

SOUTH AFRICAN NATIONAL ROADS AGENCY (SOC) LIMITED



Application for Integrated Water Use License in terms of Section 40 of the National Water Act, 1998 (Act 36 of 1998) for the Rehabilitation of National Route N11 Section 10 from Middleburg (km 3.4) to Loskop Dam (km 53.4) and Kranspoort Safety Improvement



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SANRAL

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CONTACT DETAILS OF RESPONSIBLE PERSONS

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1 INTRODUCTION

1.1 Overview of the proposed project

1.1.1 Rehabilitation of the National Route 14 (N14)

The South African National Roads Agency (SOC) Limited is proposing to rehabilitate and repair the National Route (N11) between Middelburg and Loskop Dam with the aim of increasing the safety aspect especially in the Kranspoort area. The proposed route is approximately 50 km in length and the rehabilitation includes the repair of the road surface, replacement, widening and upgrading of culverts, possible additional lanes and the widening of five existing bridges. The proposed development falls within the Mpumalanga Province. The following is proposed for the project:

Road works:

- Widening of the existing road to include surfaced shoulders;
- Addition of a fourth lane and safety improvements to the Kranspoort Pass, resulting in a major cut widening;
- Provision of climbing lanes / overtaking lanes where required;
- Upgrading of existing and installation of new storm water culverts;
- Widening of eight (8) major in-situ culverts (culvert 1 and 5 will be extended; culvert 4 new and culvert 2,3,6,7 and 8 only headwalls, adding parapets and block panels);
- Vertical and horizontal realignment of the road at several points along the route;
- Widening of the existing road reserve / land acquisition will be necessary due to the widening of the Kranspoort Pass;
- Upgrading of existing intersections and rationalization of private road accesses; and
- Relocation of utility services affected by the upgrading of the road.

Bridges:

- Widening and rehabilitation of five (5) existing bridges. Keerom Spruit (B0210) and Kranspoort River (B1682) bridges will be major. The other three bridges (B2126, B1749 and B3611) will only require minor upgrades (widening and barriers).

The proposed project will cross five existing bridges and eight culverts. In terms of the National Water Act, 1998 (Act No 36 of 1998)[NWA] a Water Use License will have to be undertaken and the following sections in terms of Section 21 of the NWA are applicable:

- **Section 21 (a)** – Taking water from a water resource
- **Section 21 (c)** – Impeding or diverting the flow of water in a watercourse
- **Section 21 (i)** – Altering the bed, banks and course and characteristics of a watercourse.

2 METHODOLOGY

2.1 National Water Act, 1998 (Act No. 36 of 1998) [NWA]

The National Water Act, Act No 36 of 1998 requires that a water use must be licensed unless it is listed in Schedule I of this act, is an existing lawful use, is permissible under a general authorization, or if a responsible authority waives the need for a licence. A water use is defined in Section 21 of the National Water act as shown in box below. The water uses applicable to this integrated Water Use License Application are highlighted in bold text.

21. For the purposes of this Act, water use includes -
- a) taking water from a water resource;**
 - b) storing water;
 - c) impeding or diverting the flow of water in a watercourse;**
 - d) engaging in a stream flow reduction activity contemplated in section 36;
 - e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
 - f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
 - g) disposing of waste in a manner which may detrimentally impact on a water resource;
 - h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
 - i) altering the bed, banks, course or characteristics of a watercourse;**
 - j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
 - k) using water for recreational purposes.

This document will form part of the supporting documentation for an Integrated Water Use Licence Application for the proposed road rehabilitation on the N11. To ensure compliance with the National Water Act (Act 36 of 1998), the following process will be followed (**Figure 2.1**):

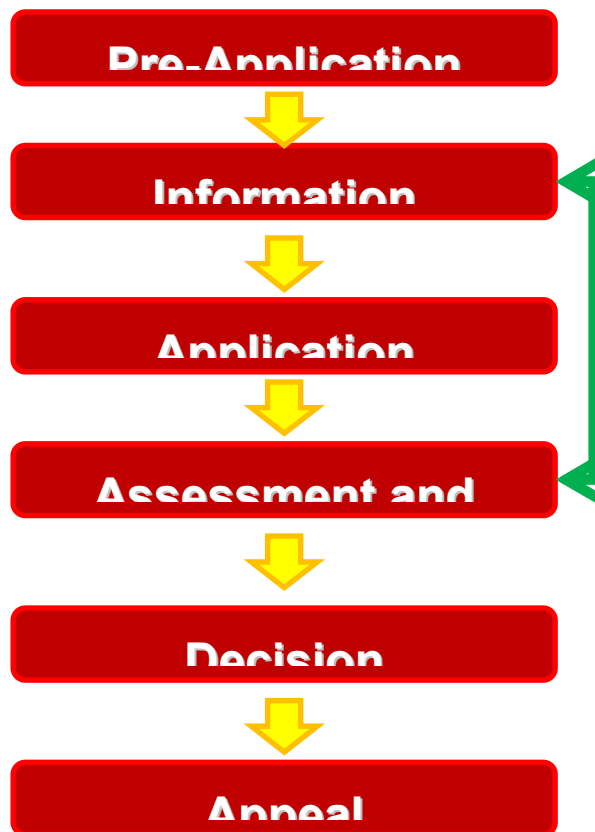


Figure 2.1: Licensing Application Process

2.2 Application

2.2.1 Application forms

The Application Forms are summarized in **Table 2.1**.

