the findings of the Environmental Impact Assessment and Environmental Management Plan (if applicable) must also be considered.

Where roads have been incorporated into the National Road network that do not conform with requirements, the designer of a project should consider, within the context of this Policy, all options for ensuring that the project enables the requirements of the SANRAL’s Geometric Design Guidelines to be met for the road in question, within the constraint of available funds.
4.2 Frontage roads

Frontage roads within the building restriction area are sometimes required alongside freeways and major roads. Frontage roads are provided to:

- Prevent uncontrolled access to the National Road, thus improving capacity and safety
- Provide access to roadside properties in a safe and controlled manner;
- Restore the continuity of local street or road systems;
- Provide for non-motorised traffic that might otherwise want to use the freeway; and
- Provide or maintain continuity.

When considering providing frontage roads, arrangements for their establishment, the cost of construction and their later upkeep should be formally dealt with, before they are constructed.

4.3 Access to National Roads from the surrounding Road Network (intersections and interchanges)

In general, access to the surrounding road network will have been catered for during the road-planning phase. In exceptional cases, however, applications for new interchanges or intersections may have to be considered. Typically, new intersections or interchanges may be required to remove a number of informal accesses in order to improve road safety.

The number of accesses should be kept to a minimum, consistent with the optimum use of the road facility. Approval for new accesses will only be considered when the SANRAL’s requirements are met and when properly motivated. Once approval in principle has been granted, final approval will only be given if the design satisfies the requirements set out in the SANRAL Geometric Design Guidelines.

4.4 Direct Access Roadside Service and Rest Areas

4.4.1 Objectives

Road users travelling on the network have a need for roadside services and rest areas along the network of national roads at reasonable intervals, in balance with road safety and sound traffic management. To this end, the private sector may take the initiative to identify and acquire service area sites. The approval of the SANRAL, as well as any approvals from other relevant Authorities for their development and operation, will be required.

4.4.2 Process

Developers of service and rest areas should interact and seek approval from the SANRAL and all relevant Authorities with jurisdiction, and must comply with all Laws, Town Planning Ordinances, Bye-Laws, the Geometric Design Guidelines and environmental legislation. This process is documented in the Procedures for Road Planning and Geometric Design.
Once consensus is achieved between the SANRAL and the planning authorities, and the development is approved, the SANRAL will conclude an access Agreement with the developer, incorporating operating and safety guidelines, as well as financial arrangements.

4.4.3 Location

On National Roads, the minimum allowed spacing between service areas will depend on the Average Annual Daily Traffic in both directions. Spacing less than these limits will not be approved, unless in the sole opinion of the SANRAL, the benefits to the road user, the economy and the opportunity for work creation are considered highly desirable.

<table>
<thead>
<tr>
<th>AADT Veh/day</th>
<th>Spacing Kilometre</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 000</td>
<td>50</td>
</tr>
<tr>
<td>5 000-50 000</td>
<td>30</td>
</tr>
<tr>
<td>&gt;50 000</td>
<td>10</td>
</tr>
</tbody>
</table>

The above table has been derived using the estimated traffic volumes required to sustain facilities in the long term.

4.4.4 Parking

Adequate parking within the service and rest area is an important requirement and developers must provide for space and capacity over a 20 year period as indicated in the Procedures and Guidelines.

4.4.5 Safety

Traffic flow and safety are of paramount importance. Any service and rest area must be designed in such a way as to ensure the safety of the road user.

4.4.6 Access from Local and Provincial Roads

It is the SANRAL’s policy to only allow access to and from freeways by means of interchanges with local roads, and in the case of non-freeways, through formal intersections. The planning of service areas should, therefore, prevent the possibility of vehicles gaining access from the local road system, through the service area, to the National Road.

4.4.7 Other Requirements

To meet the objectives of providing services to long distance road users, the minimum range of services described in chapter 3 of volume 2 of the Southern African Development Community Road
Traffic Signs Manual must be provided. There should be no sale or consumption of alcohol on the premises.

