SUPPLEMENTARY WATER USE INFORMATION

Section 21(c) and (i) Water Uses

Section 21(c) ~ impeding or diverting the flow of water in a watercourse

Section 21(i) ~ altering the bed, banks, course or characteristics of a watercourse

1. Watercourse Attributes

1.1 Locality

1.1.1. Description of the location of the watercourse:

The main freshwater features in the study area consist of the Seweweekspoort River, its tributaries within the pass and its associated valley bottom wetland area. The Seweweekspoort River is a tributary of the Kobus River, as tributary of the Gamka River in the Gouritz River System. The Seweweekspoort River is largely contained within the Klein Swartberg Mountains and is still in a largely natural ecological state. Only once the river exits the pass does it become modified by the surrounding agricultural activities.

The Seweweekspoort pass was used by earlier farmers to access the Great Karoo from the south. It is approximately 17km long and in many places is only broad enough for the stream to pass through. In 1859 it was decided that a pass should be built through the poort. The early part of the work was done by 108 convicts, without the presence of a road engineer. In 1860 A G de Smidt, brother-in-law of Thomas Bain, continued and 11 of the 17km was completed. The road was s finally completed in November 1962. The road crosses the river 23 times.

Table 1: Summary of key information related to the water resource in the study area

Descriptor	Name / details	Notes
Water Management Area	Breede-Gouritz	
Catchment Area	Seweweekspoort River, a tributary of the Kobus River in the Gourits River	
Quaternary Catchment	J25B	
Present Ecological state	D	DWS PES and EI&ES national assessments (2012) for the adjacent River
Ecological Importance and Ecological Sensitivity	High; Very High	
Water resource component potentially impacted	Seweweekspoort River, as well as its tributaries and associated wetland areas	
Latitude	33°21'41.3"S	Start of Road Upgrade (km 40.9)
Longitude	21°24'35.4"E	
Latitude	33°27'35.0"S	End of Road Upgrade (km 58.1)
Longitude	21°25'43.2"E	

1.1.2. Locality map indicating the relevant catchment, surrounding land use, towns, infrastructure:

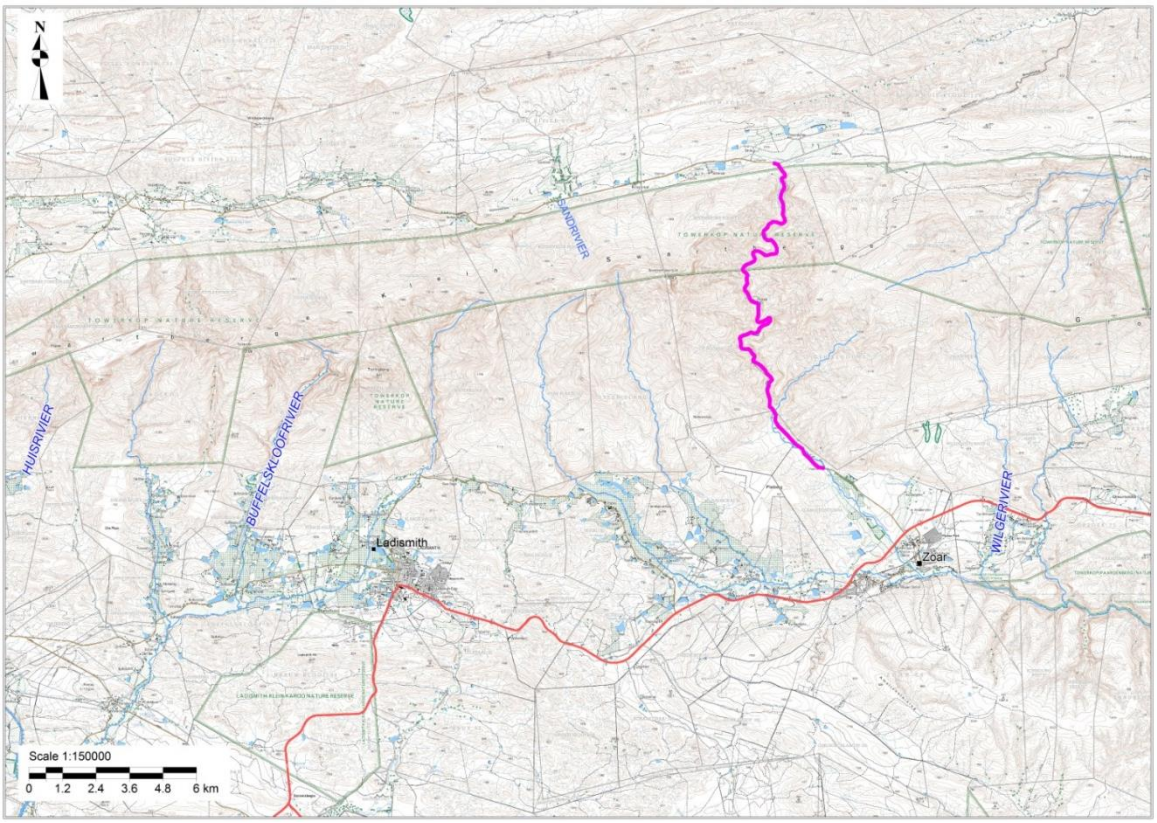


Figure 1. Topographical map (3321AC/DA/CA/CB) of the location and extent of the proposed flood repair work in the Seweweekspoort Pass

1.1.3. Catchment reference number:
J25B

1.2 Description

1.2.1. Name and Description of affected watercourse:
The Seweweekspoort River is a southward flowing tributary of the Kobus River. The river is largely natural for much of its middle to upper reaches where it has carved a ravine through the Klein Swartberg Mountains. Only in its lower reaches have been impacted by agricultural activities.

Figure 3. Seweweekspoort River as it enters the pass

Figure 4. View of the Seweweekspoort River within the pass

Figure 5. Seweweekspoort River immediately downstream of the pass

1.2.2. Map of affected watercourse with flood lines/riparian zones:

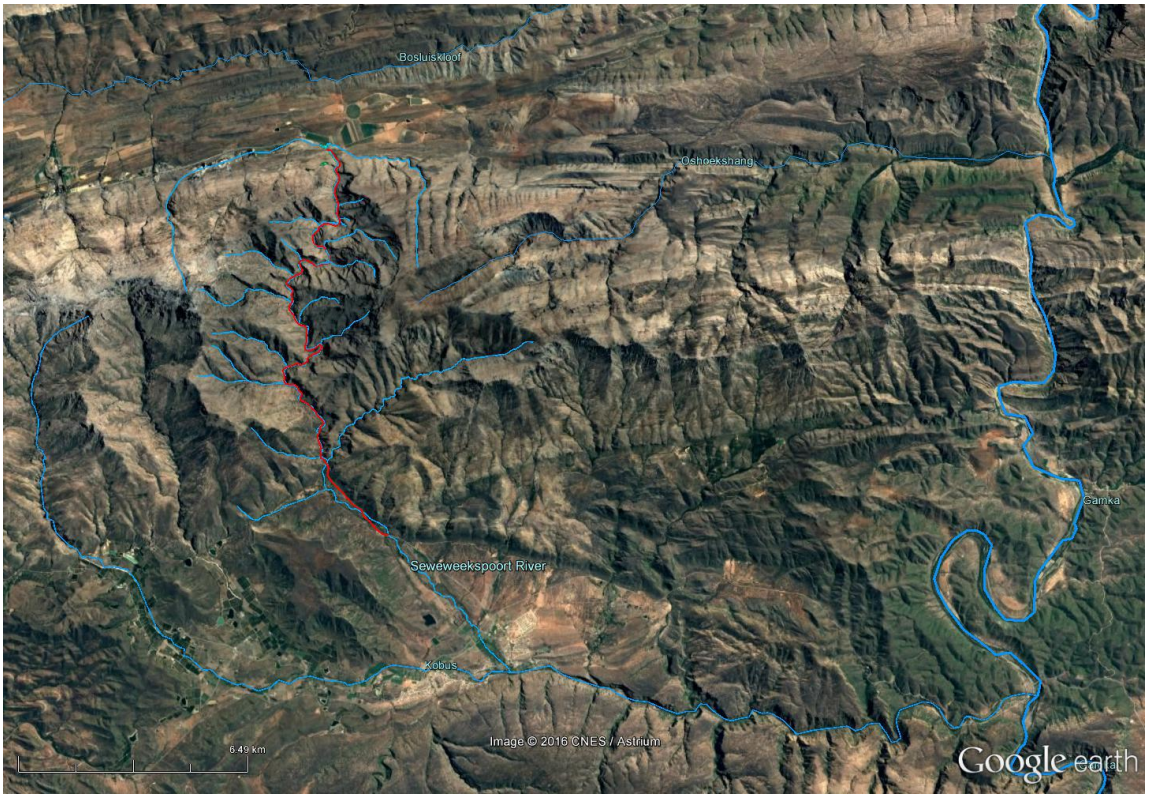


Figure 6. Google Earth image of the study area with the mapped freshwater features

1.2.3. Present Ecological Status i.t.o. flow, water quality, habitat and biota:

From the Site Characterisation assessment, the geomorphological and physical characteristics of the river can be classified as shown in **Table** .

Table 2. Geomorphological and Physical features of the river

River	Seweweekspoort
Geomorphological Zone	Lower foothill river
Lateral mobility	Largely confined
Channel form	Simple
Channel pattern	Single thread: low sinuosity
Channel type	Cobble bed
Channel modification	Largely natural
Hydrological type	Perennial
Ecoregion	Southern Folded Mountains
DWA catchment	J25B
Vegetation type	Montague Shale Renosterveld
Rainfall region	Throughout the year

The IHI assessment is based on an evaluation of the impacts of two components of the river, the riparian zone and the instream habitat. The total scores for the instream and riparian zone components are then used to place the habitat integrity of both in a specific habitat category. The assessment of habitat integrity was undertaken for the Seweweekspoort River within the study area.

Table 3: Index of Habitat Integrity Assessment results and criteria assessed

Instream Habitat Integrity	Score	Riparian Zone Habitat Integrity	Score
Water Abstraction	7	Vegetation Removal	6
Flow Modification	5	Exotic Vegetation	4
Bed Modification	4	Bank Erosion	5
Channel Modification	3	Channel Modification	3
Water Quality	4	Water Abstraction	7
Inundation	4	Inundation	4
Exotic Macrophytes	1	Flow Modification	5
Exotic Fauna	1	Water Quality	4
Rubbish Dumping	2		
Instream Habitat Integrity Score	85	Riparian Zone Habitat Integrity Score	82
Integrity Class	**B**	**Integrity Class**	**B**

The Seweweekspoort River is in a largely natural state within the pass. Impacts to the river consist of the direct impact on the existing road and its associated activities on the riparian habitat of the river as well as the light invasion of alien plants within the disturbed riparian habitat. The upstream agricultural activities have also modified the flow and water quality of the water entering the pass.

Wetland Classification

The wetland areas at the site can largely be classified as a mosaic of valley bottom wetland and riparian zones that are associated with the river. The valley bottom wetland areas are closely associated with the riparian zones of the streams and as such have also been assessed as part of the river/stream assessment. The wetland features receive their flow from both groundwater and surface water. The wetland areas within the study area can be classified as follows:

Table 4: Classification of wetland areas within study area

Name	Channelled Valley bottom wetlands
System	Inland
Ecoregion	Southern Folded Mountains Ecoregion
Landscape setting	Valley floor
Longitudinal zonation	foothills
Drainage	Associated with river and its tributaries
Seasonality	Seasonally to permanently inundated
Anthropogenic influence	Largely Natural
Geology	Sandstone
Terrestrial Vegetation	North and South Swartberg Sandstone Fynbos
Dominant wetland vegetation	*Phragmites australis* reeds in the upstream section and sedges and rushes such *Juncus effuses* and *Isolepis* sp. in the southern section
Substrate	alluvial sands
Salinity	Fresh

The valley bottom wetland areas within the study area as closely associated with the Seweweekspoort and occur along the length of the river where the valley is slightly wider and flatter and where flow in the river is slightly impeded by natural rock barriers. In the upper portion the wetland areas tend to be dominated by the common reed, *Phragmites australis,* as a result of the more brakish water quality and finer sediments that are influenced by the Great Karoo while the wetland areas in the lower section consist of rushes, sedges and restios such as *Isolepis* sp., broom restio (*Calopsis paniculata*), soft rush (*Juncus effuses*) as a result of the low conductivity and coarser sediments within the pass.

Figure 7. Valley bottom wetland in the upper (top) and lower (bottom) sections of the Seweweekspoort

Table 5. Wetland habitat integrity assessment (score of 0=critically modified to 5=unmodified)

Criteria & Attributes	Valley bottom wetlands
Hydrological	
Flow Modification	4.1
Permanent Inundation	4.3
Water Quality	
Water Quality Modification	4.0
Sediment Load Modification	3.7
Hydraulic/Geomorphic	
Canalisation	4.0
Topographic Alteration	4.2
Biota	
Terrestrial Encroachment	4.1
Indigenous Vegetation Removal	3.9
Invasive Plant Encroachment	4.1
Alien Fauna	4.6
Over utilization of Biota	4.5
Category	**A/B**

Table 6: WET-Health assessment of wetland areas in the study area

Components	Method used for assessment	Valley bottom wetlands	
		PES% Score	Ecological Category
Hydrology PES	WET-Health Hydro Module	90 %	**A/B**
Geomorphology PES	WET-Health Geomorph Module	97 %	**A**
Water quality PES	Landuse-WQ Model	99 %	**A**
Vegetation PES	WET-Health Veg Module	80 %	**B/C**
Overall Wetland PES	WET-Health default weightings	89 %	**A/B**

The valley bottom wetlands are considered to be largely natural with the only impacts are the direct habitat and aquatic vegetation impacts associated with the existing road, as well as flow modification as a result of the upstream agricultural activities (**Table**). There is also a low density invasion of alien plants as a result of the disturbance activities.

The assessment of the ecosystem services supplied by the wetland areas was conducted according to the guidelines as described by Kotze *et* al (2005). An assessment was undertaken that examines and rates the services listed in Table . The characteristics were scored according to the general levels of services provided.

Table 7: Goods and services assessment results for wetlands (low=0 and high=4)

Goods and services	Valley bottom
Flood attenuation	3.0
Stream flow regulation	3.2
Sediment trapping	3.4
Phosphate trapping	2.0
Nitrate removal	2.3
Toxicant removal	1.5
Erosion control	2.9
Carbon storage	1.8
Biodiversity Maintenance	3.3
Water supply	2.8
Natural resources	0
Cultivated foods	0
Cultural significance	0.5
Tourism and recreation	3.0
Education and research	0.8

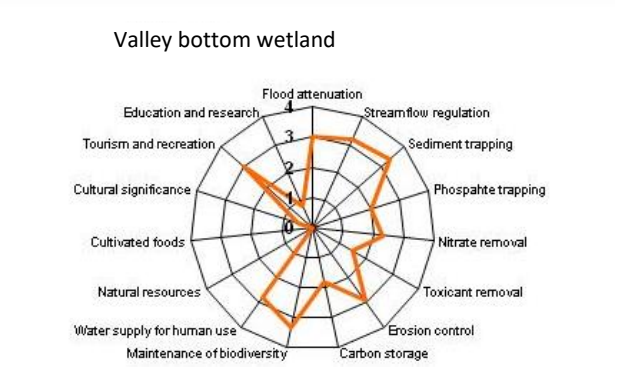


Figure 8: Ecosystem services provided by the wetland areas

The valley bottom wetlands provides important goods and services such as flood attenuation, flow regulation, erosion control and sediment trapping for the Seweweekspoort River (Figure). The wetland areas are important for providing habitat for biodiversity.

1.2.4. Ecological Importance and Sensitivity:

EIS considers a number of biotic and habitat determinants surmised to indicate either importance or sensitivity. The determinants are rated according to a four-point scale. The median of the resultant score is calculated to derive the EIS category.

Table 8. Results of the EIS assessment

Biotic Determinants	Seweweekspoort
Rare and endangered biota	3
Unique biota	3
Intolerant biota	3
Species/taxon richness	3
Aquatic Habitat Determinants	
Diversity of aquatic habitat types/features	3
Refuge value of habitat type	3
Sensitivity of habitat to flow changes	3
Sensitivity of flow related water quality changes	3
Migration route/corridor for instream and riparian biota	3.5
National parks, wilderness areas, Nature Reserves, Natural Heritage sites, Natural areas, PNEs	3.5
EIS CATEGORY	High

The Seweweekspoort Rivers is considered to be of a high ecological importance and sensitivity. The river is home to many localised and endemic plant species as well as aquatic biota such as redfin minnows (*Psuedobarbus* spp.), ghost frogs (*Helephryne* sp.) and Victorin's warbler (*Bradypterus victorini*).

Wetland EIS

The EIS Assessment for the wetland areas is undertaken in the same manner as that for the river and considers a number of biotic and habitat determinants surmised to indicate either importance or sensitivity. The main ecological importance of the valley bottom wetland areas are their link to the river system.

Table 9: Results of the EIS assessment for the wetland areas

Biotic Determinants	**Valley bottom**
Rare and endangered biota	3
Unique biota	3
Intolerant biota	3
Species/taxon richness	2

Aquatic Habitat Determinants	
Diversity of aquatic habitat types or features	2
Refuge value of habitat type	3
Sensitivity of habitat to flow changes	3
Sensitivity of flow related water quality changes	3
Migration route/corridor for instream and riparian biota	2
National parks, wilderness areas, Nature Reserves, Natural Heritage sites, PNEs	3
EIS CATEGORY	Moderate to High

The valley bottom wetlands are of a moderate to high ecological importance and sensitivity due to their link with the Seweweekspoort River.

1.2.5. Existing land and water use impacts:

The landcover within the study area and its surroundings is mapped as comprising largely of natural areas (pale green in Figure). The area is also mapped as largely being located within the CapeNature Towerkop Nature Reserve which is a formally protected area.

The road to be upgraded lies across the boundary between the Laingburg Local Municipality (Central Karoo District Municipality) and the Kanneland Local Municipality (Eden District Municipality). The closest urban areas are Ladismith to the west, Calitzdorp to the east, Vanwyksdorp and Riversdale to the south and Laingsburg to the north. The communities of Zoar and Seweweekspoort are located to the south and north of the pass respectively. Some cultivated areas occur immediately to the north and to the south of the area (yellow in Figure). The blue areas in Figure that are mapped as wetland areas consist largely of small farm dams that have been constructed to irrigate the cultivated areas. The pass provides an important access route between the little Karoo to the south and the Great Karoo to the north.