Table 2.1: Summary of application forms

Description	Document reference	Description
Registration	DW758	SANRAL Registration as a Water User
Section 21a	DW760	Taking water from a water resource
Section 21 c	DW763	Impeding or diverting the flow of water in a watercourse
Section 21i	DW768	Altering the bed, banks, course or characteristics of a watercourse
Supplementary	DW781/775	Supplementary form for Section 21 (c) and (i)
Supplementary	DW901	Three (3) properties are affected by the bridge upgrade – Property where the water use occurs
Supplementary	DW902	Details of the Property Owner

2.2.2 Technical and supporting documentation

To follow is a brief description of all the documents accompanying this application:

- Appendix A:** Registration Form Part 1 – DW758
- Appendix B:** Section 21a Form Part 2 (DW760)
- Appendix C:** Section 21c Form Part 2 (DW763)
- Appendix D:** Section 21i Form Part 2 (DW768)
- Appendix E:** Supplementary Forms (DW901)
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- Appendix Q:** Property Details
- Appendix R:** ID Document

3 THE APPLICANT**3.1 Name and address of the applicant**

The name and address of the applicant is reflected in **Table 3.1** below.

Table 3.1: Contact details of property owner and applicant

Applicant	The South African National Roads Agency (SOC) Limited (SANRAL)
Full name of the applicant:	The South African National Roads Agency (SOC) Limited (SANRAL)
Contact person:	Mrs. Mpati Makoa / Mr. Ntebogeng Kgomo
Telephone number:	(012) 426 6200
Postal address:	P.O. Box 415, Pretoria, 0001
Email address	makoam@nra.co.za / kgomon@nra.co.za

4 PROPERTIES AND DEVELOPMENTS

4.1 Properties affected by the activities

The water use activities contemplated in this report *all occur within the existing road reserve of the National Route 11 (N11) between Middelburg and Loskopdam at the bridge and culvert crossings*. The neighbouring properties include:

- **Middelburg Town and Townlands 290 Portion 100 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000029001600
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Mooiplaats 242 Portion 37 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T131975/2006
 - Surveyor General cadastral Code: T0JS00000000024200037
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Mooiplaats 242 Portion 17 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T2626/2012
 - Surveyor General cadastral Code: T0JS00000000024200017
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Mooiplaats 242 Portion R JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T2626/2012
 - Surveyor General cadastral Code: T0JS00000000024200000
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Mooiplaats 242 Portion 35 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T69829/2007
 - Surveyor General cadastral Code: T0JS00000000024200035
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Mooiplaats 242 Portion 13 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve

- Title deed number: T39143/2002
- Surveyor General cadastral Code: T0JS00000000024200013
- Surveyor general office: Pretoria
- Deeds office: Mpumalanga

- **Mooiplaats 242 Portion 14 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T113114/2002
 - Surveyor General cadastral Code: T0JS00000000024200014
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Toevlugt 320 Portion 1**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000032000001
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Rietvallei 78 Portion 45 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T52678/2006
 - Surveyor General cadastral Code: T0JS0000000007800045
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Voetpadskloof 113 Portion 1 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T72626/2005
 - Surveyor General cadastral Code: T0JS00000000011300001
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Voetpadskloof 113 Portion R JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T129598/2004
 - Surveyor General cadastral Code: T0JS00000000011300000
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 122 Portion R JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000012200000
 - Surveyor general office: Pretoria

- Deeds office: Mpumalanga
- **Polfontein 118 Portion R JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T57105/1992
 - Surveyor General cadastral Code: T0JS00000000011800000
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga
- **Zeekoegat 115 Portion 3 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T1804/1979, T22903/1967, T29862/1985, T37116/1983 and T9301/2010
 - Surveyor General cadastral Code: T0JS00000000011500003
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga
- **Zeekoegat 115 Portion 1 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T103135/1997
 - Surveyor General cadastral Code: T0JS00000000011500001
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga
- **Rietvallei 78 Portion 12 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T59082/1989
 - Surveyor General cadastral Code: T0JS00000000007800012
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga
- **Farm 780 Portion 6 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007800006
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga
- **Rietvallei 78 Portion 33 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007800033
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Rietvallei 78 Portion 45 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number: T52678/2006
 - Surveyor General cadastral Code: T0JS00000000007800045
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 79 Portion 16 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007900016
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 79 Portion 17 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007900017
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 79 Portion 18 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007900018
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 79 Portion 2 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007900002
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

- **Farm 79 Portion 6 JS**
 - Area: Not applicable as it falls within the existing SANRAL N11 Road Reserve
 - Title deed number:
 - Surveyor General cadastral Code: T0JS00000000007900006
 - Surveyor general office: Pretoria
 - Deeds office: Mpumalanga

4.2 Surface rights and general characteristics of the area

The SANRAL N11 road rehabilitation will be undertaken between Middelburg (km 3.4) and Loskopdam (km 53.4). The development will occur within the existing SANRAL road reserve and five bridge and eight culvert crossings will be affected by the rehabilitation i.e Bridge B0210 in quaternary catchment B12E and the Bridge 1682, 2136, 3611, B1749 and culvert 1-8 in quaternary catchment B32A. It is situated within the Lower Olifants River Water Management Area (WMA). Twenty six (26) properties border the bridge structures as was mentioned in point 4.1 above, however the rehabilitation will occur within the existing SANRAL Road Reserve.

4.3 Municipal boundaries

The Keerom Spruit Bridge which is the first crossing is located approximately 6.6km from Middelburg, while the Olifants River Bridge which is the last bridge crossing is located approximately 52.84km from Middelburg on the N11. The proposed project falls within the jurisdiction of the Steve Tshwete Local Municipality in Mpumalanga province.