To ensure that these minimum standards are achieved and maintained, a formal access agreement will be concluded between the SANRAL and the developer of the service and rest area. Continued access to the freeway will be dependent on all the requirements being met and maintained.

4.4.8 Costs

The developer will be responsible for all costs of associated with the development, including the payment of a levy to the SANRAL, and shall reimburse the SANRAL for maintaining any portion of the accesses to the facility falling within the freeway road reserve.

4.5 Informal Trading Areas

Within the South African social fabric and economy, it is accepted that informal trading areas alongside roads are the only way certain local communities are able to make a living. However, in the interests of road safety, it is incumbent upon the road authority and the designer to take the steps necessary to formalise and rationalise such endeavours. The SANRAL’s requirements for informal trading alongside National Roads are:

- All relevant geometric design standards should be applied to the design of the trading site;
- Informal roadside trading is not allowed alongside freeways;
- On non-freeway single carriageway roads, informal roadside trading will be allowed outside of the road reserve on a site-specific basis, in consultation with the relevant Regional Manager of the SANRAL;
- Sites on which trading is permitted should be properly signposted, must not hinder the safe operating conditions of the road and will have more than adequate sight distance for the road user;
- Trading sites should comprise paved lay-byes separated from the travelled way by an acceptable barrier.

5. BUILDING RESTRICTION AREAS AND UTILITY SERVICES

5.1 Mandate

5.2 Determination of Restrictions

5.2.1 Building Restriction Line and Applications for Subdivision

The SANRAL will, when considering restrictions on activities within building lines and applications for subdivision, consider the following:

- The objectives of Government and the needs of communities;
- The need to develop the roads network within the context of the SANRAL’s policies and plans;

5.2.2 Revised land use

Where a revised land use is proposed by local authorities in urban areas, the SANRAL will actively participate in the local authorities’ planning in an attempt to ensure the long term sustainability and efficiency of road transport development.

Where individual developers propose revised land use adjacent to National Roads, or affecting National Roads, the SANRAL will consider the aims of economic and social development along with its future roads plans.

5.3 Utility Services

It is a policy of Government to supply certain basic services to all its citizens. At the same time, individuals and organisations may require access to or the crossing of SANRAL property for the provision of services such as water, telecommunications, electricity, conveyance pipelines or gas.

The above services need to be accommodated within the context of the policies and objectives of the SANRAL. The SANRAL will, therefore, cooperate with and allow the owners of utility services access to its property under Agreements designed for every situation.

6. ROADSIDE ADVERTISING AND TOURISM SIGNS

6.1 Management of roadside advertising

Advertising alongside National Roads is managed in terms of Section 50 of the “South African Roads Agency Limited and National Roads Act” number 7 of 1998, and the corresponding “Regulations on Outdoor Advertising on or visible from National Roads”, December 2000, as amended from time to time.

In general, advertising alongside National Roads is allowed under certain conditions provided it does not compromise road safety, the environment and traffic operations, and does not distract the road
Applications must be made for permission to erect advertising signs in accordance with the Act and Regulations, and must be accompanied by the application fee stipulated in the applicable Government Gazette.

Any permission granted to erect an advertisement shall be subject to the entering of a formal Agreement between the SANRAL and the applicant.

6.2 Tourism Signs

Tourism is a major contributor to the economy of South Africa, and is a major provider of jobs. Government has a strong interest in further developing this industry.

The SANRAL will support the development of Tourism by considering applications for Tourism Signs to be placed along its roads.

All tourism signs shall comply with the Southern African Development Community Road Traffic Signs Manual, and shall only be approved by the SANRAL if the tourism facility or establishment complies with, or meets the requirements of a recognised grading body.

The SANRAL shall consult with the relevant Local and/or Provincial Tourism Authorities before approving any tourism sign, in order to ensure the orderly development of a tourist friendly signage system.

The approval of any tourism sign is subject to the entering of an Agreement between the SANRAL and the Applicant, which shall include responsibilities for costs as well as a removal and sign replacement clause. The SANRAL shall retain the right to modify any tourism sign in accordance with road signage improvements and to accommodate further tourism establishments on the tourism sign, or in the tourism signage system.