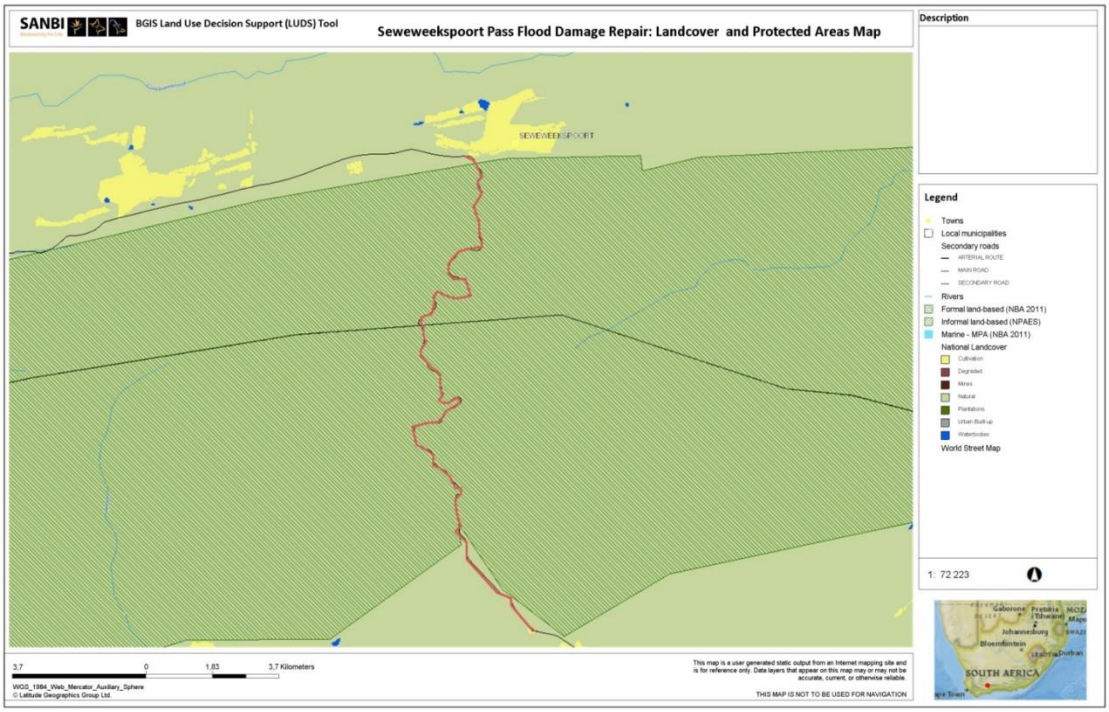


Figure 9: Land cover for the surrounding area (SANBI BiodiversityGIS, 2016)

1.2.6. Sensitive environments/conservation value:

There are two biodiversity mapping initiatives of relevance to the site, the Western Cape Biodiversity Framework (WCBF) for the Central Karoo and Kannaland that contains fine-scale mapping and the national Freshwater Ecosystem Priority Areas (FEPA) map. The WCBF or Critical Biodiversity Areas (CBA) map aims to guide sustainable development by providing a synthesis of biodiversity information to decision makers. It serves as the common reference for all multi-sectorial planning procedures, advising which areas can be lost to development, and which areas of critical biodiversity value and their support zones should be protected against any impacts. The CBA map indicates areas of land as well as aquatic features which must be safeguarded in their natural state if biodiversity is to persist and ecosystems are to continue functioning.

Most of the study area is located within the formally protected Towerkop Nature Reserve (hatched green area in Figure), with the southern portion also forming part of a Mountain Catchment Area (yellow area in Figure). The portions of the study area immediately north and south of the protected areas are mapped as CBAs that should be protected.

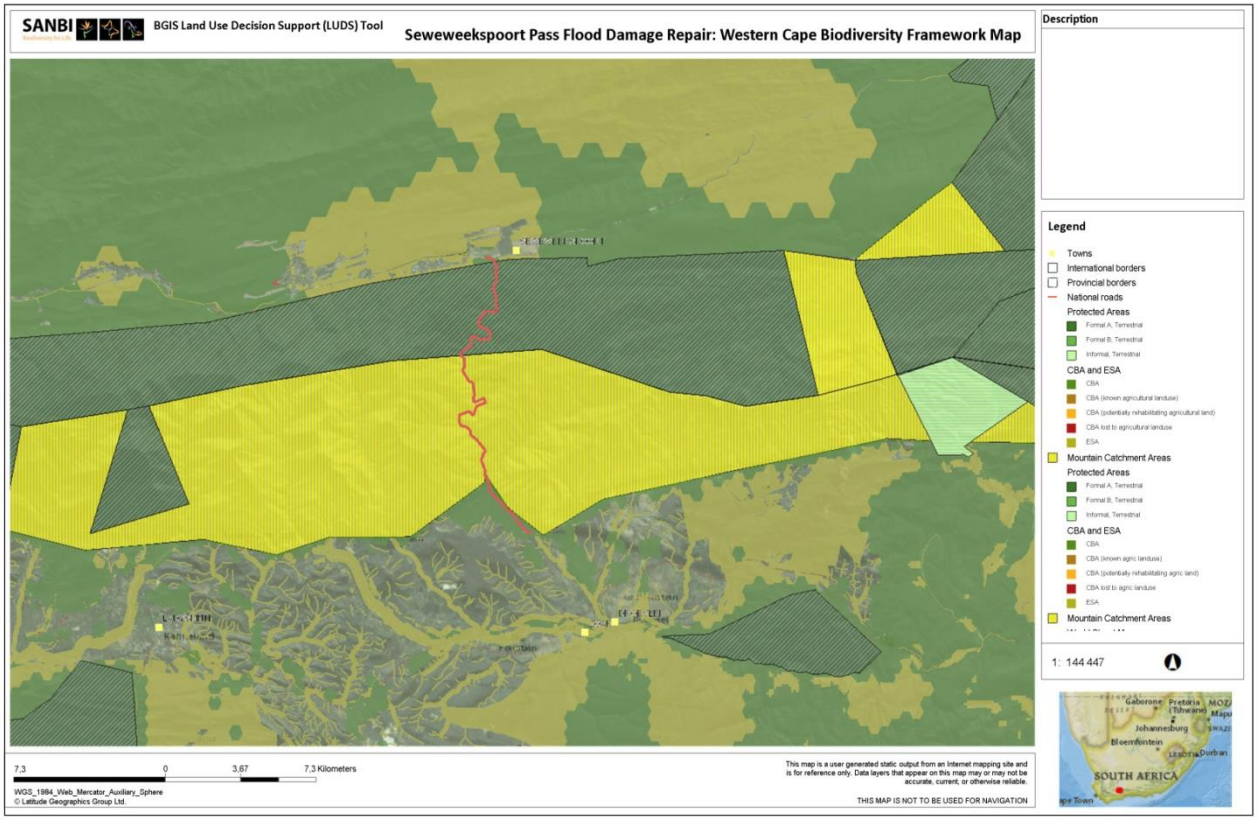


Figure 10. Western Cape Biodiversity Framework map for the area (SANBI Biodiversity GIS, 2016)

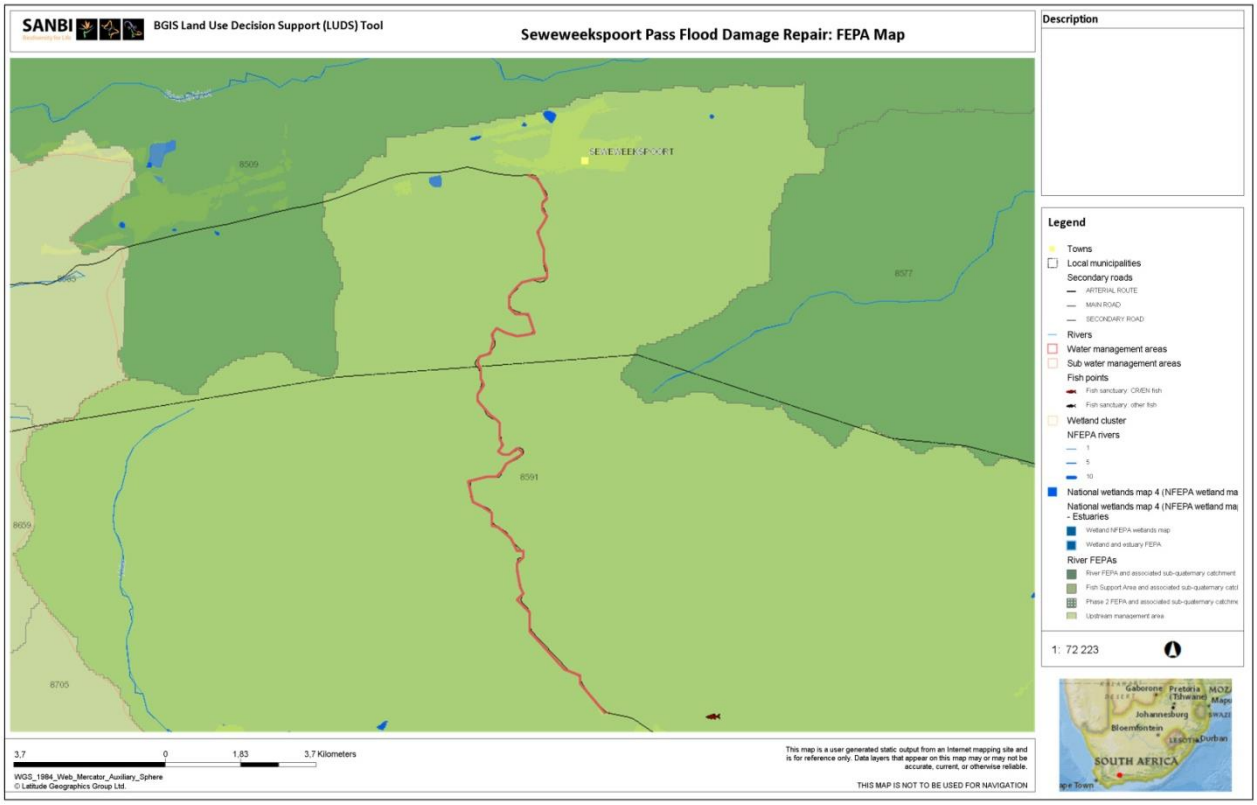


Figure 11. Freshwater Ecosystem Protected Areas (FEPA) map for the area

The Seweweekspoort River is considered to be an important fish support area for indigenous fish such as the Slender redfin (*Pseudobarbus tenius*) and Smallscale redfin (*P. asper*) and as such is mapped as a FEPA Fish Support Area (pale green area in Figure 11). FEPAs are strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity. FEPAs were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries. Fish support areas are important for the migration of indigenous fish species. The condition of these rivers should be improved in order to sustain the fish populations that they contain.

2. Water Use Information	
2.1 Description and Methodology	*2.1.1. Water use activities description:* The Seweweekspoort Pass, located on MR309 approximately between km 40.9 to 58.1, is a gravel road that meanders through the narrow gorge of the Seweweekspoort, linking the towns of Laingsburg and Ladismith. Structures have been constructed over many years consisting mostly of one or two pipes. The result is that even small rain events cause the road to be overtopped with ensuing damage to the road that requires repair work to be done by the Eden District Municipality and the Central Karoo District Municipality since the border is half way through the Seweweekspoort. Hatch was appointed by the Western Cape Government Roads Network Branch to assess, design and monitor the repair work to roads, drainage and protection works for the road. This freshwater assessment report is intended to inform the freshwater ecosystem aspects of the project. The flood damage repairs included in this project occur on Major Road MR306 in the Seweweekspoort Area. There are 27 structures proposed for repair work or replacement. Table each structure. The design width of the structures are to be 6m clear width between guideblocks and not materially wider

than the gravel road which is narrower in many parts of the pass. Typical sizes for the structures will be 4m to 6m wide perpendicular to the flow of the river and structures will be aligned with the direction of the river. Rectangular causeways with larger clear spans (few piers) are preferred to pipe causeways as the risk of blockage is much reduced. The sizing of openings will be to allow floods with a 2 year return period to pass through drainage openings under the deck slab. Concrete approach slabs are to be omitted as far as possible due to under scour risks and expensive repairs. The pass cannot be closed for traffic during construction. Temporary deviation roads would need to be used but will be revegetated. A site visit was attended between the environmental impact assessment team, the project engineers and the client to determine the bypass routing that would have the least environmental impact.

Table 10. Description of the structures on MR306 proposed for repair or replacement

Structure No.	Km	Co-ordinates	Description of Existing Structure	Description Of Proposed Structure
1	40.90	33°21’41.30’’S 21°24’35.42’’E	3x600mm pipes with gabions upstream, ponding occurs at inlet and outlet	6m wide causeway
2	44.10	33°22'51.38"S 21°24'31.32"E	2x600mm encased pipes, large skew angle	4m wide causeway
3	44.30	33°22'55.45"S 21°24'26.95"E	2x600mm encased pipes, with wing walls, apron slabs, gabions downstream damaged	6m wide causeway
4	44.50	33°23'1.12"S 21°24'21.51"E	2x600mm encased pipes, grouted stone head walls, base scoured and water running under structure	4m wide causeway
5	44.70	33°23'8.56"S 21°24'22.03"E	2x600mm encased pipes, heavy siltation, low level	6m wide causeway
6	45.05	33°23'11.26"S 21°24'31.42"E	2x600mm encased pipes, grouted stone head walls, mostly damaged, slight siltation	4m wide causeway
7	45.10	33°23'13.16"S 21°24'34.38"E	2x600mm encased pipes, with stone and concrete head walls upstream	4m wide causeway
8	45.50	33°23'24.84"S 21°24'37.91"E	1x600mm pipe only for side stream	3m wide causeway
9	45.97	33°23'27.84"S 21°24'22.06"E	2x600mm encased pipes with concrete and stone head walls at inlet and outlet, heavy siltation, structure completely buried	4m wide causeway
10	46.35	33°23'23.57"S 21°24'7.61"E	1x600mm pipe with stone head wall	2m wide causeway
11	46.50	33°23'26.04"S 21°24'5.27"E	2x600mm pipes; concrete and stone head walls at inlet and outlet, stone pitching aprons, siltation, structure buried	6m wide causeway
12	48.00	33°24'3.53"S 21°23'55.81"E	1x900mm pipe, stone head and wing walls, damaged apron slabs both sides, river channel is deep	6m wide causeway
13	50.10	33°24'42.25"S 21°24'31.50"E	3x600mm pipes with stone head walls up and down stream, stone pitching aprons severely damaged	2 x 3m Wide Cell causeway
14	50.30	33°24'46.14"S 21°24'29.91"E	2x900mm pipes with stone head and return wall downstream, severely damaged and siltation issue	4m Wide Cell causeway
15	50.80	33°24'56.08"S 21°24'14.54"E	3x600mm pipes with stone head and return walls up and down stream, severely damaged and siltation prevalent	4m Wide Cell
16	51.10	33°24'59.11"S 21°24'7.50"E	2x900mm pipes with stone head wall up and down stream, severely damaged, large boulders abundant in river bed	4m Wide Cell causeway
17	51.60	33°25'1.52"S 21°23'51.22"E	River blocked by fallen tree and erodes bank and under scours road when flood comes through	30m Long Wall
18	52.00	33°25'16.31"S 21°23'50.59"E	2x900mm pipes with stone head wall up and down stream, severely damaged, boulders abundant in river bed	4m Wide Cell causeway

19	53.20	33°25'35.88"S 21°24'16.53"E	2x900mm pipes with concrete protection works up and down stream, scouring severe	4m Wide Cell causeway
20	53.40	33°25'39.94"S 21°24'20.83"E	2x600mm pipes with stone head walls at and outlet, mostly buried, nearly completely destroyed	4m Wide Cell causeway
21	53.50	33°25'43.76"S 21°24'23.71"E	2x900mm pipes with concrete protection works up and down stream, scouring severe	4m Wide Cell causeway
22	53.80	33°25'52.34"S 21°24'31.94"E	Road way gets flooded by river and washes material away completely during floods	100m Long Wall
23	54.10	33°25'56.48"S 21°24'26.57"E	2x900mm pipes with stone head wall up and down stream, mostly damaged, large boulders in river	4m Wide Cell causeway
24	54.30	33°26'0.20"S 21°24'24.55"E	2x900mm pipes with stone head wall up and down stream, mostly damaged, large boulders in river bed, siltation high	4m Wide Cell causeway
25	54.40	33°26'3.00"S 21°24'24.34"E	Road way gets flooded by river and washes material away completely during floods	350m Long Wall
26	57.10	33°27'14.40"S 21°25'15.08"E	57m causeway with 6x2.4m openings, 500mm slab, aprons and wing walls, 4 openings blocked with rocks only 2 openings clear	Drop inlet on existing structure
27	58.10	33°27'34.98"S 21°25'43.17"E	1x1.9m W causeway with 750mm pipe down steam, broken apron slabs and downstream return walls	6m Wide Cell causeway