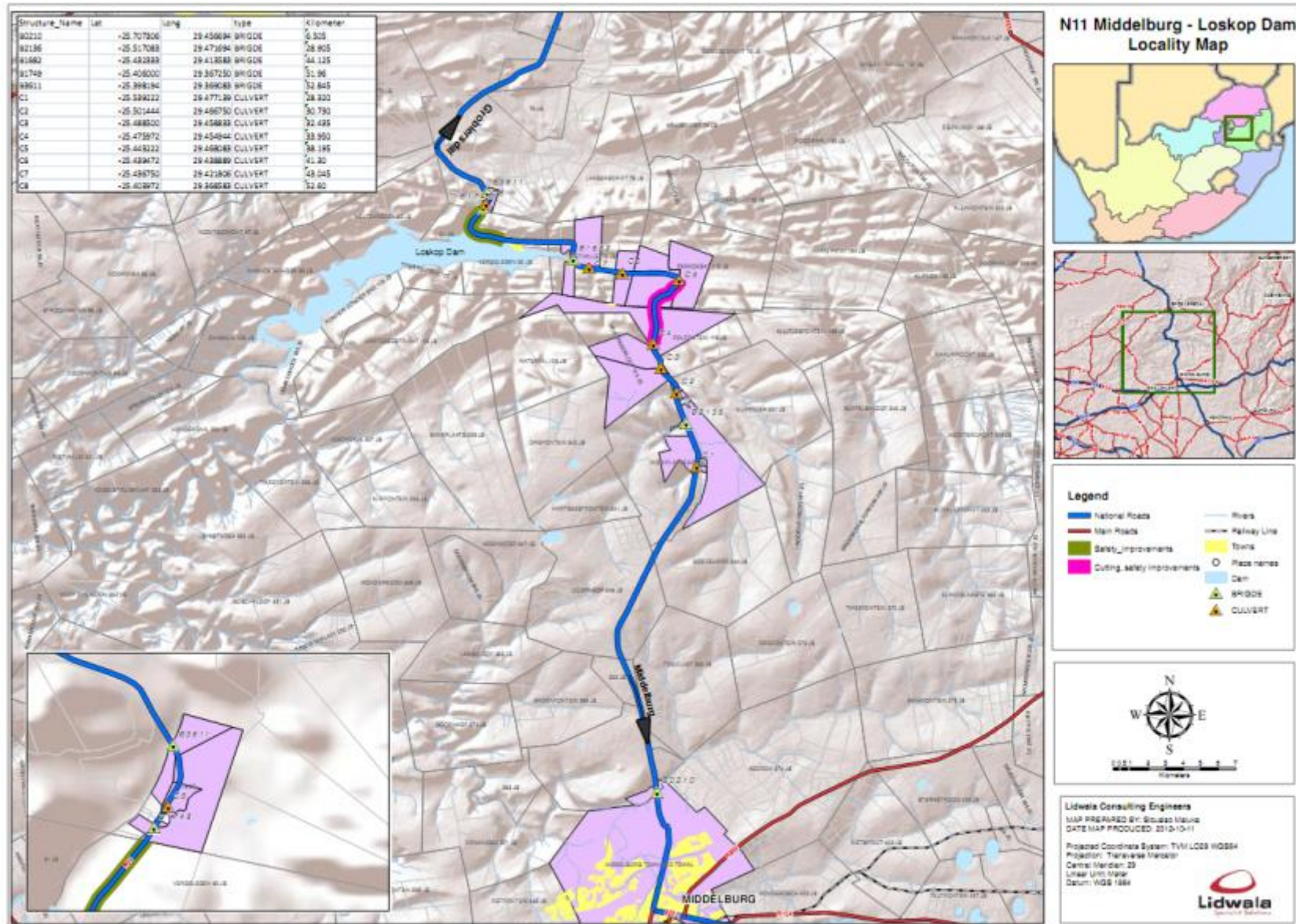


Figure 4.1: Locality map showing the proposed project

5 PROPOSED DEVELOPMENT THAT REQUIRES THE WATER USE LICENSE

5.1 Proposed upgrade and rehabilitation

The N11 road upgrade and rehabilitation, as well as bridge and culvert upgrade will be undertaken within the existing SANRAL Road Reserve.

The Scope of Works for the Rehabilitation of the Road includes the following:

Road works:

- Widening of the existing road to include surfaced shoulders;
- Addition of a fourth lane and safety improvements to the Kranspoort Pass, resulting in a major cut widening;
- Provision of climbing lanes / overtaking lanes where required;
- Upgrading of existing and installation of new storm water culverts;
- Widening of eight (8) major in-situ culverts (culvert 1 and 5 will be extended; culvert 4 new and culvert 2,3,6,7 and 8 only headwalls, adding parapets and block panels);
- Vertical and horizontal realignment of the road at several points along the route;
- Widening of the existing road reserve / land acquisition will be necessary due to the widening of the Kranspoort Pass;
- Upgrading of existing intersections and rationalization of private road accesses; and
- Relocation of utility services affected by the upgrading of the road.

Bridges:

- Widening and rehabilitation of five (5) existing bridges. Keerom Spruit (B0210) and Kranspoort River (B1682) bridges will be major. The other three bridges (B2126, B1749 and B3611) will only require minor upgrades (widening and barriers).

With regards to the bridges and culverts the following alternatives exist and the most preferred options are bolded:

Keerom Spruit Bridge (B0210) Alternatives:

Keerom Spruit

a. Alternative 1:

No-Go Alternative: Entails leaving the bridge conditions the same. The existing bridge sits in a sub-standard vertical curve, thereby having an impact on sight distances at the design speed. By raising the bridge will improve the vertical curve condition and improve visibility, however should this alternative be considered the vertical curve conditions will remain unchanged as well as visibility and the potential flooding around the bridge site;

b. Alternative 2:

Widening of the bridge towards the east and keep the western wall. This entails shifting the alignment out by 5.5m from the centre line. The bridge height will remain unchanged, however the one wall will be widened to accommodate the new road alignment; and

c. Alternative 3:

Raising the bridge to meet the Class 2 hydraulics and widening of the centre line on both sides. This alternative entails keeping the road in the same place and this alternative is considered the best solution to improve visibility and site distance. (Preferred)

Kranspoort Bridge (B1682) Alternatives:

a. Alternative 1:

No-Go Alternative: Leave the bridge as is. No construction or disturbance to the existing infrastructure. Unnecessary passing and high accidental risks remain the same, especially drivers getting frustration from sitting behind heavy motor vehicles.

b. Alternative 2:

Widen the existing bridge on one side to provide space for a fourth lane (a crawler lane). This is especially important as this alternative will avoid unnecessary passing and driver frustration in terms of heavy motor vehicles in Kranspoort.