7. ROAD LIGHTING

7.1 General

Road lighting is a measure to improve pedestrian as well as driver safety and comfort. Road lighting must be considered together with all practical engineering solutions which could improve road safety and traffic operation, in areas where these measures are considered necessary.

The process for considering road lighting is set out in the Procedures, while the South African Road
Traffic Safety Manual, in addition, provides guidelines as to where lighting may be advisable.

The SANRAL will, whenever considered desirable, enter into Agreements with local authorities for the supply of electricity and the maintenance of road lighting systems.

8. PEDESTRIAN FACILITIES, CYCLE PATHS AND LIVESTOCK CROSSINGS

8.1 General

In South Africa, pedestrians use and cross roads extensively, often without any protection or separation from traffic. Road designers should therefore always evaluate pedestrian movements in the context of a project.

The crossing of roads by livestock should be considered in rural areas within the context of road safety and economically efficient traffic operations.

8.2 Pedestrian Facilities

In general, pedestrian facilities refer to:

- Public transport boarding and disembarking points;
- Cycle Paths, road shoulders and Sidewalks;
- Pedestrian grade separations; and
- Facilities for disabled persons.

8.2.1 Public Transport

South Africans make extensive use of public transport. In metropolitan areas, public transport access points are generally at termini or modal interchanges. In all areas, however, facilities for picking up and dropping off passengers should be planned in conjunction with the transport operator(s) and the local community in order to formalise and reduce the number of informal stopping places. Stopping places must conform with the Geometric Design Guidelines.

8.2.2 Road Shoulders

Cyclists and pedestrians are not allowed to be present or travel within freeway road reserves, and this must be enforced as far as is possible. The manner in which road shoulders are used by pedestrians should be evaluated in the context of each project and road type in the interests of road safety. During the planning and design of a project, solutions should be sought to enable and promote the
compliance of cyclists and pedestrians with traffic legislation. The proximity of schools and other activity nodes can affect the need for cycle and pedestrian footpaths, which should be considered at the time of planning and designing any project. As bridges across physical barriers alter and concentrate cyclist and pedestrian flows, they should be planned for in consultation with the local community in order to ensure that they are used and adequately serve pedestrian movements.

8.2.3 Sidewalks and cycling paths

The SANRAL may assist with the construction of sidewalks and cycling paths in the interests of road safety.

The Procedures contain information concerning the manner in which the SANRAL will provide, maintain, and upgrade pedestrian facilities and cycle paths.

8.2.4 Pedestrian and Cyclist Grade Separations

8.2.4.1 Motivation for grade separations

The need for a pedestrian and/or cyclist grade separation is determined by studying the present and future needs of a particular area or community. Road safety and traffic operations should be carefully considered, and where deemed necessary, protection of road users, pedestrians and cyclists must be provided by means such as barriers, netting or screening. Decision making must be accompanied by liaison with the community likely to use the facility.

Where a grade separation is justified, overpasses are preferred. When an underpass is the only practical solution, the design of the underpass should provide for the safety and security of its users.

8.2.4.2 Funding of facilities.

The SANRAL’s participation in the financing of pedestrian facilities will be considered in the context of each project.

8.2.5 Facilities for Disabled People

The SANRAL will strive to provide access to facilities for all individuals, especially for the disabled. Designers must carefully consider these needs when planning pedestrian access.
8.3 Livestock Crossings

8.3.1 General

Livestock is often driven across National Roads in rural areas. The safety of the road user is most important and as traffic volumes increase, these crossings become hazardous and cause traffic delays.

At-grade livestock crossings on National Roads should be eliminated, or modified if:

- the crossing is unsafe for reasons of traffic volume, stopping sight distance or other reason,
- the crossing causes unacceptable delays for road users, and
- if there is an acceptable cost benefit in doing so.

If sight distance is of concern, it may be necessary to move a livestock crossing point, and to provide a cattle path to the new point.

Any decision to eliminate crossings by physically separating the livestock from the traffic requires balancing safety concerns with SANRAL and user costs.