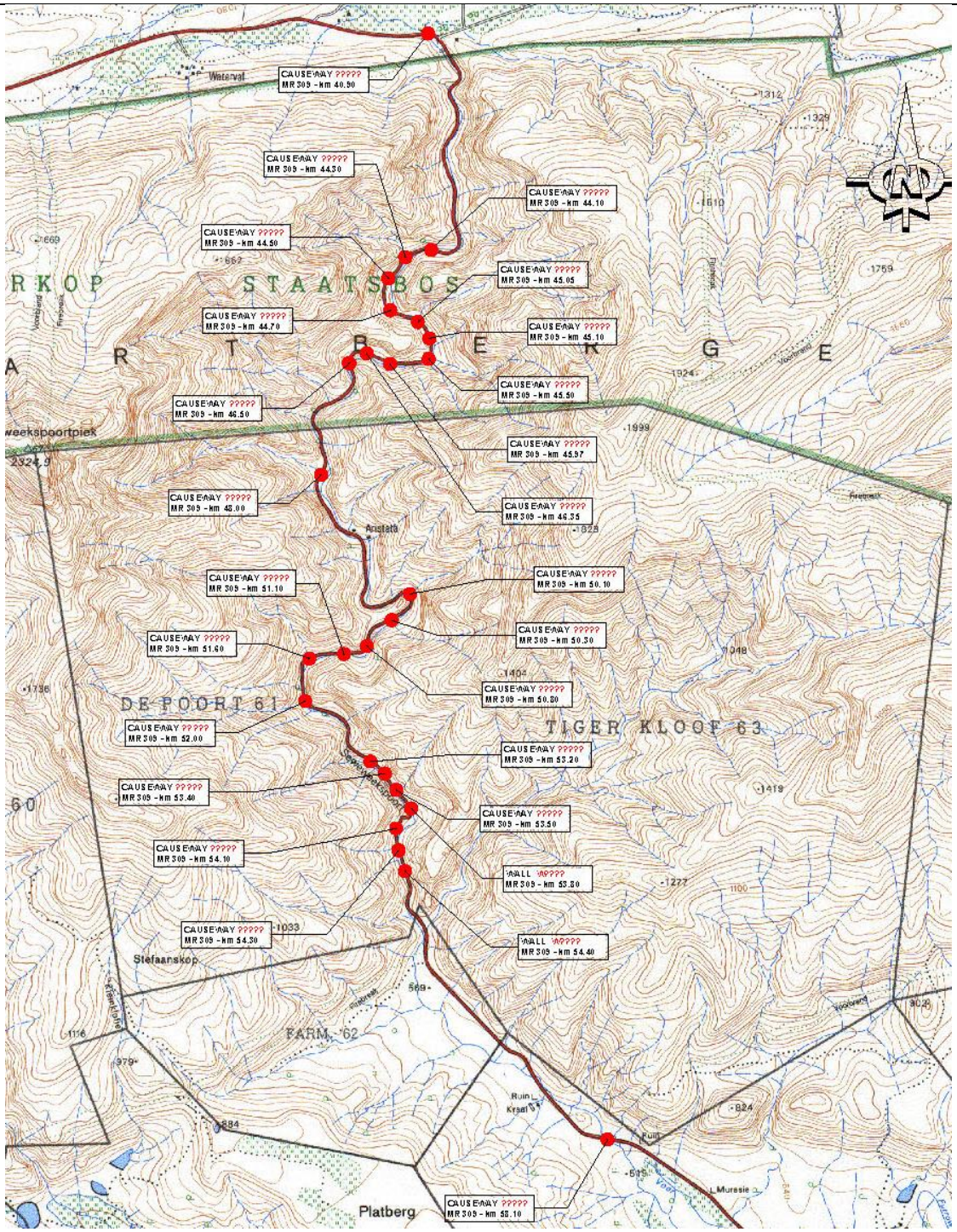


Figure 12. Location of the structure that require repair or replacing

2.1.2. Project phases description:
The project consists of a planning, construction and operational phase

2.1.3. Site layout plans:
See plans in Appendix C

2.1.4. Method statement:
See detailed engineering plans in Appendix C

2.1.5. Engineering Drawings:
See plans in Appendix C

	2.1.6. Storm water Management Practices description and map: The designs of the proposed culverts and structures are designed to accommodate the high flows within the river. The structures themselves will not result in an increase in storm water flows.
	2.1.7. Existing lawful use: The existing road with its river crossings is an existing lawful use.
	2.1.8. Investments made and to be made: Currently the initial estimation of the cost for the structures is R17.13million.
	2.1.9. Duration of undertaking: The duration is long term in accordance with the lifespan of the infrastructure.
2.2 Motivation	*2.2.1. Objective of water use:* The Seweweekspoort Pass, located on MR309 approximately between km 40.9 to 58.1, is a gravel road linking the towns of Laingsburg and Ladismith. The road meanders through the narrow gorge of the Seweweekspoort. The gorge is very narrow with the result that the gravel road crosses the Seweweekspoort River numerous times in a short distance of 18km. Structures have been constructed over many years consisting mostly of one or two pipes. The result is that even small rain events cause the road to be overtopped with ensuing damage not only at the river crossing but also along the road since the road acts as a weir when the hydraulic capacity is exceeded. The frequent overtopping of the road requires repair work to be done. The route is considered an important link between the Groot and the Klein Karoo and it is proposed to upgrade the structures throughout the pass with the aim of improving their functionality, and reducing the level of repairs which are currently required.
	2.2.2. Contribution to rectify past discrimination: The proposed water use does not entail and it not associated with the consumptive usage of water or the supply of water related services (water supply and sanitation). It is therefore not directly contributing towards the rectification of past discrimination.
	2.2.3. Efficient and beneficial use of water: The proposed water use does not entail and it not associated with the consumptive usage of water or the supply of water related services (water supply and sanitation). It cannot therefore be considered an efficient or in-efficient use of water. Although, during the construction phase the activity will have negative impacts upon the water course, the longer term operation will have beneficial aspects. The current infrastructure requires regular maintenance activity within the river. The aim of the new infrastructure is that the frequency and magnitude of maintenance activities will be reduced. This will be beneficial to the aquatic and riparian habitats.
	2.2.4. Relevant catchment management strategies and local government planning framework: A catchment management strategy for the Gouritz Water Management Area (WMA) has not yet been compiled.
	2.2.5. Strategic importance of water use: The proposed activity is not considered a strategic water use.

3. Impact Assessment and Management	
3.1 Impact Prediction and Assessment	*3.1.1. Assessment of the impacts associated with the water use:* This section provides a combined assessment of the potential impacts to freshwater ecosystems that are likely to be associated with the proposed road improvement activities. AQUATIC HABITAT MODIFICATION OR LOSS
	Nature of Impact: A small risk of the possible impact on the ***aquatic habitat*** of the Seweweekspoort River, its tributaries and associated wetland areas can be expected during the construction phase due to the fact that the activities associated with road upgrade will need to take place where the road crosses or is adjacent to the river or its tributaries. The disturbance of aquatic habitat will also provide an opportunity for invasive alien plants to proliferate in the pass which is currently relatively free of invasive alien plants. Significance of impacts without mitigation: *Construction Phase:* A localized impact of medium intensity in the short term that is expected to have a

low negative significance in terms of its impact on the aquatic habitat in the study area. This is due to the fact that the habitat at the sites has already been disturbed as a result of the existing road and its structures and the long term associated road maintenance activities. In addition, a specific site visit was attended by the project team and EIA specialists to identify those areas in which the proposed activities would have the least potential impact.

Operation Phase: Over the longer term a positive impact of a low significance could be expected due to the impacted hydraulic capacity of the upgraded structures and the reduced need to undertake maintenance activities on the road and hence the reduced disturbance of aquatic habitats over the long terms with a reduce potential for invasive alien plants to establish within the pass at the river crossing sites.

Proposed mitigation:

Construction Phase:

- Work within the river channel or wetland areas should be limited as far as possible and the disturbed areas rehabilitated immediately afterwards.
- Construction within the river channel should as far as possible take place during the drier months of the year.
- To minimise the impact of the temporary bypass, the bypass route should be selected to avoid larger riparian trees as far as possible. Larger plants should be trimmed back to leave their stems and roots intact rather than removing the entire trees unless absolutely necessary. Bidem should be placed over the existing topsoil and vegetation before placing the fill material in the channel, that the fill material can all be removed after completion of the road crossing structure. Pipe culverts should be temporarily placed within the channel to ensure the low flow in the river is not impeded. Sandbags should be placed on the outer edge of the bypass to prevent the sashing of sediment into the channel.
- Spoil material should be utilised within the construction works or removed to approved dumping sites.
- Once construction is complete, the area should be rehabilitated to resemble that of the surrounding bed and banks and where necessary vegetated with suitable local indigenous plants as occur at the site.

Operation Phase:

- Any invasive alien plants from the road reserve should be monitored and removed on an ongoing basis according to methods as provided by the Working for Water Programme.
- Minimise the frequency of, or requirement for, maintenance activities.
- All reasonable measures should be undertaken to ensure that river maintenance activities minimise erosion.

Significance of impacts after mitigation:

Construction Phase: The significance of the impact on the aquatic ecosystems with mitigation is expected to be a very low (negative) in the short term.

Operation Phase: The significance of the impact on the aquatic ecosystems with mitigation is expected to be low (positive) in the long term.

WATER QUALITY IMPACTS

Nature of impact: Impairment of the ***surface water quality*** could potentially occur during the construction phase.

Significance of impacts without mitigation:

Construction Phase: A slight risk of a localized impact of low intensity that is expected to have a low overall significance in terms of its impact on the identified aquatic ecosystems in the area.

Proposed mitigation:

Construction Phase:

Contaminated runoff from the construction site(s) should be prevented from entering the river, its tributaries and associated wetland areas. The laydown area and main construction site for the road upgrade should be located outside of the pass and away from the river and its associated wetland areas. If the construction site(s) need to be located near the rivers/streams, all materials on the construction site(s) should be properly stored and contained. Disposal of waste from the site(s) should also be properly managed. Construction workers should be given ablution facilities at the construction works that are located away from the river systems (at least 30m) and regularly serviced. These measures should be addressed, implemented and monitored in terms of the Environmental Management Plan for the construction phase.

Increased sedimentation or turbidity at each of the construction works should be mitigated as far as possible by making use of sandbags, settling ponds or screens to minimise the load of sediment being washed downstream of the sites.

Significance of impacts after mitigation:

Construction Phase: Provided that the mitigation measures are effectively implemented the water quality impacts of the proposed road upgrades should be of very low to negligible significance.

POTENTIAL FOR EROSION

Nature of Impact – There is a potential for ***increased erosion*** to take place at the river crossings as a result of a change in the runoff characteristics, a loss of vegetation cover and physical disturbance of stream banks. The proposed road upgrades should however reduce the risk of erosion due to their larger hydraulic capacity.

Significance of impacts without mitigation:

Operation Phase: Low localized impact.

Proposed mitigation:

The riparian vegetation cover should be disturbed as little as possible during the construction phase. Any disturbed areas should be rehabilitated as soon as possible after construction is completed and planted with suitable indigenous plants where necessary.

Where the tributary stream channels drop steeply at the crossings and the risk of erosion downstream of the crossings is high, erosion protection measures should be implemented or the structures stepped to accommodate the drop at the site in order to prevent the need to mitigate erosion in the future.

Stormwater runoff from the road into the stream channel at these sites may also need to be mitigated to prevent erosion at the crossings.

Significance of impacts after mitigation:

Operation Phase: Negligible localized impact during construction phase.

FLOW MODIFICATION

Nature of Impact: A ***temporary and longer term impedance of the flow*** or a change to the flow characteristics in the rivers at the river crossing sites may occur as a result of construction activities. Longer term maintenance of the river channel at the structures may be required to ensure that no debris

blocks the channel at the road crossings.

Significance of impacts without mitigation:

Construction Phase: The construction activities would be expected to have a very limited impact on the flow in the stream in terms of the extent and duration.

Operation Phase: The upgraded river crossing structures are likely to result in altered flow/hydraulic characteristics. Due to the proposed increase in the hydraulic capacity of the structures, this potential impact would be a low (positive) significance.

Proposed mitigation:

Construction Phase:

Activities within the river channel during the construction phase should be limited as far as possible in terms of their spatial and temporal extent. Construction work within the river channel should preferably take place before the onset of the rainfall period to ensure minimal impact on flow. Flow in the river should be diverted around the construction works. In particular the low flow should not be impeded during construction.

Rubble and debris from existing structures and construction activities, as well as the temporary bypass structures, should be removed after construction is complete so as not to impede flow in the river.

Operation Phase:

In the longer term, the upgraded structures and the box culverts/pipes should not impede the flow and in particular the low flow in the river. In particular, the new culvert structures should not be placed higher than the base level of the river channels to ensure that low flows are not impeded. In addition, the culvert structures must be placed within the natural drainage line of the streams. The structures should also not impede the migration of biota. The channel upstream of the river crossings should be kept free of debris, intrusive growth of invasive alien plants and sediment build-up, particularly at the culvert where it might impede flows.

Channelization or canalization associated with the proposed protection walls should be avoided as it tends to result in bigger problems than those it was intended to solve. The wall should be constructed within the road reserve and should not encroach into the riparian zone of the river. It should also not significantly confine or intensify the flood flows of the river but should only protect the road from flood damage.

Significance of impacts after mitigation:

Construction Phase: A localised impact of low intensity that is expected to have a very low (negative) significance in terms of its impact on the identified aquatic ecosystems in the area during construction phase.

Operation Phase: An impact of low (positive) significance is expected post-construction.

CUMULATIVE IMPACTS

The Seweweekspoort River, its tributaries and associated wetland areas within the proposed road upgrade area that would be impacted by the proposed activities have already been modified as a result of previous road construction activities as well as the ongoing road maintenance activities. These activities have all contributed to a modification of both the instream and riparian aquatic habitats.

Considering that the proposed activities are to the existing road, one can expect that the cumulative impact of this activity on the river systems will be of a low to very low significance. The cumulative impacts will largely take place during the construction phase when construction activities are simulatively being undertaken on a number of the crossings. While these impacts to the freshwater ecosystem in the pass are each of a low significant it is essential that they be adequately mitigated to minimise the potential cumulative impacts.

Key cumulative impacts relate to increased sedimentation of the river at a number of sites together with cumulative impedance of flows at the sites. It is thus important that these impacts be adequately mitigated. It is also essential that each site, once completed be rehabilitated. Ongoing monitoring and management of invasive alien plants within the disturbed areas along the road on a twice yearly basis for

a period of at least three years is also essential to ensure that the river corridor does not become invaded with alien invasive plants.

The cumulative impacts of the proposed activities as well as the no-go alternative are considered in the following section. The no-go alternative implies that no upgrades for the road crossings will be undertaken and that the current 'ad hoc' repair of flood damaged structures would continue. The structures would also remain with many of the existing culverts becoming increasingly blocked by sediment and impeding the lower flow in the river system.

9.3. SUMMARY OF ASSESSMENT OF POTENTIAL IMPACTS OF THE PROPOSED ACTIVITIES

CONSTRUCTION PHASE:

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Limited disturbance of freshwater related habitats at the road crossing sites	None
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Medium	-
Probability of occurrence:	Probable as a result of construction activities at road crossings over the identified rivers and streams	-
Degree to which impact can be reversed:	Partially reversible	-
Irreplaceability of resources:	Medium to low	-
Cumulative impact prior to mitigation:	Low due to the existing modification by the roads within the river channel	-
Significance of impact pre-mitigation	Low	-
Degree of mitigation possible:	Low to Very low	-
Proposed mitigation:	Work within the river channel should be limited as far as possible and the river bed and banks rehabilitated immediately afterwards. Construction within the river channel should preferably take place during the drier months of the year. The temporary bypass should be according to the recommended methods was provided in the previous section.	-
Cumulative impact post mitigation:	Very Low	-
Significance after mitigation	Very Low/negligible	-

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Downstream ***water quality impacts*** as a result of runoff from construction activities	None
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Low	-
Probability of occurrence:	Probable	-
Degree to which impact can be reversed:	Reversible	-
Irreplaceability of	Low	-

resources:		
Cumulative impact prior to mitigation:	Low	-
Significance of impact pre-mitigation	Very Low	-
Degree of mitigation possible:	Low	-
Proposed mitigation:	Contaminated runoff from the construction site(s) should be prevented from entering the rivers/streams. All materials on the construction sites should be properly stored and contained. Disposal of waste from the sites should also be properly managed. Construction workers should be given ablution facilities at the construction sites that are located away from the river (at least 30m) and regularly serviced. These measures should be addressed, implemented and monitored in terms of the EMP for the construction phase. Sediment loads to river from construction activities should be prevented or minimized.	-
Cumulative impact post mitigation:	Very Low	-
Significance after mitigation	Very Low	-

Potential impact on freshwater features	Proposed upgrade to road crossings over watercourses	No-go Alternative
Nature of impact:	A temporary ***impedance of flow*** during construction activities	-
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Low	-
Probability of occurrence:	Probable	-
Degree to which impact can be reversed:	Reversible	-
Irreplaceability of resources:	Medium	-
Cumulative impact prior to mitigation:	Low	-
Significance of impact pre-mitigation	Very low	-
Degree of mitigation possible:	Very low	-
Proposed mitigation:	Activities within the river channel during the construction phase should be limited as far as possible in terms of their spatial and temporal extent. Construction work within the river channel should preferably take place before the onset of the rainfall period to ensure minimal impact on flow. In the longer term, the upgraded structures and the box culverts/pipes should not impede the flow and in particular the low flow in the river. In particular, the new culvert structures should not be placed higher than the base level of the river channel to	-

	ensure that low flows are not impeded. In addition, the culvert structures must be placed within the natural drainage line of the river. The structures should not impede the migration of fish species. All rubble and waste material associated with the river crossing upgrades that are within the channel should be removed after construction is complete.	
Cumulative impact post mitigation:	Very Low to negligible impact	-
Significance after mitigation	Very Low	-

OPERATION PHASE

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Limited ***disturbance of freshwater related habitats*** at the road crossings where construction activities have taken place, with reduced the potential for flow modification and erosion	Ongoing ***disturbance of freshwater related habitats*** at the road crossings, with the potential for flow modification and erosion
Extent and duration of impact:	Localised longer term impacts	Localised longer term impacts
Intensity of Impact	Low	Low
Probability of occurrence:	Probable as a result of operation activities within the river channel and riparian zones	Probable as a result of operation activities within the river channel and riparian zones
Degree to which impact can be reversed:	Reversible	Reversible
Irreplaceability of resources:	Low	Medium
Cumulative impact prior to mitigation:	Low positive	Low negative
Significance of impact pre-mitigation	Low positive	Low negative
Degree of mitigation possible:	Very low	Very low
Proposed mitigation:	Disturbed areas should be revegetated post-construction phase to reduce the risk of erosion – these areas should be monitored and kept free of invasive alien plant growth. The channel upstream of the river crossings should be kept free of debris and sediment build-up, particularly at the culvert structures where it might impede flows. The roads should be maintained such that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road.	Disturbed areas should be monitored and kept free of invasive alien plant growth. The channel upstream of the river crossings should be kept free of debris and sediment build-up, particularly at the culvert structures where it might impede flows. The roads should be maintained such that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road.
Cumulative impact post mitigation:	Low positive	Low negative
Significance after mitigation	Low positive	Low negative