B2136 Klip Tributary, B1749 Irrigation Canal and B3611 Olifants River

a. Alternative 1:

No-Go Alternative: Leave the bridges as is. No construction or disturbance to the existing infrastructure. Unnecessary passing and high accidental risks remain the same, especially drivers getting frustration from sitting behind heavy motor vehicles.

b. Alternative 2:

Widen the existing bridges to accommodate widened roadway and paved shoulders. This is especially important as this alternative will avoid unnecessary passing and driver frustration in terms of heavy motor vehicles. (Preferred)

Culverts:

No-Go Alternative: Leave the culverts as is. No construction or disturbance to the existing infrastructure. Unnecessary passing and high accidental risks remain the same, especially drivers getting frustration from sitting behind heavy motor vehicles.

Klipriver tributary (culvert 1):

Extending the pier of the culvert. This extension is necessary to accommodate the N11 dual carriage which will improve the safety on the road. (Preferred)

Klipriver tributary (culvert 4):

Replacing the existing culvert with pipes with a new box culvert. The pipes in the existing culvert show signs of cracking and deformation and are elliptical in shape. The replacement of this culvert is necessary as it will improve the drainage and to accommodate the N11 dual carriage which will improve the safety on the road. (Preferred)

Furrow (culvert 5):

Extending the culvert downstream. The extension of this culvert is necessary to accommodate the N11 dual carriage which will improve the safety on the road. (Preferred)

Culvert 2 Klip River Tributary, 3 Klip River Tributary , 6 Kranspoort Spruit Tributary ,7 Kranspoort Spruit Tributary and 8 Olifants Tributary:

Widening these culverts (new headwalls, adding parapets and block panels). The widening of these culverts is necessary to accommodate the N11 dual carriage which will improve the safety on the road. (Preferred)

5.2 Legal assessment of existing and proposed new water use

5.2.1 Existing water uses

The National Route 11 (N11) crosses the Keerom Spruit, Klip River Tributary, Furrow, Kranspoort Spruit, a canal from the Loskop Dam and the Olifants River between Middelburg and Loskop Dam. The associated bridge, culvert structures and road are existing road infrastructure within an existing road reserve.

The condition of this section of the N11 National Route and the bridges and culverts has deteriorated over the years due to extensive use by motorists and heavy transport vehicles. The road is one of the main road transport links between the Mpumalanga Province and the Limpopo Province. The primary objective for the proposed N11 upgrade are to restore the quality and safety of the road for its users and the general public for sustainable economic activity in the area and region, and potential growth due to improved road infrastructure. The Keerom Spruit and the Kranspoort Spruit bridges meet the class 3 hydraulic requirements. Keerom Spruit has been redesigned to meet the class 2 hydraulics. A minimum requirement of class 3 road hydraulics is the 1:40 year flood. Failing to achieve this, as is the case for Keerom Spruit, will lead to a redesign for a class 2 road (1:50 year flood).

The proposed N11 upgrade project will be constructed within an existing road reserve in pursuit of maximization of existing infrastructure and to have absolute minimal impacts on the surrounding environment.

5.2.2 Proposed water uses that requires licensing

Section 21 water uses to be affected for the SANRAL N11 Road upgrade and Rehabilitation is summarized in **Table 6.1** below.

Table 6.1: Water uses to be licensed

Section 21 Water use	Water use
21 (a)	Taking water from a water resource
21 (c)	Impeding or diverting the flow of water in a watercourse
21 (i)	Altering the bed, banks, course or characteristics of a water course

The license period for the abovementioned water uses would be permanent.

6 IMPACT ASSESSMENT AND MANAGEMENT MEASURES

6.1 Impact Assessment

An environmental impact assessment was undertaken for the proposed development. The following is applicable in terms of the alternatives considered for this project:

From an environmental perspective the proposed development is deemed necessary as the road condition has deteriorated significantly. Road safety and motor vehicle accidents along the N11 between Middelburg and Loskop Dam have increased significantly and unstable rock falling occurs especially in the Kranspoort Pass area. Rutting and pavement deterioration has occurred on the N11 and bridge structures including the Keerom Spruit and Kranspoort River and have deteriorated over the years of usage and require a significant upgrade. Culverts along the N11 are in a bad state and some are blocked.

1. In terms of ecology the following is applicable:

The first section (km 3.4 to km 25.0) of the N11 falls within the Rand Highveld Grassland. This vegetation feature is a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. This vegetation is species-rich, wiry, sour grassland alternating with low, sour, shrubland on rocky outcrops and steeper slopes. The most common grasses on the plains are from the genera *Themeda*, *Eragrotis*, *Heteropogon* and *Elionurus*. A high diversity of herbs, mainly of the family of Asteraceae, is also typical of this feature. The rocky hills and ridges are home to sparse woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii*, *Acacia caffra* and *Celtis africana*, together with a rich suite of shrubs among which the genus *Rhus magalismonata* is the most prominent.

The second section (km 25.0 to km 48.0) of the N11 falls within the Loskop Mountain Bushveld. This vegetation occurs on low mountains and ridges with open tree savanna on lower-lying areas dominated by *Burkea africana* and a denser broad-leaved tree savanna on lower slopes and midslopes with prominent *Diplorhynchus condylocarpon*, *Combretum apiculatum* and *Acacia caffra*. An herbaceous grass layer is present.

The last section (km 48.0 to km 53.4) of the N11 at Loskop Dam falls within the Loskop Thornveld. This vegetation feature occurs in valleys and plains of parts of the upper Olifants River Catchment. The general area is open, deciduous to semi-deciduous, with tall thorny woodland and dominated by *Acacia* species.

Cape baboons were observed along the route at Kranspoort pass and the local community of Doornkop have grazing cattle. Agricultural practices are occurring near Middelburg, while the final section of the N11 at Loskop Dam runs through the Loskop Nature Reserve.

Due to the proposed cuttings at Kranspoort of approximately 25 m, a permit in terms of the removal of indigenous trees and Red Data Plants will have to be applied for from the Department of Agriculture, Forestry and Fisheries (DAFF) and last mentioned from the South African National Biodiversity Institute (SANBI) in order to remove plants within the Kranspoort pass cuttings.

The Aquatic Assessment concluded the following: The Keerom Spruit system proved to provide excellent diversity in available aquatic habitat, whilst the resident macroinvertebrate community also showed a moderately healthy diversity and abundance. As a result, the Keerom Spruit system is a system that maintains an intact functionality, whereby only the turbidity and the higher electrical conductivity, and associated Total Dissolved Solids (TDS), may be deterring intolerable aquatic biota. The Kranspoort Spruit system has a poor diversity in available habitats, and as such, a poor occurrence of macroinvertebrate taxa present. Although, within the collected sample, some moderately sensitive taxa were collected such as Ecnomidae (Caddisflies) and two separate species of Beatidae (Mayflies), indicating the presence of some preferred niche habitats. According to resident knowledge, the system had only recently begun to flow again, which would explain the low abundances, whereby a period of at least six weeks is usually required before a macroinvertebrate community can properly establish itself in a specific reach of river. Refer to the Aquatic Assessment in **Appendix L**.

The Wetland Assessment concluded the following: Three different types of wetlands were classified within the study area and were categorised into hydro-geomorphic (HGM) units. These include valley bottom wetlands with a channel, valley bottom floodplain with a riparian channel, and hillslope seepage wetlands feeding a watercourse. A total of 27 Hydro-geomorphic units were delineated and classified within the study area. The largest majority of wetlands consisted of channelled wetlands with seasonal and temporary zonation, dominated by a graminoid layer.

From a functional perspective, wetlands within the study area serves to improve habitat within and downstream of the study area through the provision of various ecosystem services such as streamflow regulation, flood attenuation, groundwater recharge, nitrogen removal, phosphate removal, toxicant removal, particle assimilation and provision of natural resources.

The impact assessment identified destruction of wetland habitat and surface water pollution as the two major potential impacts during the construction period while the highest rated potential impact during the operational phase is increased erosion as a result of the higher surface runoff from increased impermeable surface areas. Refer to the Wetland Delineation and Assessment in **Appendix L**.

2. In terms of Hydrology the proposed development falls within the Olifants River Basin. Two tributaries of the Olifants River, the Keerom Spruit and

Kranspoort River bridges will be upgraded to accommodate the new road reserve of the N11. The existing Keerom Spruit Bridge will be demolished and a new widened bridge structure will be built at the current location and elevated from the existing position. The footprint of the new bridge will be expanded and new pier structures will be introduced at the bridge. The construction of the new bridge at the Keerom Spruit will also require a temporary by-pass during construction.

3. In terms of heritage no significant impact was recorded along the N11 road between Middelburg and Loskop Dam. It is suggested that should any graves or archaeological finds be encountered at the proposed Kranspoort cuttings area, the local Police Station be contacted as well as the South African Heritage Resources Agency (SAHRA).

4. From a social perspective the proposed road upgrade is deemed necessary as illegal road access is found in the Doornkop Township as well as the Kranspoort area, increasing the risk of accidents. Currently the Keerom Spruit bridge is situated in a sub-standard vertical curve and reduces visibility of road users due to its angle. The safety of the road users along the proposed cutting area (Kranspoort Pass) is currently very high as rock falling occurs often due to the instability of the current cuttings into the rock face. In terms of the Kranspoort River, motor vehicle accidents especially heavy motor vehicles occurs often due to these heavy motor vehicles not being able to get their brakes when descending from the Kranspoort pass. The route also carries a relatively high percentage of heavy motor vehicles and with limited passing opportunities the need of climbing lanes is essential to limit driver frustration. Rutting, potholes and road degradation was also observed to have contributed to the need for this proposed road and bridge upgrade as well as the demand from the community and road users for enhanced and bettered safety along the N11. The current speed limit varies between 60km/h (40km/h for heavy motor vehicles only through Kranspoort Pass) and 120km/h on the rural section. The speed limit through the Loskop Valley is reduced to 80km/h. All vegetation will be cleared from the road shoulders, which is a safety hazard to the road users. It is recommended that the speed limit should be reduced to 100km/h along the rural section and to 80km/h at major intersections. At the Loskop Valley the speed limit should be reduced to 60km/h. It is also suggested that the speed limit is reduced to 60km/h at the school (km 18.0). A paved shoulder of 1.5 m should be constructed along the entire length of the road. The existing centreline (single barrier line) should be repainted with the conventional full treatment white barrier line road markings. Yellow shoulder edge lines should be introduced along the full length of the route. Existing road markings in the vicinity of intersections located at km 43.6 and km 48.2 should be repainted in terms of normal standards of intersections. It is also recommended that the existing chevron warning signs at tight horizontal curves be extended to start before the beginning of the curve and extended past the end of the curve and monitored for vegetation where the signs are obscured. The existing guard rails should also be removed and installed at the correct height and position in relation to the edge of the road.