	3.1.2. Description of the impact assessment methodologies : Input into this report was informed by a combination of desktop assessments of existing aquatic ecosystem information for the study area and catchment, as well as by a more detailed assessment of the aquatic ecosystems along the road to be upgraded. During the field visit undertaken on 17 September 2016 and a follow up site visit on 26 October 2016, the characterisation and integrity assessments of the aquatic ecosystems were undertaken. The site assessments were undertaken at the end of the rainy season. Mapping of the aquatic ecosystems was undertaken using a Garmin Colorado 300 GPS and mapped in PlanetGIS Professional. The SANBI Biodiversity GIS website was also consulted to identify any constraints in terms of fine-scale biodiversity conservation mapping as well as possible aquatic ecosystems mapped in the Freshwater Ecosystem Priority Areas maps. This information/data was used to inform the water resource protection related recommendations. Limitations and uncertainties often exist within the various techniques adopted to assess the condition of ecosystems. The following techniques and methodologies were utilized to undertake this study: • Analysis of the Aquatic ecosystems was undertaken at a rapid level and did not involve detailed habitat and biota assessments; • The river health assessment was carried out using South African Department of Water and Sanitation developed methodologies. Aquatic Health assessments were carried out to provide information on the ecological condition and ecological importance and sensitivity of the river systems impacted. • The guideline document, "A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas" document, as published by DWAF (2005) was followed for the delineation of the wetland areas. According to the delineation procedure, the wetlands were delineated by considering the following wetland indicators: terrain unit indicator; Soil form indicator; Soil wetness indicator; and vegetation indicator. • The wetlands were subsequently classified according to their hydro-geomorphic determinants based on a classification system devised by Kotze *et al* (2004) and SANBI (2009). Notes were made on the levels of degradation in the wetlands based on field experience and a general understanding of the types of systems present. • A Present Ecological State (PES) assessment was conducted for each hydro-geomorphic wetland unit identified and delineated within the study area. For the purpose of this study, the tool WET-Health as defined in the WET Health Series developed for the Water Research Commission was used to assess the present ecological state of each wetland unit. • The functional wetland assessment technique, WET-EcoServices, developed by Kotze *et al* (2009) was used to provide an indication of the ecological benefits and services provided by delineated wetland habitat. This technique consists of assessing a combination of desktop and infield criteria in order to identify the importance and level of functioning of the wetland units within the landscape. • The ecological importance and sensitivity assessment was conducted according to the guidelines as developed by DWAF (1999). • Recommendations are made with respect to the adoption of buffer zones within the development site, based on the wetlands/river's functioning and site characteristics. The level of aquatic assessment and environmental water requirement determination undertaken was considered to be adequate for this study.
3.2 Risk Assessment	*3.2.1. Assessment of the risks:* A risk assessment was carried out for the proposed road upgrade activities. The assessment indicates the level of risk certain activities pose to freshwater resources where the outcomes are used to guide decisions regarding water use authorisation of the proposed activity. A summary of the potential risks can be seen in Table and the full assessment tables are contained in the Freshwater Assessment Report in

Appendix B. These risk rating classes can be seen in Table 12.

Table 11: Summary risk assessment for the proposed project

Phases	Activity	Aspect	Impact	Significance	Risk Rating
Construction	Construction works associated with the flood damage repairs to structures on MR309	Construction of Culvert Structures proposed at 27 sites	Loss of biodiversity & habitat and modification of the flow and water quality	74.75	M
Operation	Construction works associated with the flood damage repairs to structures on MR309	Maintenance of infrastructure at watercourse crossings		54	L

Table 12: Risk rating classes for the Risk Assessment

RATING	CLASS	MANAGEMENT DESCRIPTION
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated. Wetlands may be excluded.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Wetlands are excluded.
170 – 300	(H) High Risk	Always involves wetlands. Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve.

The risk associated with the shorter term construction and longer term maintenance related activities are deemed to be moderate and low respectively provided that the mitigation measures as recommended are implemented. The findings of the risk assessment imply that the water use activities associated with the proposed project would need to be authorised by means of a water use licence for the Section 21(c) and (i) water uses.

3.3. Alternatives

3.3.1. Alternatives Description:

The no-go alternative implies that no upgrades for the road crossings will be undertaken and that the current 'ad hoc' repair of flood damaged structures would continue. The structures would also remain with many of the existing culverts becoming increasingly blocked by sediment and impeding the lower flow in the river system. The significance of the no-go alternative is deemed to be a low negative for the operation phase.

3.4. Mitigation and Management Measures

3.4.1. Mitigation measures:

The roadway and associated structures are already in existence adjacent to or within the freshwater features described in the previous section. The road, together with some other physical modifications to the freshwater features in the upper catchment, has resulted in the current ecological condition of the river and its associated wetland areas. Therefore it can be expected that the likely impacts of the proposed upgrade of the road crossings are of a limited extent and of a short term nature, occurring mostly during the construction phase.

Longer term impacts that are likely to occur as a result of the proposed activities relate to how the maintenance work is undertaken for the road as well as the potential encroachment of invasive alien vegetation into the freshwater features where they have been disturbed by the construction activities. The proposed upgrades will also result in a positive impact as the capacity of the crossing structures will be increased which will reduce the impact of the structures on the hydraulics of the river and the likelihood that the structures will become blocked. This will result in a reduced need to repair flood damage to the road and structures or remove sediment and debris at the structures on an ongoing basis.

General mitigation measures are:

- Work within the river channel or wetland areas should be limited as far as possible and the disturbed areas rehabilitated immediately afterwards.
- Construction within the river channel should as far as possible take place during the drier months of the year.
- To minimise the impact of the temporary bypass, the bypass route should be selected to avoid larger

	riparian trees as far as possible. Larger plants should be trimmed back to leave their stems and roots intact rather than removing the entire trees unless absolutely necessary. Bidem should be placed over the existing topsoil and vegetation before placing the fill material in the channel, that the fill material can all be removed after completion of the road crossing structure. Pipe culverts should be temporarily placed within the channel to ensure the low flow in the river is not impeded. Sandbags should be placed on the outer edge of the bypass to prevent the sashing of sediment into the channel. • Rubble and debris from existing structures and construction activities, as well as the temporary bypass structure, should be removed after construction is complete so as not to impede flow in the stream. • Once construction is complete, the area should be rehabilitated to resemble that of the surrounding bed and banks and where necessary vegetated with suitable local indigenous plants as occur at the site. • The channel upstream of the crossing should be kept free of debris and sediment build-up, particularly at the culvert where it might impede flows. • Any invasive alien plants from the road reserve should be monitored and removed on an ongoing basis according to methods as provided by the Working for Water Programme. The DEADP Maintenance Management Plan guidelines (2013) provide the following set of guiding principles for maintenance work in water courses that are of relevance to this project: • Minimise the spatial extent of disturbance and maximise physical diversity. • Minimise the frequency of, or requirement for, maintenance activities. • Minimise upstream/downstream impacts on the reach in which the sites are located. • Do not impede the movement of aquatic and riparian biota. • Minimise alterations to flow- and sediment-capacity. • Rehabilitate and re-vegetate after construction. • Clear alien plant species. • Minimise impact on the structural integrity of the water course and maintain a minimum base flow at all times. • Maintenance activities are best done during the dry season. • All reasonable measures should be undertaken to ensure that river maintenance activities minimise erosion. • Whenever possible existing access routes should be used. All potential pollutants should be kept away from rivers. • Spoil material should be removed to approved dumping sites. • After construction, any areas within the maintenance footprint that have been degraded from their condition prior to construction and as a result of the construction activities must be restored to their former condition. • Channelization or canalization is actively discouraged as it tends to result in bigger problems than those it was intended to solve. • Valuable biophysical or aesthetic areas, including meanders, and in-channel and floodplain habitat, should be retained. • Cleared woody material must be removed from the riparian area to prevent it being washed into the river channel during the wet season.
	3.4.2. Site map indicating limits of disturbance to the watercourse and any erosion and sediment controls See Assessment of River crossings Tables in Appendix C.
	3.4.3. Management/maintenance plan for the infrastructure: The DEADP Maintenance Management Plan guidelines (2013) provide the following set of guiding principles for maintenance work in water courses that are of relevance to this project: • Minimise the spatial extent of disturbance and maximise physical diversity. • Minimise the frequency of, or requirement for, maintenance activities. • Minimise upstream/downstream impacts on the reach in which the sites are located. • Do not impede the movement of aquatic and riparian biota. • Minimise alterations to flow- and sediment-capacity. • Rehabilitate and re-vegetate after construction. • Clear alien plant species.

	• Minimise impact on the structural integrity of the water course and maintain a minimum base flow at all times. • Maintenance activities are best done during the dry season. • All reasonable measures should be undertaken to ensure that river maintenance activities minimise erosion. • Whenever possible existing access routes should be used. All potential pollutants should be kept away from rivers. • Spoil material should be removed to approved dumping sites. • After construction, any areas within the maintenance footprint that have been degraded from their condition prior to construction and as a result of the construction activities must be restored to their former condition. • Channelization or canalization is actively discouraged as it tends to result in bigger problems than those it was intended to solve. • Valuable biophysical or aesthetic areas, including meanders, and in-channel and floodplain habitat, should be retained. • Cleared woody material must be removed from the riparian area to prevent it being washed into the river channel during the wet season. Maintenance work within the water courses should take these guidelines into account. It is recommended that a MMP for the
3.5. Changes to Watercourse	*3.5.1. Extent the impacts after mitigation:* The main freshwater features in the study area are the Seweweekspoort River, a tributary of the Kobus Tributary (J25B) in the Gouritz River System. There are some turbutaries and valley bottom wetland areas associated with the river in the area where the road will be upgraded. The present ecological state of the river system within the pass is largely natural. The ecological importance and sensitivity of the river is high and for the wetland areas is moderate to high. The Seweweekspoort River and tributaries is mapped as a Fish Support Area. Most of the study area is located within the formally protected Towerkop Nature Reserve, with the southern portion also forming part of a Mountain Catchment Area. The portions of the study area immediately north and south of the protected areas are mapped as Critical Biodiversity Areas that should be protected. The roadway and associated structures are already in existence adjacent to or within the Seweweekspoort River System. The road, together with some other physical modifications to the freshwater features in the upper catchment, has resulted in the current ecological condition of the river and its associated wetland areas. Therefore it can be expected that the likely impacts of the proposed upgrade of the road crossings are of a limited extent and of a short term nature, occurring mostly during the construction phase. Longer term impacts that are likely to occur relate to how the maintenance work is undertaken for the road as well as the potential encroachment of invasive alien vegetation into the freshwater features where they have been disturbed by the construction activities. However, the proposed upgrades will also result in an overall positive impact as the capacity of the crossing structures will be increased which will reduce the impact of the structures on the hydraulics of the river and the likelihood that the structures will become blocked. This will result in a reduced need to repair flood damage to the road and structures or remove sediment and debris at the structures on an ongoing basis. The following mitigation measures are recommended: • Work within the river channel or wetland areas should be limited as far as possible and the disturbed areas rehabilitated immediately afterwards. • Construction within the river channel should as far as possible take place during the drier months of the year. • To minimise the impact of the temporary bypass, the bypass route should be selected to avoid larger riparian trees as far as possible. Larger plants should be trimmed back to leave their stems and roots intact rather than removing the entire trees unless absolutely necessary. Bidem should be placed over the existing topsoil and vegetation before placing the fill material in the channel, that the fill material can all be removed after completion of the road crossing structure. Pipe culverts should be temporarily placed within the channel to ensure the low flow in the river is not impeded. Sandbags

	should be placed on the outer edge of the bypass to prevent the sashing of sediment into the channel. • Rubble and debris from existing structures and construction activities, as well as the temporary bypass structure, should be removed after construction is complete so as not to impede flow in the stream. • Once construction is complete, the area should be rehabilitated to resemble that of the surrounding bed and banks and where necessary vegetated with suitable local indigenous plants as occur at the site. • The channel upstream of the crossing should be kept free of debris and sediment build-up, particularly at the culvert where it might impede flows. • Any invasive alien plants from the road reserve should be monitored and removed on an ongoing basis according to methods as provided by the Working for Water Programme. With mitigation, the significance of the cumulative impacts of the proposed activities are deemed to be a very low negative for the construction phase and a low positive for the operation phase. The no-go alternative implies that no upgrades for the road crossings will be undertaken and that the current 'ad hoc' repair of flood damaged structures would continue. The structures would also remain with many of the existing culverts becoming increasingly blocked by sediment and impeding the lower flow in the river system. The significance of the no-go alternative is deemed to be a low negative for the operation phase.
3.6. Monitoring and Compliance	*3.6.1. Monitoring programme and describe the auditing, compliance and reporting mechanisms* The construction phase should be monitored by an approved Environmental Control Officer.

Appendix A

Application Forms

Appendix B

Freshwater Assessment (incl. Risk Assessment)

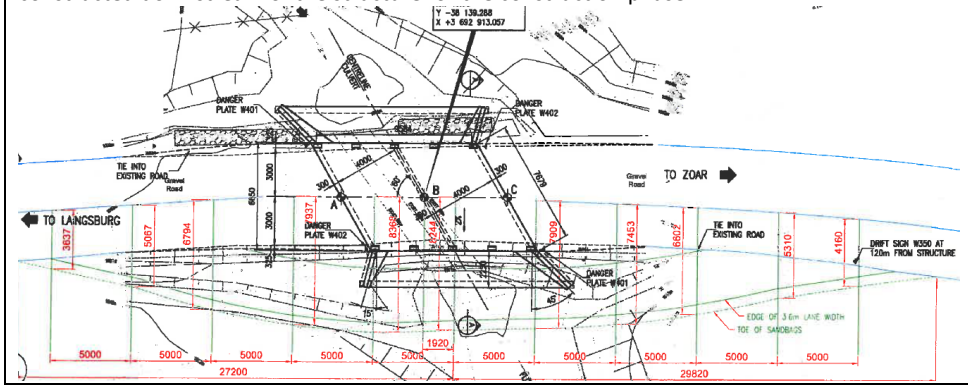
Appendix C

Maps and Figures

Table C1. Assessment of river crossings on MR 309

Km 40.9

Proposed Activity: The existing culvert structure consists of 3x600mm pipes with gabions upstream. Ponding occurs at the inlet and outlet to the structure. It is proposed to replace the structure with a 8m wide causeway of 2 x 4m Wide Cells. A 3.5m wide by-pass will be constructed downstream of the structure for the construction phase



Site description: The river at the road crossing flows through a relatively flat landscape. Upstream of the crossing the riparian zone is invaded with invasive alien trees such as poplars and black wattle trees that surround a *Phragmites* reedbed. Downstream of the river channel is consists of a large *Phragmites* reedbed. The upstream inlet has been stabilised by a low gabion wall.

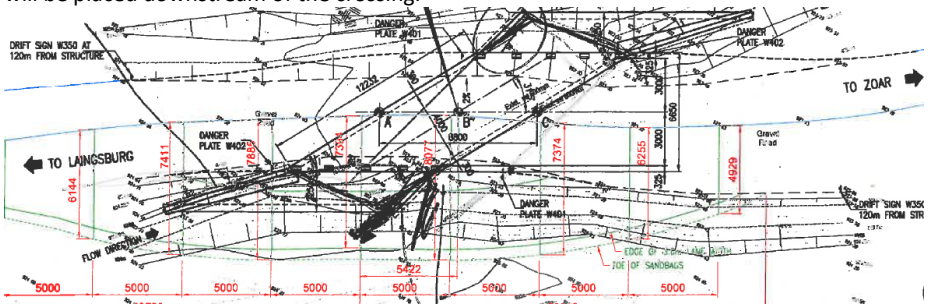
Specific Mitigation measures:

Remove invasive alien vegetation (black wattle trees) within or immediately adjacent to the road reserve at the road crossing

This site is specifically susceptible to the build up of sediment. The height and size o the culvert structure should ensure that the culverts do not become blocked with sediment on a regular basis. *Phragmites* reeds may need to be managed to ensure that the structure does not become blocked.

Km 44.1

Proposed Activity: The existing culvert structure consists of 2x600mm encased pipes that are orientated at an acute angle to the road. It is proposed to straighten the crossing by 7m and to replace the culvert structure with a 4m wide causeway. The upstream and downstream wingwalls will need to be extended to protect the banks from erosion. The temporary bypass will be placed downstream of the crossing.



Temporary bypass to be moved to downstream site as the side with the least potential impact

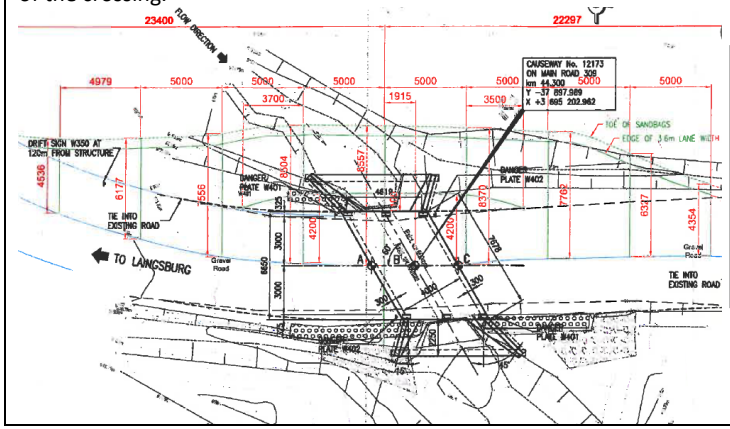
Site description: Upstream of the road crossing the channel is located along the road and consists of wetland vegetation such as broom restio (*Calopsis paniculata*), river pumpkin (*Gunnera perpensa*) and arum lilies (*Zanthedeschia aethiopica*) together with Cape willows (*Salix mucronata*). Downstream of the crossing the river is contained within a narrow channel with grassed banks. This upper section of the river channel within the pass has recently burnt, with most of the larger riparian trees being significantly burnt.

Specific mitigation measures:

The sizing, level of the culvert in relation to the channel bed and the alignment of the river channel at the road crossing are important factors in trying to reduce the potential for sedimentation and erosion taking place at the road crossing. The new culvert structures should not be placed higher than the base level of the river channel to ensure that low flows are not impeded.

Km 44.3

Proposed Activity: The existing culvert structure consists of 2x600mm encased pipes, with wing walls and apron slabs. The gabions downstream have been damaged. It is proposed to replace the structure with a 6m wide causeway and to remove the gabions. The new structure will be aligned slightly upstream of its current location. A temporary bypass will be placed downstream of the crossing.



Temporary bypass to be moved to downstream site as the side with the least potential impact

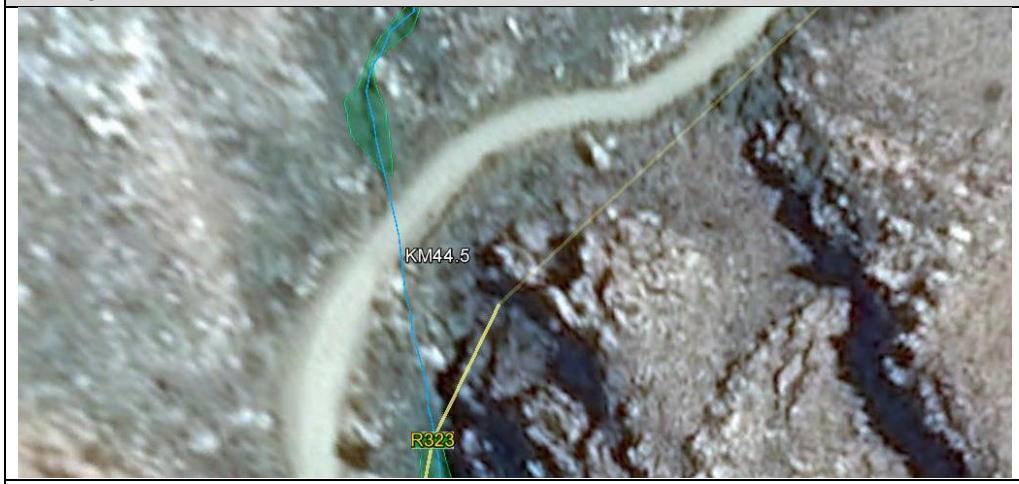
Site description: Upstream of the road crossing, the river channel is dominated by *Phragmites* reeds Downstream of the structure, wetland vegetation such as vleibos (*Cliffortia strobilifera*), fountain bush (*Psoralea affinis*), broom restio (*Calopsis paniculata*), creeping rush (*Juncus lomotophyllus*), vlei sedge *Carpha glomerata,* river pumpkin (*Gunnera perpensa*), taaiblaarmalva (*Pelargonium glutinosum*) and arum lilies (*Zanthedeschia aethiopica*).

Specific Mitigation measures:

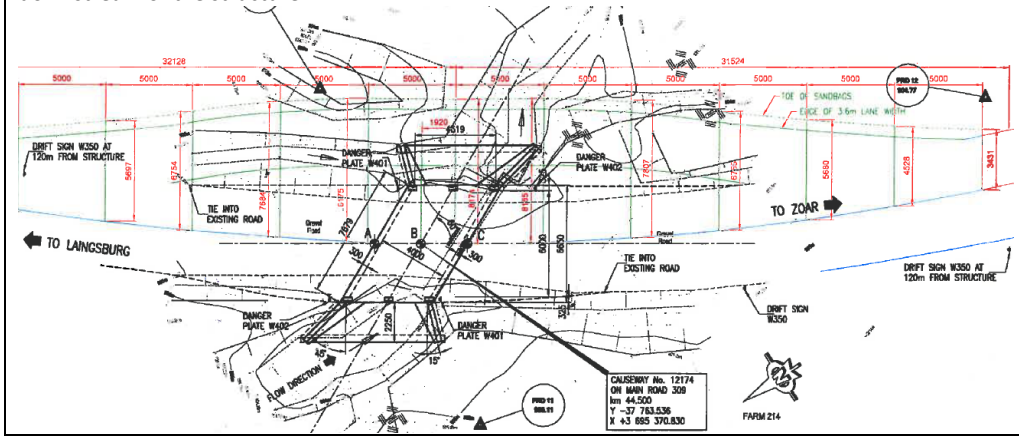
The material from the removed gabion structures and any rock that needs to be broken should be removed from the river channel and utilised for reshaping of the river banks or elsewhere in the construction works.

The baselevel of the river channel should not be significantly altered.

Km 44.5



Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes, grouted stone head walls, The base of the structure is scoured and water is running under the structure. It is proposed to replace the structure with a 4m wide causeway. The temporary bypass will be placed downstream of the structure.

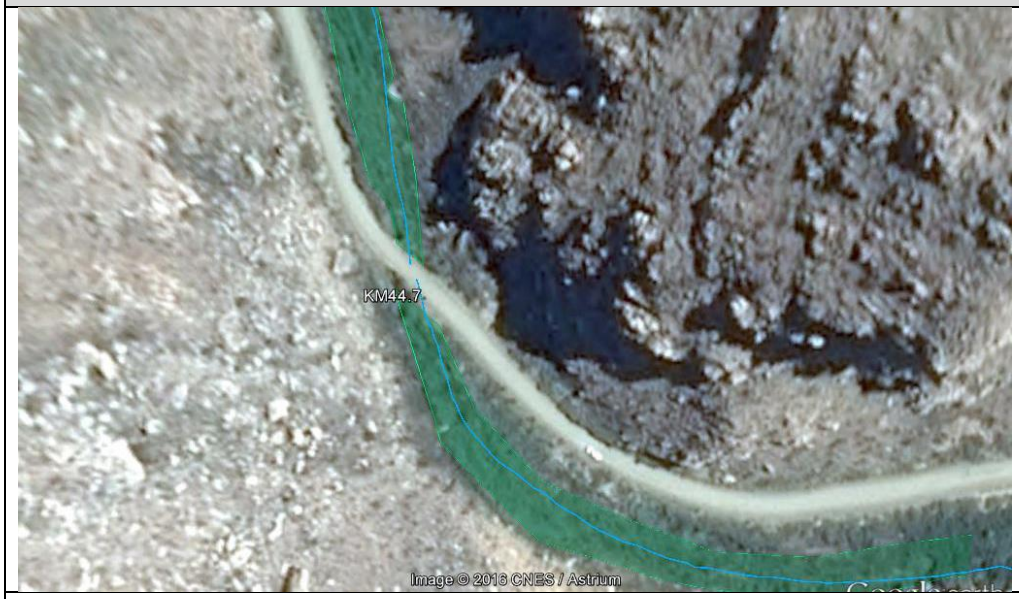


Site description: The stream is largely confined to a narrow channel at the crossing, consisting mostly of boulders. Indigenous vegetation includes Cape willow (*Salix mucronata*), blinktaaibos (*Searsia lucida*), sand olive (*Dodonaea angustifolia*), fountain grass (*Pennisetum setaceum*), broom restio (*Calopsis paniculata*). Material from past road repair works has been deposited on the upstream bank.

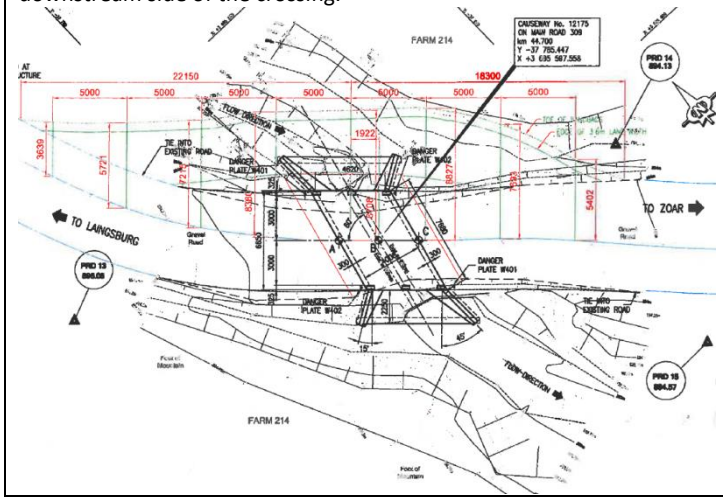
Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

Km 44.7



Proposed Activity: The existing culvert structure consists of 2x600mm encased pipes that have been placed at a low level and been subjected to heavy siltation. The structure has also been placed at a low level. It is to be replaced with a 6m wide causeway. The temporary bypass is to be located on the downstream side of the crossing.



Temporary bypass to be moved to downstream site as the side with the least potential impact

Site description: The river is largely confined to a relatively narrow channel at the crossing. Indigenous vegetation includes Cape willow (*Salix mucronata*), vleibos (*Cliffortia strobilifera*), sand olive (*Dodonaea angustifolia*), blinktaaibos (*Searsia lucida*), fountain grass (*Pennisetum setaceum*) and broom restio (*Calopsis paniculata*). Material from past road repair works has been deposited on the downstream bank.

Mitigation of the proposed embankment repair:

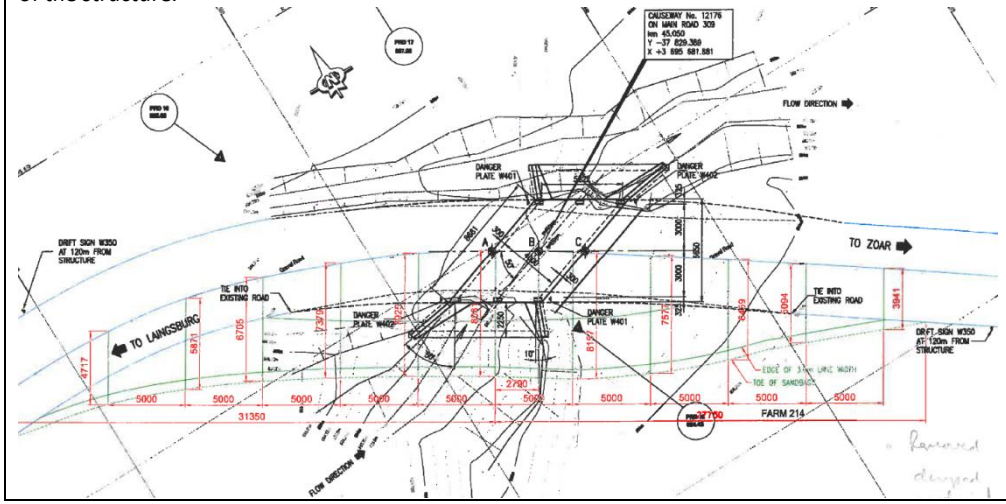
The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

The mature Cape willow trees adjacent to the crossing should be avoided. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should take place.

Cape willow tree

Km 45.05

Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes, grouted stone head walls that have been damaged and the structure has become partially silted up. The structure is to be replaced with a 4m wide causeway. The temporary bypass will be placed upstream of the structure.

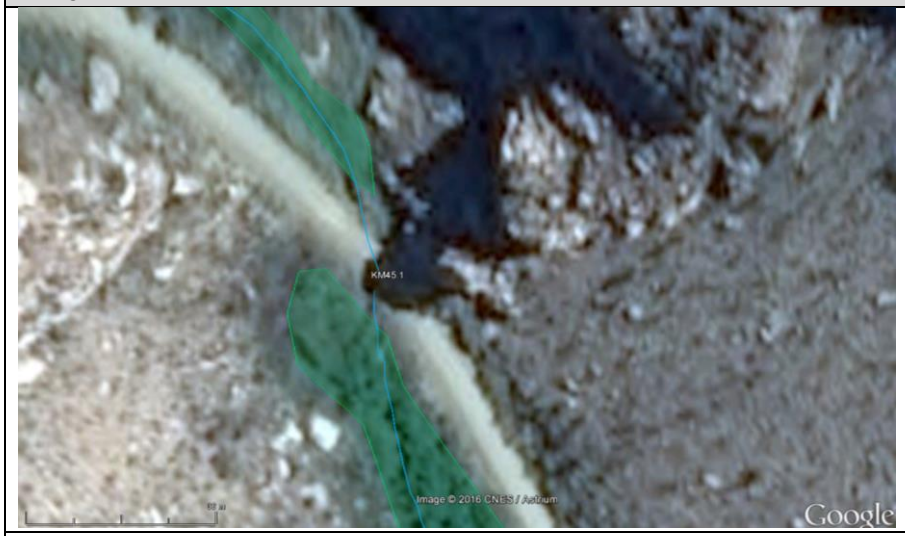


Site description: The river channel upstream and downstream of the crossing comprises wetland area with a berm on the upstream side that is the result of past road maintenance activities that was intended to protect the crossing form stormwater runoff. Indigenous vegetation includes Cape willow (*Salix mucronata*), blinktaaibos (*Searsia lucida*), sand olive (*Dodonaea angustifolia*), creeping rush (*Juncus lomotophyllus), Isolepis polifera*, broom restio (*Calopsis paniculata*), common reeds (*Phragmites australis*) and the everlasting *Helichrysum cymosum*. Material from past road repair works has been deposited on the upstream bank.

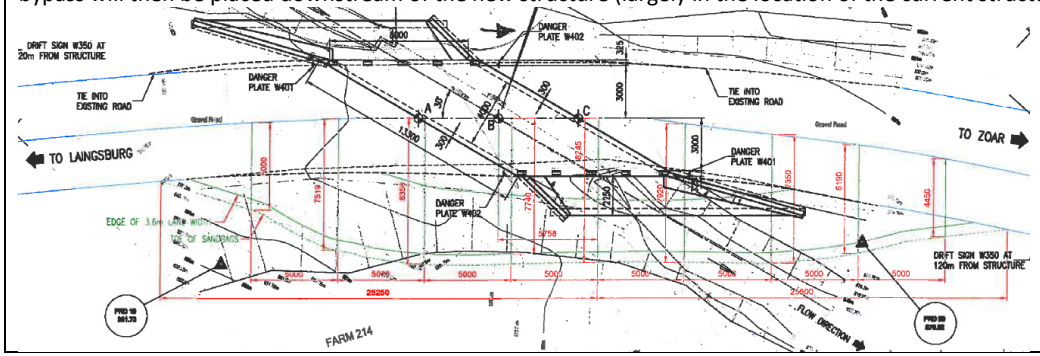
Specific Mitigation measures:

The dumped material berm should be removed and utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

Km 45.1



Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes with stone and concrete head walls upstream. The structure is to be replaced with a 4m wide causeway. The road will be realigned such that it crosses the river approximately 7m upstream of its current location and the temporary bypass will then be placed downstream of the new structure (largely in the location of the current structure).



Site description: The river channel contains many large riparian trees as well as some wetland vegetation. A sand and stone berm is located on the upstream side that is the result of past road maintenance activities. Indigenous vegetation includes honey bells (*Freylinia lanceolata*), blinktaaibos (*Searsia lucida*) broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*) and river pumpkin (*Gunnera perpensa*). Material from past road repair works has been deposited on the upstream bank.

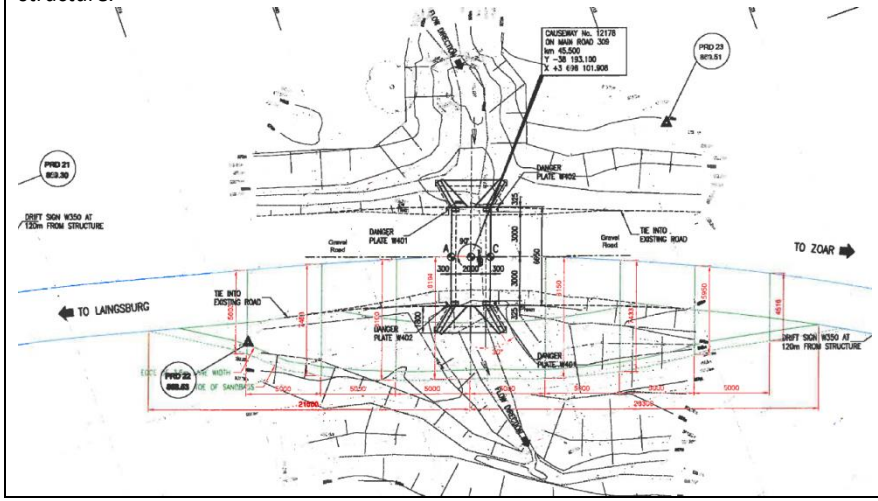
Specific Mitigation measures:

The dumped material berm should be removed and utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

Avoid cutting down larger riparian trees as far as possible. The larger plants should be trimmed back to leave their stems and roots intact rather than removing the entire trees unless absolutely necessary.

Km 45.5

Proposed Activity: The existing causeway structure consists of 1x600mm pipe. The structure is to be replaced with a 3m wide causeway. A temporary bypass will be placed downstream of the new structure.



Site description: The site consists of the crossing of a tributary of the river that flows down a steep catchment. The vegetation has been burnt and is currently dominated by weedy shrubs the larger riparian shrubs and trees such as the waterwitels (*Brachylaena neriifolia*), blinktaaibos (*Searsia lucida*) and Bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata*) are starting to resprout.

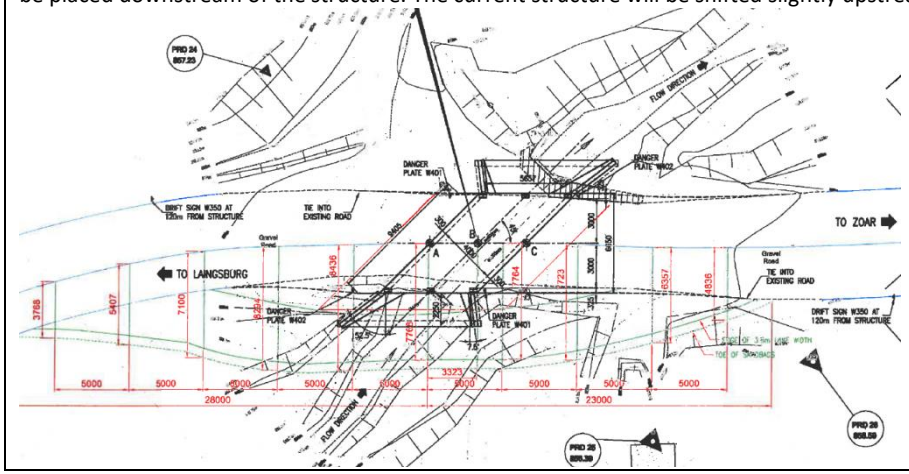
Specific Mitigation measures:

As this area is relatively disturbed as a result of the recent fire, it will need to be monitored and managed for invasive alien plant growth and has the potential for increased for sedimentation downstream.

Although the large riparian shrubs have been burnt they are resprouting and should be avoided as far as possible when establishing the bypass road. The shrubs that cannot be avoided should be cut back that they can resprout after the construction activities are complete.