This project is deemed a necessity as the current road has deteriorated substantially and the risk for pedestrians and road users have increased. By widening the existing N11 and bridges will ease the current pressure for safety especially in the Kranspoort and Keerom area. Mitigation measures as suggested in the Impact Assessment as well as the EMPr contained in **Appendix F** should be adhered to and followed. Full rehabilitation should be undertaken once the proposed development has ended. Indigenous trees and grasses should be planted where the cuttings took place and frequent maintenance should be undertaken along the road to minimise any exotic grasses and trees from establishing.

6.2 Public Participation

The public participation period was from 06 March 2012 to 05 April 2012. No comments have been received from any stakeholder, authority or interested and affected party.

All comments received during the public review period will be updated and included in the comments and responses report.

In the event that the Department of Water Affairs requires more additional information it will be provided to them on request.

6.3 Mitigation Measures

Detailed mitigation measures are provided within the Environmental Management Programme contained in **Appendix J**.

In the event that the Department of Water Affairs requires more additional information it will be provided to them on request.

6.4 Monitoring

Detailed monitoring is discussed within the Environmental Management Programme contained in **Appendix J**.

7 RESULTS

Lidwala Consulting Engineers undertook a site inspection on 02 February and 27 September 2012. Record of the major upgrades for bridges and culverts is presented first where after the record of the minor upgrades will follow. Major upgrades (Keeroms Spruit Bridge B0210, Kranspoort Spruit Bridge B1682 and Culverts 1, 4 and 5):



Picture showing the existing Keerom Spruit Bridge. This picture was taken looking North



Picture taken on the Keerom Spruit Bridge. This picture was taken looking West



Picture showing the existing Keerom Spruit Bridge taken when looking North. Note the existing bridge infrastructure



Picture showing the Keerom Spruit Brige taken when looking Northeast



Picture showing the existing Keerom Spruit Bridge taken from the North.



Picture showing the Keerom Spruit. The picture was taken looking West



Picture showing the existing bridge across Kranspoort River. This picture was taken looking North



Picture showing the Kranspoort River looking Northeast



Picture showing the Kranspoort River when looking West from the existing bridge structure



Picture showing the road across the Kranspoort River. This picture was taken looking North



Picture taken from the existing Kranspoort River when looking South

Culvert1:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 1 over the Klip River Tributary looking Northwest.

This picture shows culvert 1 over the Klip River Tributary looking West.



This picture shows culvert 1 over the Klip River Tributary looking Southwest.

Picture depicting the existing N11 road between Middelburg and Loskop Dam. This

picture was taken looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 1 over the Klip River Tributary looking Southeast.

This picture shows culvert 1 over the Klip River Tributary looking East.



Picture showing culvert 1 across Klip River Tributary. This picture was taken looking Northeast.

Picture showing culvert 1 across Klip River Tributary. Picture showing the Klip River Tributary looking North

Culvert 4:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 4 over the Klip River Tributary looking Northwest.



This picture shows culvert 4 over the Klip River Tributary looking West.



This picture shows culvert 4 over the Klip River Tributary looking Southwest.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture was taken looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 4 over the Klip River Tributary looking Southeast.



This picture shows culvert 4 over the Klip River Tributary looking East.



Picture showing culvert 4 across Klip River Tributary. This picture was taken looking Northeast.



Picture showing culvert 4 across Klip River Tributary. Picture showing the Klip River Tributary looking North.

Culvert 5:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This looking Northwest.



This picture shows culvert 5 over the Furrow Tributary looking West.



This picture shows culvert 5 over the Furrow looking Southwest.



This picture shows culvert 5 over the Furrow looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 5 over the Furrow looking Southeast



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 5 over the Furrow looking East.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture was taken looking Northeast.



Picture showing culvert 5 looking North.

Minor upgrades (Bridges: B2136, B1749 and B3611 and culvert 2, 3 6, 7 and 8).
Bridge B2136:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows Bridge B2136 over the Klip River Tributary looking Northwest.

This picture shows Bridge B2136 over the Klip River Tributary looking West.



This picture shows Bridge B2136 over the Klip River Tributary looking Southwest.

This picture shows Bridge B2136 over the Klip River Tributary looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows Bridge B2136 over the Klip River Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows Bridge B2136 over the Klip River Tributary looking East.



Picture showing Bridge B2136 across Klip River Tributary. This picture was taken looking Northeast.



Picture showing Bridge B2136 over the Klip River Tributary looking North.

Bridge 1749:



Picture depicting the existing N11 road between Middelburg and the Olifants River Bridge. This picture shows Bridge 1749 over irrigation canal from Loskop Dam Tributary looking West.



This picture shows Bridge 1749 over irrigation canal looking South.



This picture shows Bridge 1749 over irrigation canal looking East.



This picture shows Bridge 1749 over irrigation canal looking North.



This picture shows the irrigation canal under Bridge 1749.

Bridge 3611:



Picture depicting the existing N11 road between Middelburg and the Olifants River Bridge. This picture shows Bridge 3611 over the Olifants River Northwest.



This picture shows Bridge 3611 over the Olifants River looking West.



This picture shows Bridge 3611 over the Olifants River looking South.



This picture shows Bridge 3611 over the Olifants River looking Southeast.



Picture depicting the existing N11 road between Middelburg and the Olifants River



Picture depicting the existing N11 road between Middelburg and the Olifants River

Bridge. This picture shows Bridge 3611 over the Olifants River looking East.



Picture showing the existing bridge 3611 over the Olifants River. This picture was taken looking North.

Bridge. This picture shows Bridge 3611 over the Olifants River looking Northeast.