Km 45.97

Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes with stone and concrete head walls at inlet and outlet. The structure is almost completely buried as a result of heavy siltation. The structure is to be replaced with a 4m wide causeway. The temporary bypass will be placed downstream of the structure. The current structure will be shifted slightly upstream.



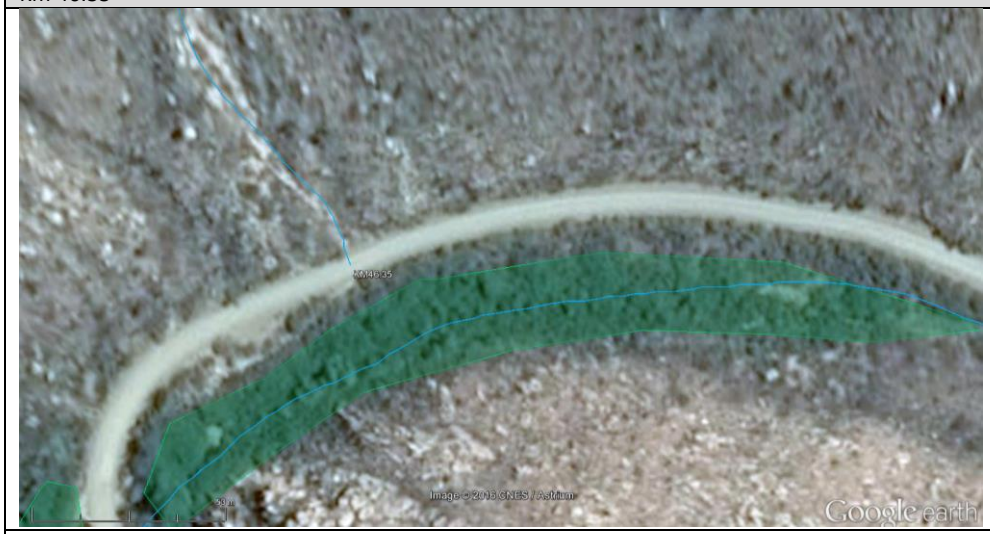
Site description: The site shows evidence of disturbance and contains weedy shrubs and a berm of material from past road works. Indigenous vegetation includes Cape willow (*Salix mucronata*), bitter aloe (*Aloe ferox*), the sedge *Ficinia nigrescence*, creeping rush (*Juncus lomotophyllus),* broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*), river pumpkin (*Gunnera perpensa*) and wittamarak (*Albuca Canadensis*). Redfin minnow fry and tadpoles were also observed at the site.

Specific Mitigation measures:

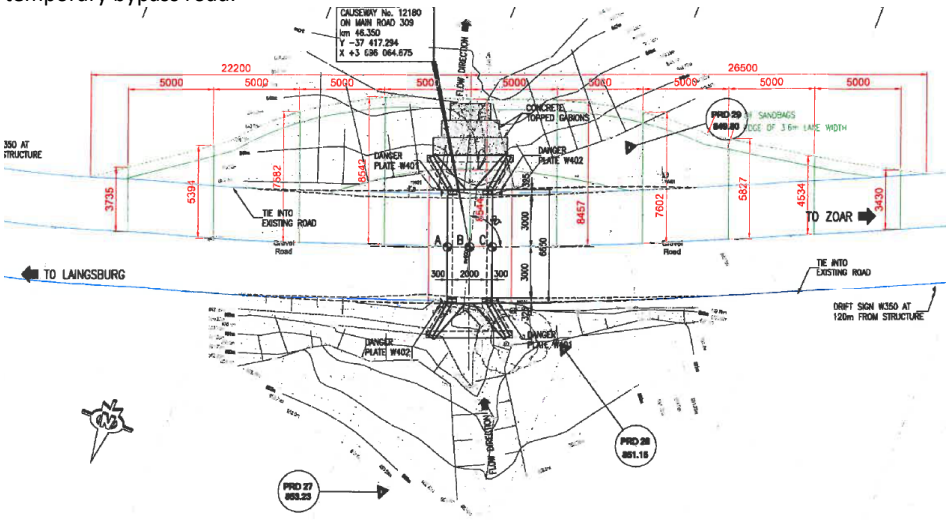
As this area is relatively disturbed as a result of the recent fire, it will need to be monitored and managed for invasive alien plant growth and has the potential for increased for sedimentation downstream.

Although the large riparian shrubs have been burnt they are resprouting and should be avoided as far as possible when establishing the bypass road. The shrubs that cannot be avoided should be cut back that they can resprout after the construction activities are complete.

Km 46.35



Proposed Activity: The existing causeway structure consists of 1x600mm encased pipes with a stone head wall upstream. The new proposed structure will consist of a 2m wide causeway with 2x900mm pipe culverts with additional strengthening. The structure will also be stepped to accommodate the drop at the site. The works at the road will be undertaken in half roadwidths as there is no space for a temporary bypass road.

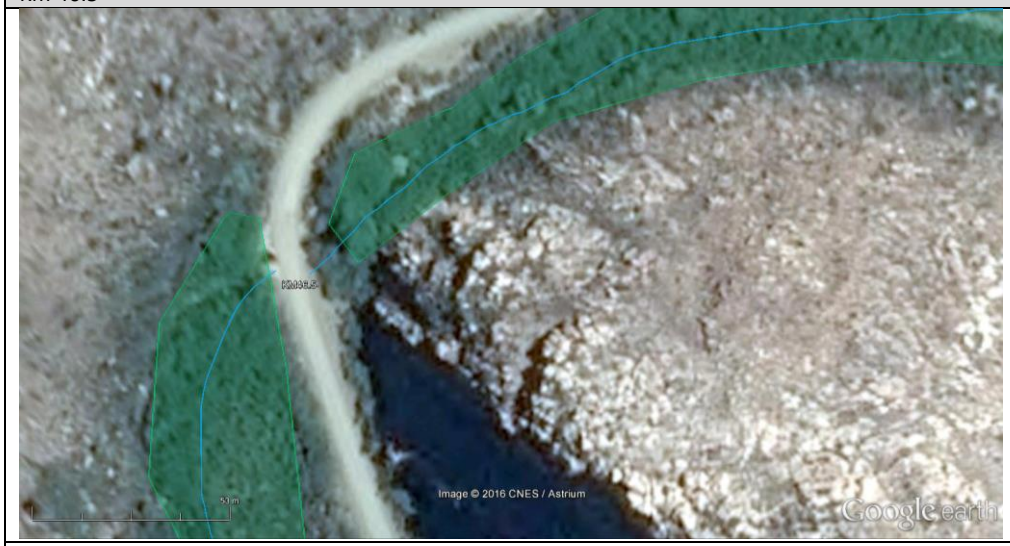


Site description: The site consists of the crossing of a tributary of the river that flows down a steep catchment and drops steeply at the crossing. The vegetation is minimal with a stream channel dominated by larger boulders.

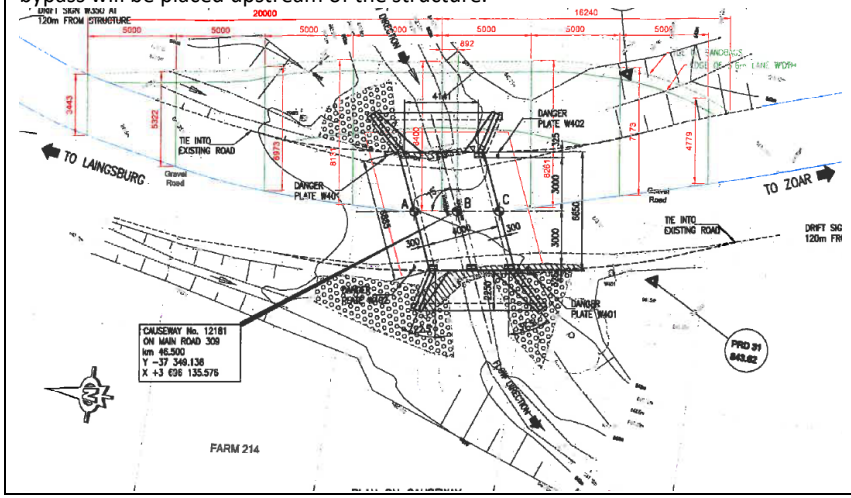
Specific Mitigation measures:

As this stream channel drops steeply at the site, the risk of erosion downstream of the crossing is high and the level at which the culverts are constructed is critical. Stormwater runoff from the road into the stream channel should also be mitigated to prevent erosion of the embankment at the crossing. Where necessary the disturbed area on the stream banks should be revegetated with at least indigenous grasses to reduce the risk of erosion.

Km 46.5



Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes, with concrete and stone head walls at inlet and outlet and stone pitching aprons. As a result of siltation, the structure is completely buried. The structure is to be replaced with a 6m wide causeway. The road will be shifted slightly downstream and some bedrock will need to be removed. The temporary bypass will be placed upstream of the structure.



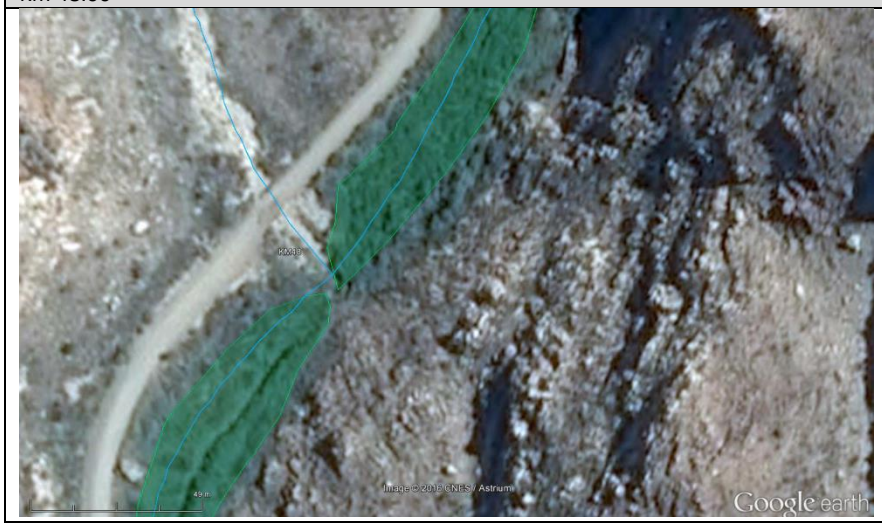
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape willow (*Salix mucronata*), blinktaaibos (*Searsia lucida*), the sedges, *Mariscus thunbergii* and *Ficinia nigrescence*, creeping rush (*Juncus lomotophyllus),* broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*), taaiblaarmalva (*Pelargonium glutinosum*), river pumpkin (*Gunnera perpensa*) and Bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata*). Material from past road repair works has been deposited on the upstream bank.

Specific Mitigation measures:

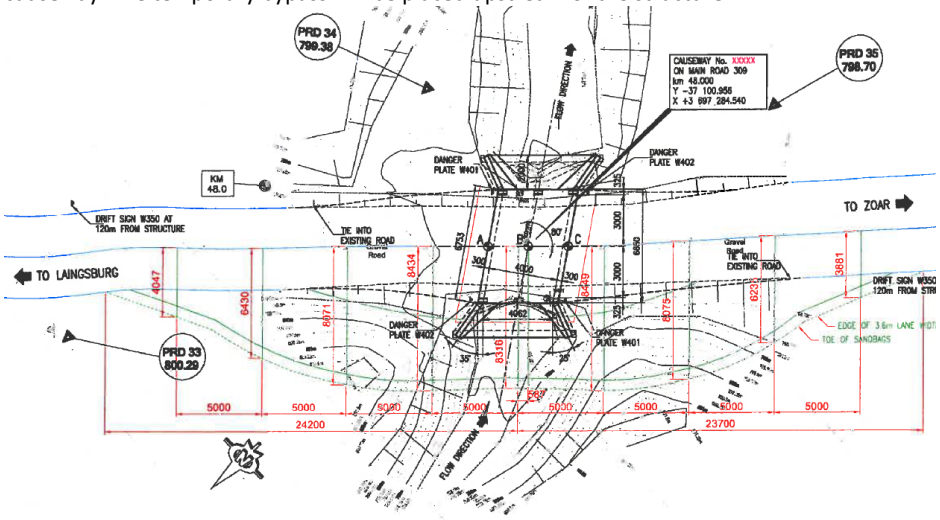
The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

The mature Cape willow tree adjacent to the crossing should be avoided. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should take place.

Km 48.00



Proposed Activity: The existing causeway structure consists of 1x900mm pipe with stone head and wing walls and damaged apron slabs both sides. The structure is to be replaced with a 6m wide causeway. The temporary bypass will be placed upstream of the structure.



Site description: The site consists of the crossing of a tributary of the river that flows down a steep catchment and drops steeply at the crossing. The vegetation is minimal with a stream channel dominated by larger boulders. Material from past road repair works has been deposited on both the upstream and the downstream stream banks. The road is located at the point at which the hillslope flattens out.

Specific Mitigation measures:

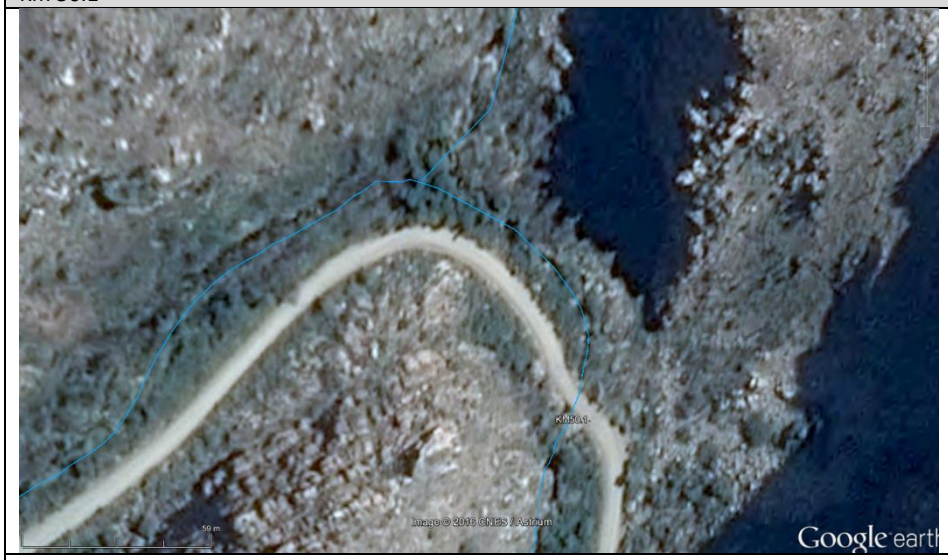
As this stream channel drops steeply at the site, the risk of erosion downstream of the crossing is high and the level at which the culverts are constructed is critical.

Stormwater runoff from the road into the stream channel should also be mitigated to prevent erosion of the embankment at the crossing.

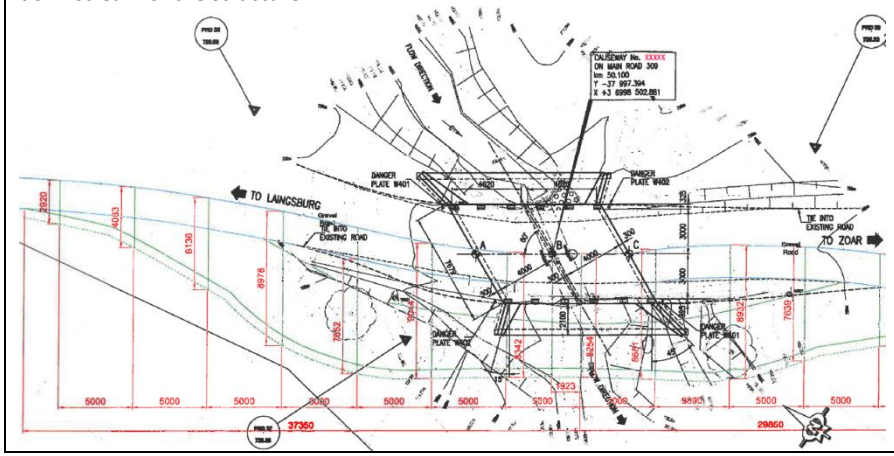
Where necessary the disturbed area on the stream banks should be revegetated with at least indigenous grasses to reduce the risk of erosion and sedimentation of the downstream channel.

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

Km 50.1



Proposed Activity: The existing causeway structure consists of 3x600mm encased pipes, with stone head walls at inlet and outlet and stone pitching aprons that are severely damaged. The structure is to be replaced with an 8m wide causeway. Some of the existing structure will remain. The new structure will be constructed as far upstream and possible and the temporary bypass placed downstream of the structure.



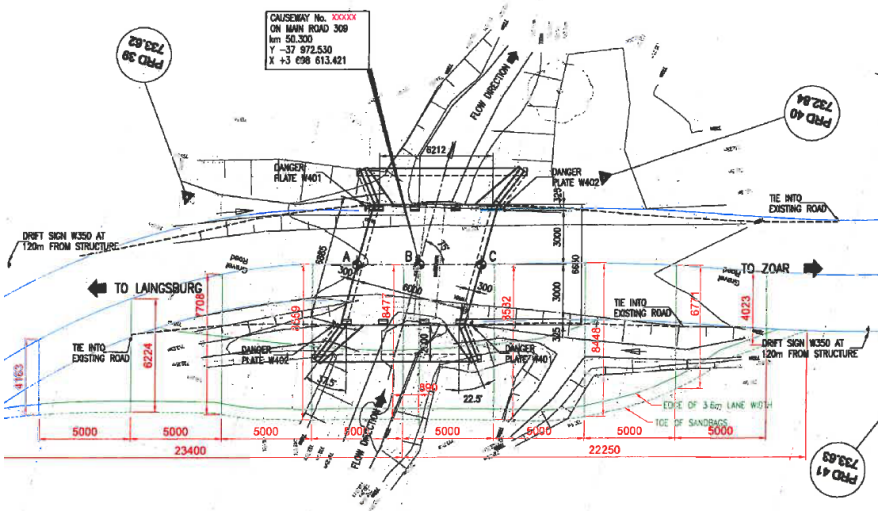
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape willow (*Salix mucronata*), blinktaaibos (*Searsia lucida*), bostolbos (*Diospyros dichrophylla*), keurboom (*Virgilia divaricata*), kiepersol (*Cussonia spicata*), sand olive (*Dodonaea angustifolia*), broom restio (*Calopsis paniculata*) and sagewood (*Buddleja salviifolia*).

Specific Mitigation measures:

The mature trees adjacent to the crossing should rather be cut back and not removed to accommodate the temporary bypass so that they can resprout after the construction activities are complete. The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 50.3

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with stone head and return walls downstream that have been severely damaged and area silted up. The structure is to be replaced with a 5m wide causeway. The road will be realigned slightly downstream by 2m and the temporary bypass will be placed upstream of the structure.



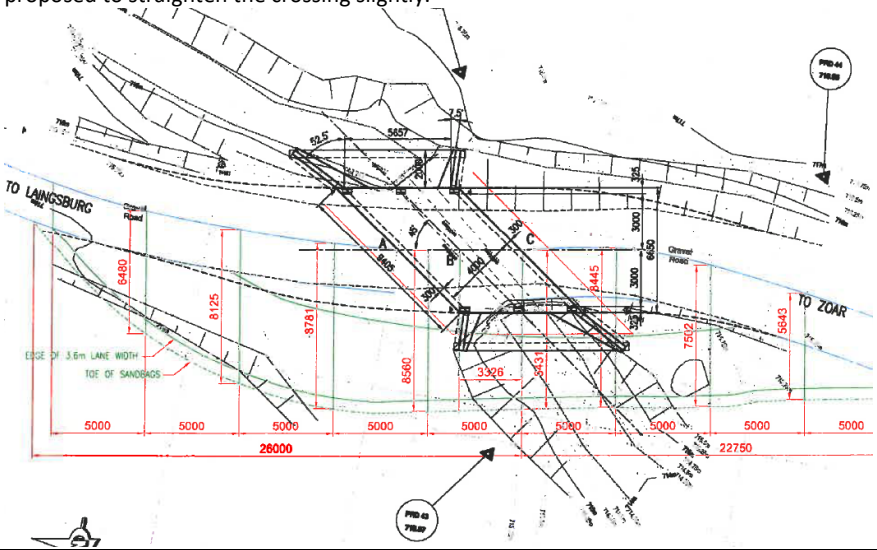
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes the sedge *Ficinia nigrescence*, creeping rush (*Juncus lomotophyllus),* bostolbos (*Diospyros dichrophylla*), keurboom (*Virgilia divaricata*), broom restio (*Calopsis paniculata*) and sagewood (*Buddleja salviifolia*). Material from past road repair works has been heaped within the site.

Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks. The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 50.8

Proposed Activity: The existing causeway structure consists of 3x600mm encased pipes, with stone head and return walls at inlet and outlet that have been severely damaged and are silted up. The structure is to be replaced with a 6m wide causeway. The road will be realigned slightly upstream and the temporary bypass will be placed downstream of the structure. It is also proposed to straighten the crossing slightly.



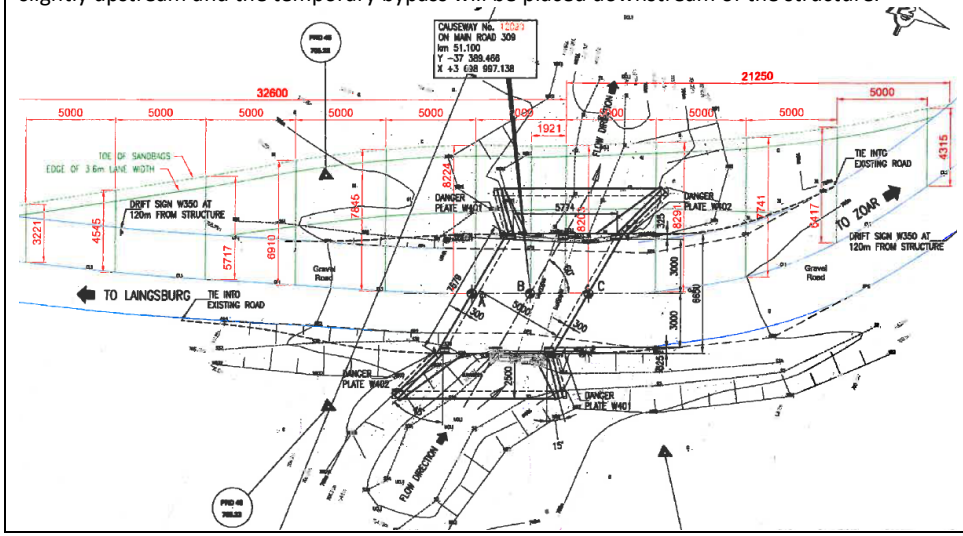
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes keurboom (*Virgilia divaricata*), broom restio (*Calopsis paniculata*) and sagewood (*Buddleja salviifolia*).

Specific Mitigation measures:

Additional erosion protection measures are likely to be required on the upstream east bank and downstream west bank as a result of the straightening of the channel. The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 51.1

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with stone head walls at inlet and outlet that are severely damaged by the large boulders that are abundant in the river. The structure is to be replaced with a 6m wide causeway. The structure will be realigned slightly upstream and the temporary bypass will be placed downstream of the structure.



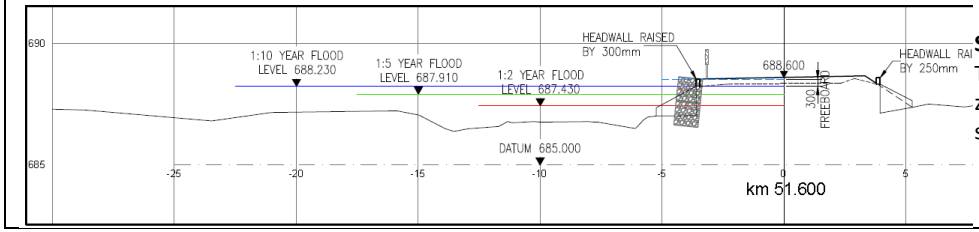
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes keurboom (*Virgilia divaricata*), blinktaaibos (*Searsia lucida*), the sedges, *Mariscus thunbergii* and *Isolepis prolifera*, broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*) and katoenbos (*Gomphocarpus fruticosus*).

Specific Mitigation measures:

The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 51.6

Proposed Activity: The river is blocked by a fallen tree that has resulted in an eroded bank and under-scouring of the road. A 30m concrete or gabion wall is proposed. The wall will be placed at the edge of the road reserve.



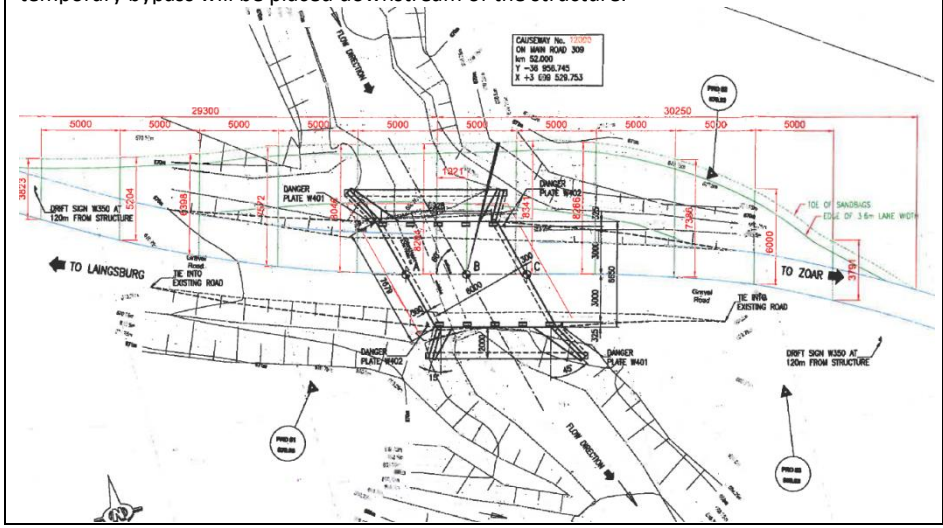
Site description: The river is located alongside the road in a relatively narrow part of the valley. The riparian zone of the river consists of large riparian trees. Indigenous vegetation includes Cape willow (*Salix mucronata*), honey bells (*Freylinia lanceolata*), keurboom (*Virgilia divaricata*), kiepersol (*Cussonia spicata*) and broom restio (*Calopsis paniculata*).

Specific Mitigation measures:

The wall should be constructed within the road reserve and should not encroach into the riparian zone of the river. It should also not significantly confine or intensify the flood flows of the river but should only protect the road from flood damage.

Km 52.0

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with stone head walls at inlet and outlet that are severely damaged by the large boulders that are abundant in the river. The structure is to be replaced with a 6m wide causeway. The temporary bypass will be placed downstream of the structure.



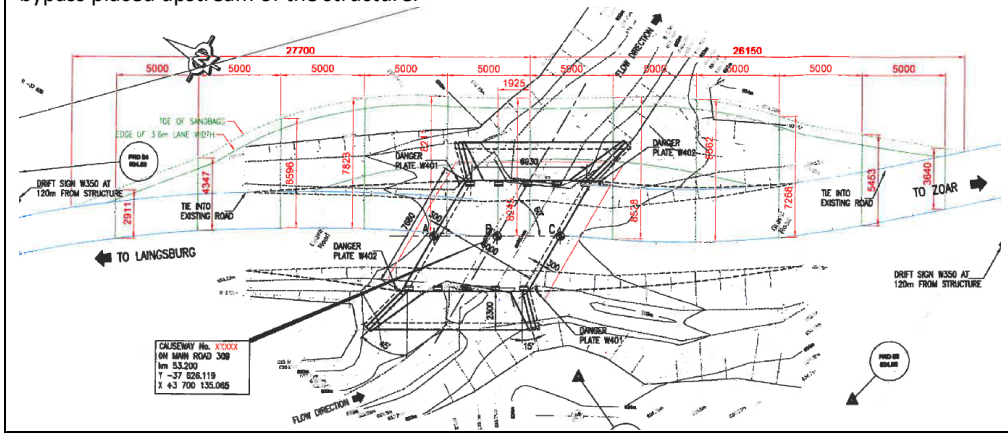
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape willow (*Salix mucronata*), keurboom (*Virgilia divaricata*), kiepersol (*Cussonia spicata*), blinktaaibos (*Searsia lucida*), broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*), common reeds (*Phragmites australis*) and sagewood (*Buddleja salviifolia*). Material from past road repair works has been deposited on the upstream bank.

Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks. The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 53.2

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with upstream and downstream protection works. Scouring of the structure has taken place. The structure is to be replaced with a 6m wide causeway. The structure will be moved slightly upstream and the temporary bypass placed upstream of the structure.



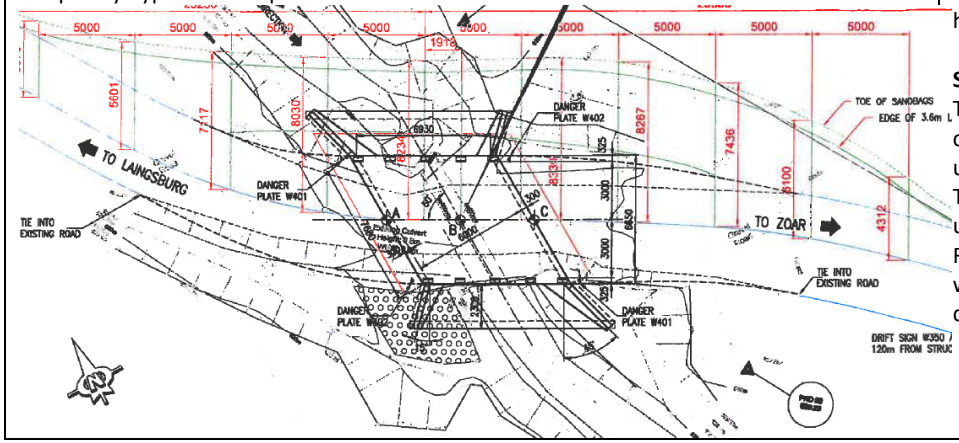
Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes honey bells (*Freylinia lanceolata*), keurboom (*Virgilia divaricata*), Cape Holly (*Ilex mitis*), taaibos (*Searsia laevigata*), wildedagga (*Leonotis loenurus*), *Isolepis prolifera* and palmiet (*Prionium serratum*).

Specific Mitigation measures:

The mature trees adjacent to the crossing should rather be cut back and not removed to accommodate the temporary bypass so that they can resprout after the construction activities are complete. The bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible. Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 53.4

Proposed Activity: The existing causeway structure consists of 2x600mm encased pipes, with head walls at the outlet that are mostly buried and have been almost completely destroyed. As a result of siltation, the structure is completely buried. The structure is to be replaced with a 6m wide causeway. The road will be shifted slightly upstream and the temporary bypass will be placed downstream of the structure.



Site description: The river channel upstream and downstream of the crossing is somewhat disturbed and cleared as result of past road maintenance activities. Indigenous vegetation includes keurboom (*Virgilia divaricata*), Cape honey bells (*Freylinia lanceolata*), taaibos (*Searsia laevigata*), the sedge *Isolepis prolifera*, creeping rush (*Juncus lomotophyllus),* broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*) and bostolbos (*Diospyros dichrophylla*). Material from past road repair works has been deposited on the river banks.

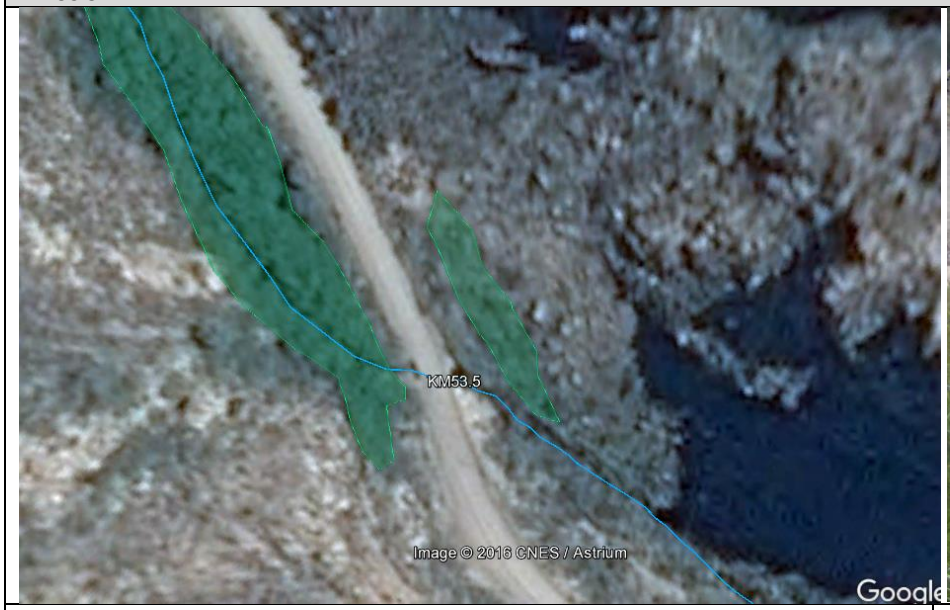
Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

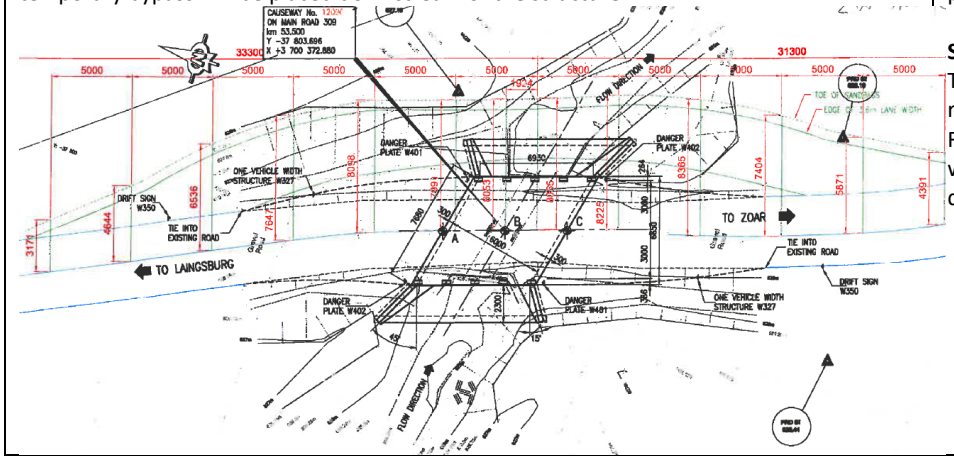
The mature trees adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 53.5



Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with concrete protection works at inlet and outlet. Severely scouring has taken place at the structure. The structure is to be replaced with a 6m wide causeway. The road will be shifted slightly upstream and some of the downstream bank will need to be removed. The temporary bypass will be placed downstream of the structure.



Site description: The river channel upstream and downstream of the crossing has been disturbed as result of past road maintenance activities. Indigenous vegetation includes keurboom (*Virgilia divaricata*), Cape honey bells (*Freylinia lanceolata*), taaibos (*Searsia laevigata*), broom restio (*Calopsis paniculata*), fountain bush (*Psoralea affinis*) and bostolbos (*Diospyros dichrophylla*). Material from past road repair works has been deposited on the upstream bank.

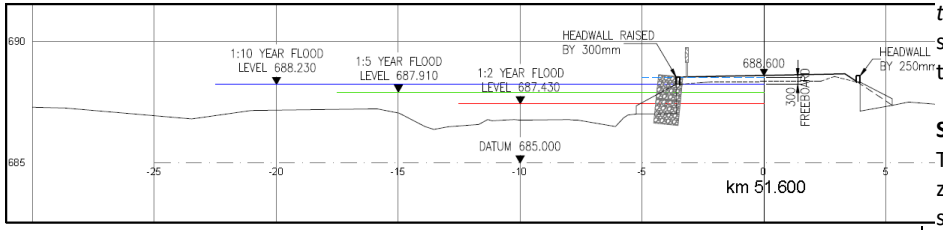
Specific Mitigation measures:

The hillslope wetland area adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 53.8

Proposed Activity: The road way gets flooded by the river that washes the road material away completely during floods. It is proposed to construct a 100m long concrete retaining wall.



Site description: The river channel adjacent to the road has been disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape honey bells (*Freylinia lanceolata*), keurboom (*Virgilia divaricata*), silky bark (*Maytenus acuminate*), wild olive (*Olea europaea* subsp. *africana*), sand olive (*Dodonaea angustifolia*), taaibos (*Searsia laevigata*), the sedge, *Mariscus thunbergii),* broom restio (*Calopsis paniculata*), taaiblaarmalva (*Pelargonium glutinosum*) and sagewood (*Buddleja salviifolia*). Some material from past road repair works has been deposited along the bank.