Picture showing Olifants River looking West.

Culvert 2:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 2 over the Klip River Tributary looking Northwest.



This picture shows culvert 2 over the Klip River Tributary looking West.



This picture shows culvert 2 over the Klip River Tributary looking Southwest.



This picture shows culvert 2 over the Klip River Tributary looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 2 over the Klip River Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 2 over the Klip River Tributary looking East.



Picture showing culvert 2 across Klip River Tributary. This picture was taken looking Northeast.



Picture showing culvert 2 looking North.

Culvert 3:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 3 over the Klip River Tributary looking Northwest.



This picture shows culvert 3 over the Klip River Tributary looking West.



This picture shows culvert 3 over the Klip River Tributary looking Southwest.



This picture shows culvert 3 over the Klip River Tributary looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 3 over the Klip River Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 3 over the Klip River Tributary looking East.



Picture showing culvert 3 across Klip River Tributary. This picture was taken looking Northeast.



Picture showing the Klip River Tributary looking North.

Culvert 6:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 6 over the Kranspoort Spruit Tributary looking Northwest.



This picture shows culvert 6 over the Kranspoort Spruit Tributary looking West.



This picture shows culvert 6 over the Kranspoort Spruit Tributary looking Southwest.



This picture shows culvert 6 over the Kranspoort Spruit Tributary looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 6 over the Kranspoort Spruit Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 6 over the Kranspoort Spruit Tributary looking East.



Picture showing the existing culvert 6 across Kranspoort Spruit Tributary. This picture was taken looking Northeast.



Picture showing Kranspoort Spruit Tributary looking North.

Culvert 7:



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 7 over the Kranspoort Spruit Tributary looking Northwest.



This picture shows culvert 7 over the Kranspoort Spruit Tributary looking West.



This picture shows culvert 7 over the Kranspoort Spruit Tributary looking Southwest.



This picture shows culvert 7 over the Kranspoort Spruit Tributary looking South.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 7 over the Kranspoort Spruit Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and Loskop Dam. This picture shows culvert 7 over the Kranspoort Spruit Tributary looking East.



Picture showing culvert 7 over the Kranspoort Spruit Tributary. This picture was taken looking Northeast.



Picture showing the Kranspoort Spruit Tributary looking North.

Culvert 8:



Picture depicting the existing N11 road between Middelburg and the Olifants River Bridge. This picture shows culvert 8 over the Olifants River Tributary looking Northwest.



This picture shows culvert 8 over Olifants River Tributary looking West.



This picture shows culvert 8 over the Olifants River Tributary looking Southwest.



This picture shows culvert 8 over the Olifants River Tributary looking South.



Picture depicting the existing N11 road between Middelburg and the Olifants River Bridge. This picture shows culvert 8 over the Olifants River Tributary looking Southeast.



Picture depicting the existing N11 road between Middelburg and the Olifants River Bridge. This picture shows culvert 8 over the Olifants River Tributary looking East.



Picture showing culvert 8 across the Olifants River Tributary. This picture was taken looking Northeast.



Picture showing culvert 8 looking North.



Current wall next to the N11 across the tributary blocking the watercourse.

8 SECTION 27 MOTIVATION

8.1 Existing Lawful Water Use

There are no water uses along the road that required permitting in terms of the Water Act of 1956 for the purposes of this application. However, both bridges were constructed prior to 1996 which may constitute existing lawful use.

8.2 Need to Redress the Results of Past Racial and Gender Discrimination

The South African National Roads Agency Ltd (SANRAL) is an example of the transformation of the public service which has been attained by government. The Agency was established in April 1998 by an Act of Parliament as an independent statutory Company with the Minister of Transport as the sole shareholder.

SANRAL is an affirmative action and equal opportunity company. Where the Agency lacked skills, specific recruitment drives have been initiated to augment competencies in the human resource and financial management fields. Professional services were procured to investigate well-founded job evaluation and salary grading systems based on best practice in the market. Of note are the adoption of policies on Sexual Harassment and HIV/AIDS.

It is well known that the highest incidences of HIV/AIDS occur along the main routes of the country, due largely to transmission between sex workers and truckers. SANRAL takes its responsibilities in terms of health education very seriously, and HIV/AIDS education takes place as part of most of the contracts undertaken, both on the national routes and within communities in which it implement socio-economic development projects.

One of the imperatives was to transform the organisational structure. SANRAL has moved well beyond hierarchical concepts of structure, which typify bureaucracy. Our internal capabilities and attributes have now been factored into the environmental design and the way in which staff interact with each other in the workplace. SANRAL operates in "clusters" constituted by a combination of talents so that expertise, vision and different kinds of experiences can be harnessed into a holistic, multi-disciplinary approach to the core business.

SANRAL is committed to create a workplace in which individuals of ability and application can develop rewarding careers regardless of their background, race or gender. Employment Equity policies emphasise opportunity for all and include appropriate educational support programmes, recruitment targets, training and development programmes and innovative management development practices. The procurement process for the proposed upgrade and rehabilitation of N11 national road and the bridge expansions will be implemented along the same principles.

8.2.1 BBBEE

SANRAL supports the principles of BBBEE and SANRAL has developed its own BBBEE policy. SANRAL as an organization, being an agency in the Department of Transport stable has to adhere to the Transport Sector Transformation Charter, specifically the Public Sector sub-section. In order to overcome the inequalities of the past governments strategy is to position BBBEE as a tool to broaden the country's economic base, accelerate growth, job creation and poverty eradication.

To give effect to this government enacted the BBBEE Act (No.53 of 2003). This Act has a significant impact on the procurement processes of SANRAL. The revised procurement principles must imbue the requirements and principles embodied in the BBBEE, Preferential Procurement Policy Framework Act (PPPFA), the Supply Chain Management Regulations of National Treasury as well as the Public Finance Management Act.

SANRAL supports this policy and strategy of government and vigorously promotes the achievement of these objectives.

8.2.2 Transformation Charter Applicable to SANRAL

The Transport Sector Charter is applicable to SANRAL as an entity. The service providers to SANRAL fall into 3 broad categories viz:

- Contractors and Built Environment Professionals - Construction Charter
- Land and related service providers - Property Charter
- Banks, Financial Advisor - Financial Sector Charter

The above generic core components and elements are applicable to all the charters, it is just targets and weighting that differ from charter to charter. It is imperative and necessary for SANRAL to check the compliance of all service providers to ensure that they also comply with charters in their economic sectors and if the particular economic sector or industry does not have a charter then the generic charter of Department of Trade and Industry (DTI) will then be applicable.

8.2.3 Job Creation Opportunities

During the construction phase, it is common practice that labour should be sourced from the communities who are to be affected by the development. Due to low levels of skills identified in the communities, it is highly likely that, the local people will only be employed in the non-specialized types of work such as the following:

- Concrete works;
- Storm water drains;
- Traffic control;
- Supply of sand;

- Borrow pit mining and crushing; and
- Fencing.

8.3 Efficient and Beneficial Use of Water

In terms of water demand, the volume of water required by SANRAL for road construction and bridge expansion purposes amounts to a small percentage of the total water demand for settlements along the N11 and that the zone of influence does not extend to areas utilized by other users, either upstream or downstream – with specific reference to the proposed widenings of the Keerom Bridge and Kranspoort Bridge. The proposed road upgrade and bridge expansions will utilize approximately 150 000 – 200 000 litres/day.

8.4 Socio-Economic Impact

The upgrading of the N11 – including bridge expansions - will have both positive and negative spin offs to the communities affected.

8.4.1 Short Term Benefits

During the construction phase, it is common practice that labour should be sourced from the communities who are to be affected by the development. Due to low levels of skills identified in the communities, training will be provided to improve skills in the community in terms of:

- Concrete works;
- Storm water drains;
- Traffic control;
- Supply of sand;
- Burrow pit mining and crushing; and
- Fencing.

8.4.2 Long Term Benefits

After the completion of the road, those who were fortunate to be employed will definitely have acquired certain skills which they would be able to use for instance those who would be mixing concrete and supplying sand will most likely be considered when there are opportunities such as the Reconstruction and Development Programme (RDP) housing constructions and the like.

Another long term benefit will be the provision of a greatly improved road infrastructure which will enhance safety, mobility and accessibility, not only to work opportunities, but also to multiplier and secondary economic activities around Middelburg and Groblersdal. The improved road infrastructure will also be more easily accessible for tourists and visitors, and will thus indirectly promote tourism.

8.5 Catchment Management Strategy

The Catchment Management Strategy (CMS) has a specific role within the context of catchment management. It formalises the catchment vision, the mission of catchment management and the understanding of the management objectives and issues. These will be addressed through agreed management strategies within a specified time period in the individual management units of the catchment. Such agreements should be the outcome of "interests-focused" bargaining as opposed to "rights-focused" bargaining. The CMS allocates roles, responsibilities and accountabilities to stakeholders and outlines an associated legislative and procedural framework for implementation.

A Catchment Management Agency (CMA) has been established for the Olifants River Basin.

The Olifants River Basin is the second pilot basin in which DWAF started establishing a Catchment Management Agency (CMA). The present research supports the institutional reforms in the Olifants River Basin, with a focus on:

- Inclusion of poor people in the CMA.
- Development of water and water productivity for the poor.
- Taking indigenous integrated water management systems into account.
- Fostering genuine dialogue on level playing fields between the different stakeholders.

8.6 Likely Effect of Water Use under Application on Water Resources

The water uses under application involve the widening of existing bridges and culverts.

The significant impacts of the bridge and culvert expansions on the surface water will be sediment load due to stormwater run-off. The sediment will emanate from vehicle and machinery movements around the proposed bridge expansions. During rainy seasons this sediment may be washed and deposited into the river channel and affect downstream water users.

If, and when accidental oil and fuel spillages do occur, and storm water come into contact with the spillages prior to cleaning, such water is likely to be contaminated. The mentioned potential impact will however be limited to construction/expansion phase (12-18 months) only. The management plans outlined to deal with the spillages, however, render the impact insignificant, provided they are strictly adhered to.

8.7 Class and Resource Quality Objectives

The class and resource quality objectives will be determined by the Department of Water Affairs (DWA).

8.8 Investments Already Made by Water User in Respect of the Water Use under Application

The rehabilitation and upgrade process will take place on an existing N11 as well as the bridge upgrades. The estimated cost of the proposed road upgrade project will be approximately R300 million – this includes approximately R3 to 6 million required for the bridge expansions depending on the option constructed.

8.9 Strategic Importance of the Water Use

The upgrade and rehabilitation of the N11 (including the bridge upgrades) seeks to provide a direction in achieving the public transport objectives of the Integrated Development Plan (IDP). The overall goal of SANRAL (and the relevant local municipalities) is to strive to put more resources to build more and better roads infrastructure to improve the quality of life for the residents and enhance local economic activity through the provision of better and safe roads.

8.10 Water Quality in the Resource

The water use under application is unlikely to affect the underground water resources; however, increased sediment load may result due to the construction/expansion activities, which may in turn contaminate water in the river channel especially during rainy seasons.

8.11 Probable Duration of Undertaking for the Water Use

The N11 rehabilitation and upgrade – includes the proposed bridge expansion activities will take approximately 12-18 months to complete, thereafter the upgraded road and bridges will be permanent structures. All activities will be undertaken within the existing N11 SANRAL Road Reserve.