Specific Mitigation measures:

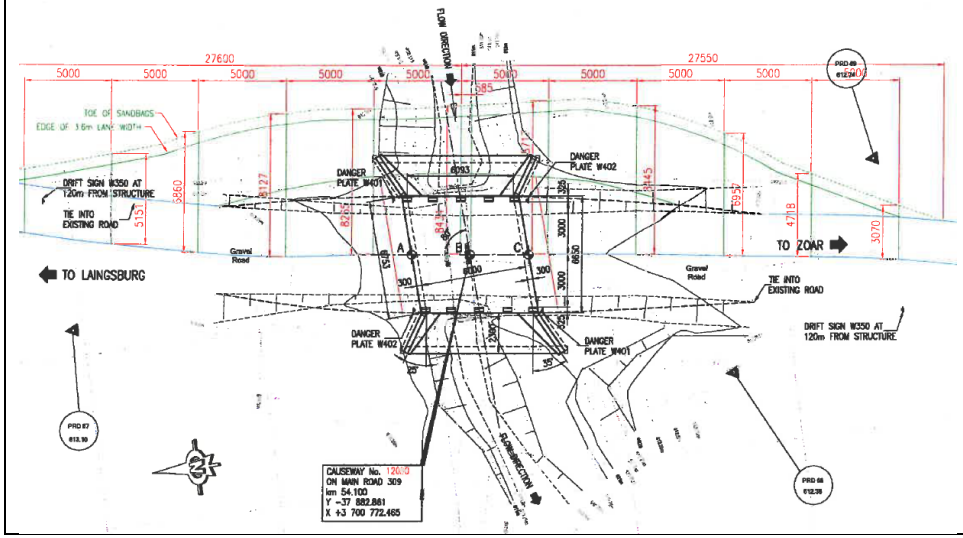
The wall should be constructed within the road reserve and should not encroach into the riparian zone of the river. It should also not significantly confine or intensify the flood flows of the river but should only protect the road from flood damage.

Any dumped material from previous road repair works should be utilised was far as possible for the construction works and the banks shaped to resemble that of the surrounding unimpacted banks. The mature trees adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 54.1

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with stone head walls at inlet and outlet that have been damaged by boulders that are abundant in the river. The structure is to be replaced with a 6m wide causeway. The temporary bypass will be placed downstream of the structure.



Site description: The river channel upstream and downstream of the crossing has been disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape honey bells (*Freylinia lanceolata*), silky bark (*Maytenus acuminate*), keurboom (*Virgilia divaricata*), wild olive (*Olea europaea* subsp. *africana*), sand olive (*Dodonaea angustifolia*), taaibos (*Searsia laevigata*), the sedge, *Mariscus thunbergii* and broom restio (*Calopsis paniculata*).

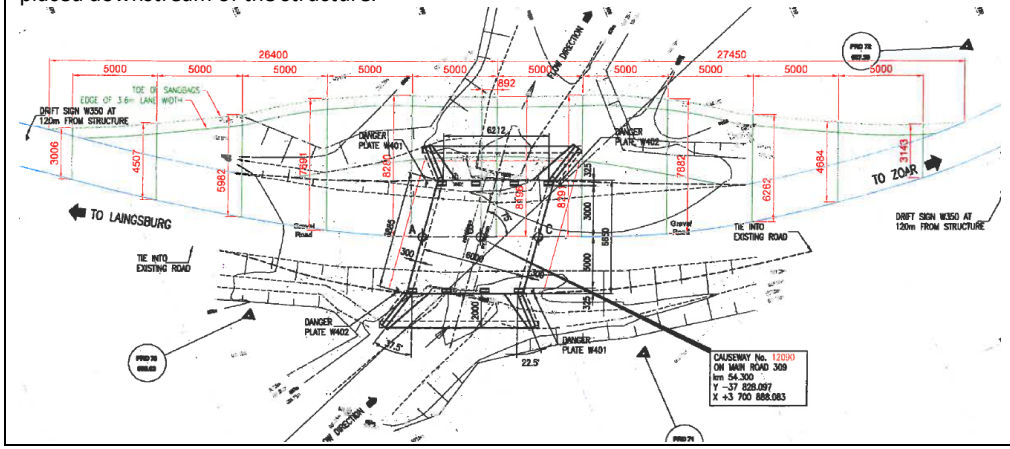
Specific Mitigation measures:

The mature trees adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 54.3 and 54.4

Proposed Activity: The existing causeway structure consists of 2x900mm encased pipes, with stone head walls at inlet and outlet that have been damaged by boulders that are abundant in the river. The road way gets flooded by the river that washes the road material away completely during floods. It is proposed to construct a 350m long concrete retaining wall and a 6m wide causeway. The new structure will be placed slightly upstream of the existing structure and the temporary bypass will be placed downstream of the structure.



Site description: The river channel upstream and downstream of the crossing has been disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape honey bells (*Freylinia lanceolata*), keurboom (*Virgilia divaricata*), broom restio (*Calopsis paniculata*), river pumpkin (*Gunnera perpensa*) and taaibos (*Searsia laevigata*). Material from past road repair works has been deposited on the upstream bank.

Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks. The mature trees adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 57.1

Proposed Activity: The existing causeway structure consists of 57m long causeway with 6x2.4m openings with a 500mm thick slab, aprons and wing walls. Four openings area completely blocked with rocks and only 2 openings area clear. It is proposed to drop the inlet and realign the river. The temporary bypass will be placed upstream of the structure.

Site description: The river channel upstream and downstream of the crossing is somewhat disturbed as result of past road maintenance activities. Indigenous vegetation includes Cape willow (*Salix mucronata*), keurboom (*Virgilia divaricata*), sweet thorn (*Acacia karoo*), taaibos (*Searsia laevigata*), wild olive (*Olea europaea* subsp. *africana*), the sedges, *Carpha glomerata*, *Mariscus thunbergii, Pycreus polystachyos* and *Isolepis prolifera,* creeping rush (*Juncus lomotophyllus),* broom restio (*Calopsis paniculata*), Vleibos (*Cliffortia strobilifera*), knotweed (*Persicaria lapathifolia*), taaiblaarmalva (*Pelargonium glutinosum*) and kruidtjie-roer-my-nie (*Melianthus comosus*). Material from past road repair works has been deposited on the banks and some invasive alien black wattle (*Acacia mearnsii*) and bramble (*Rubus cuneifolius)* are present at the site.

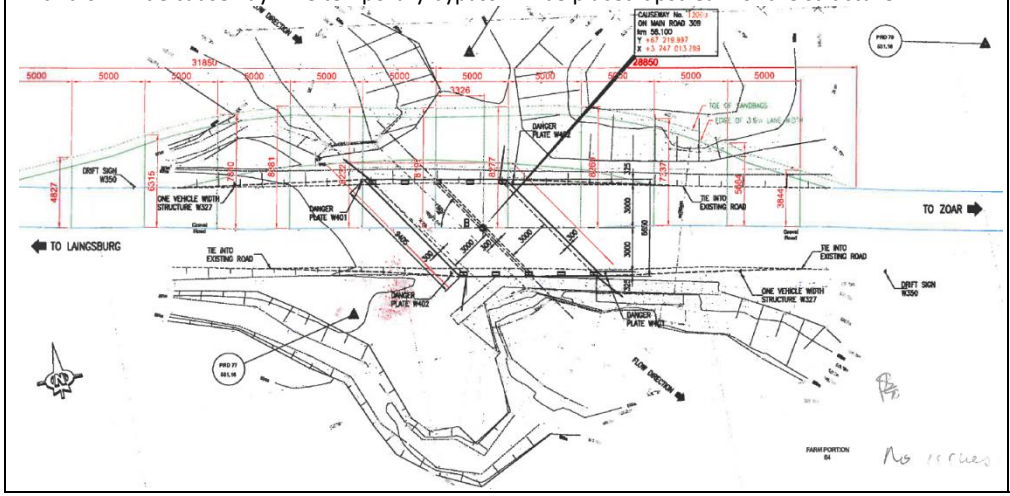
Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks. The mature trees adjacent to the crossing should be avoided and the bed and banks of the river upstream and downstream of the road reserve should be disturbed as little as possible.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Km 58.1

Proposed Activity: The existing causeway structure consists of 1x1.9m W causeway with 750mm pipe down steam, broken apron slabs and downstream return walls. The structure is to be replaced with a 6m wide causeway. The temporary bypass will be placed upstream of the structure.



Site description: The river channel upstream and downstream of the crossing has been significantly disturbed and cleared of vegetation as result of recent road maintenance activities. Indigenous vegetation includes Cape willow (*Salix mucronata*), keurboom (*Virgilia divaricata*), sweet thorn (*Acacia karoo*), taaibos (*Searsia laevigata*) and and bostolbos (*Diospyros dichrophylla*). There is a high flow bypass channel that has been constructed on the eastern bank of the river.

Specific Mitigation measures:

The dumped material from previous road repair works should be utilised was far as possible for the construction of the new crossing and the banks shaped to resemble that of the surrounding unimpacted banks.

Routine monitoring of the structure should be undertaken to ensure that it does not become blocked with larger boulders. Ongoing monitoring and clearing of any invasive alien plants within the disturbed areas should also take place.

Appendix D

EIA related documentation

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

REGISTRATION/LICENSING PART 1 COMPANY, BUSINESS, PARTNERSHIP OR COMMUNITY, NATIONAL OR PROVINCIAL GOVERNMENT

1. GENERAL INFORMATION

Mark the applicable option(s) with an *X* and/or complete details where applicable/available.

Indicate the nature of this application:

- ☒ New registration
- ☐ Minor change
- ☐ Formal amendment
- Registration Number ☐☐☐☐☐☐☐☐☐

2. PARTICULARS OF THE APPLICANT

Application for:
(Mark **one** block with an X)

- ☐ Company, business, partnership or community *(complete part 3,5,6,7 and 8)*
- ☒ National or provincial government *(complete part 4,5,6,7 and 8 excl. 8.1.2)*

3. PARTICULARS OF THE COMPANY, BUSINESS, PARTNERSHIP OR COMMUNITY

3.1 Name of company, business, partnership or community:

3.2 Trading name if different from name of company, business, partnership or community:

3.3 Type of enterprise:
(Mark **one** block with an X)

- ☐ 06 Public Company (Ltd)
- ☐ 07 Private Company (Pty) Ltd
- ☐ 08 Article 21 (Association Inc. under Article 21 of the Company Act No. 61 of 1973)
- ☐ 09 Limited By Guarantee
- ☐ 10 External Company
- ☐ 11 External Company under article 21 of the Company Act No. 61 of 1973
- ☐ 20 Transvaal Ordinance
- ☐ 21 Incorporated (Inc)
- ☐ 22 Unlimited
- ☐ 23 Close Corporation (CC)
- ☐ Parastatal
- ☐ Trust
- ☐ Other [i.e. non-CIPRO Company types (e.g. Churches, Schools, Community Groups, etc.) excluding Trust and Parastatal]

3.4 Business enterprise registration number:

3.5 Date established:
(ccyy/mm/dd) ☐☐☐☐☐☐☐☐

3.6 Country where established:

3.7 VAT registration number:

4. PARTICULARS OF NATIONAL OR PROVINCIAL GOVERNMENT

4.1 National Department:

4.2 a) Provincial Department:

DEPARTMENT OF TRANSPORT AND PUBLIC WORKS

b) Province:

WESTERN CAPE

5. APPLICANT CONTACT DETAILS

5.1 Postal Address:

PO Box 2603

Cape Town

Postal Code 8000

5.2 Street Address (only if different from postal address)**:**

9 Dorp Street

Cape Town

Postal Code 8001

5.3 Contact telephone number during office hours

Area/cell code 021 Number 4832170 Ext

Alternative contact number

Area/cell code 083 Number 6450299 Ext

5.4 E-mail Wally.Silbernagl@westerncape.gov.za

6. CONTACT PERSON DETAILS

6.1 Title Mr

6.2 Name Wilfried

6.3 Surname Silbernagl

6.4 Telephone

Area/cell code 021 Number 4832170 Ext

6.5 Cell Phone Number

Area/cell code 083 Number 6450299

6.6 Fax

Area/cell code 021 Number 4832205 Ext

6.7 E-mail Wally.Silbernagl@westerncape.gov.za

6.8 Preferred Form Of Communication

Declaration by applicant (or person who was granted power of attorney by the applicant)

Surname of delegated person: BELCHER

Title: MRS

Initials: A

ID Number: 6605090049081

Passport Number:
(if not a holder of South African ID)

Expiry Date (ccyy/mmdd):

Delete the words that are not applicable I/we ANTONIA BELCHER hereby declare that the information provided by me/us in this application form is, to the best of my/our knowledge, true and correct.

		021 851 0555
Signature PSP FOR APPLICANT	Thumb print	Contact number during office hours
Designation of signatory		Date (ccyy/mm/dd)

It is a criminal offence to provide information that is false or misleading.

7. LIST OF PART 2 DOCUMENTS (WATER USE RELATED FORMS)

Mark with an X which of the following documents have been submitted with this application

☐	DW760 NWA-Section 21(a)	☒	DW768 NWA-Section 21(i)
☐	DW761 NWA-Section 21(b)	☐	DW780 NWA-Section 21(h)
☐	DW762 NWA-Section 21(b)	☐	DW805 NWA-Section 21(j)
☒	DW763 NWA-Section 21(c)	☐	DW806 NWA-Section 21(k)
☐	DW764 NWA-Section 21(d)	☒	DW901 Property or properties where water use occurs
☐	DW765 NWA-Section 21(e)	☒	DW902 Details of property owner
☐	DW766 NWA-Section 21(f)	☐	DW903 Actual/Monitored waste discharge details NWA-Section 21(f/h)
☐	DW767 NWA-Section 21(g)	☐	DW904 Actual/Monitored waste discharge details NWA-Section 21(e/g)

8. THIS SECTION IS RESERVED FOR OFFICE USE ONLY

8.1 Billing information

8.1.1 ☐☐ WMA for billing*

* Water Management Area Codes

01 Limpopo	05 Inkomati	09 Middle Vaal	13 Upper Orange	17 Olifants/Doorn
02 Luvuvhu/Letaba	06 Usutu-Mhlatuze	10 Lower Vaal	14 Lower Orange	18 Breede
03 Crocodile (W), Marico	07 Thukela	11 Mvoti-Umzimkulu	15 Fish-Tsitsikamma	19 Berg
04 Olifants	08 Upper Vaal	12 Mzimvubu-Keiskamma	16 Gouritz	

8.1.2 District Municipal Establishment Levy Payable ☐ Yes ☐ No

8.2 Mark with an X which of the following documents have been submitted with this application

☐ Certified copy of South African identity document

☐ Certified copy of passport

File number *(i.e. Office Hardcopy Register File No)*

Water Use Register Number

Received by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

Captured on NRWU database

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Registration / Licensing | **Section 21(c) of the National Water Act**

Part 2 | **IMPEDING OR DIVERTING THE FLOW OF WATER IN A WATERCOURSE**

SPECIAL NOTE

This form is not applicable to any structure that is capable of containing, storing or impounding water.

For these structures, please complete form DW762

1. GENERAL INFORMATION

Mark the applicable option(s) with an *X* and/or complete details where applicable/available.

1.1 **Have you already registered a water use with the Department of Water Affairs and Forestry?**

☐ Yes ☐ No

Registration Number:

Water Use Number:

☐ Licence Related WU

RLA Reference

NRWU Licence Number

RLA Business Unit

(NRWU = National Register of Water Use; RLA = Responsible Licensing Authority; WU = Water Use)

1.2 **Applicant Type** (mark only one block with X)

☐ Individual (complete 1.3)
☐ Company, business, partnership or community (complete 1.4)
☐ National Department (complete 1.5)
☒ Provincial Department (complete 1.6)
☐ Water Services Provider (complete 1.7)
☐ Water User Association (complete 1.8)

1.3 **If the applicant is an individual**

1.3.1 Title Surname Initials

For office use only

Allocated Reg. No. WU No.

1.3.2 **South African ID (if holder of South African Id) alternatively Passport Number:**

ID Number or Passport Number

Passport Expiry Date (ccyymmdd)

Passport Country Of Issue

1.4 **If the applicant is a company, business, partnership or community:**

1.4.1 Name of company, business, partnership or community:

1.4.2 Business Enterprise Registration Number /

1.4.3 Date Established (ccyymmdd)

Country Where Established

1.5 **If the applicant is a National Department:**

1.5.1 National Department Name:

1.6 **If the property owner is a Provincial Department:**

1.6.1 Province:

1.6.2 Provincial Department Name:

1.7 **If the applicant is a Water Services Provider:**

1.7.1 Name of WSP:

1.8 **If the applicant is a Water User Association:**

1.8.1 Name of WUA:

Declaration by applicant

Delete the words that are not applicable I/we _____ (FULL NAME(S)) hereby declare that the information provided by me/us in this application form is, to the best of my/our knowledge, true and correct.

Signature

Thumb print

Contact number during office hours
1

Designation of signatory

Date (ccyy/mm/dd)

It is a criminal offence to provide information that is false or misleading.

2. SUCCESSION/TRANSFER AND SOURCE PART 2 DETAILS

2.1 Is this a succession Related Water Use? (Mark only one box with an X)

☐ Yes

☒ No

2.2 If yes, complete the following source details:

2.3

Source Register Number		WU Number	
Source Register Number		WU Number	
Source Register Number		WU Number	

3. NATURE OF ACTIVITY (mark one category with X and enter any details required)

3.1 Registration of (mark only one block with X)

☐ Impeding flow (complete part 3,4,6 and 7)

☒ Diverting flow (complete part 3,5,6 and 7)

4. WATER RESOURCE INFORMATION

4.1 Name of water source (watercourse, surface water or estuary)

Seweweekspoort River

4.2 Type of water source (mark with an X)

☒ River or stream ☐ Spring ☐ Estuary ☒ Wetland ☐ Eye

4.3 Quaternary Drainage Region

J 2 5 B

5. IMPEDING THE FLOW IN A WATERCOURSE

5.1 Geographic location of the impedance (in one format only)

Latitude S ° ' ." or S . ° or S ° . '

Longitude E ° ' ." or E . ° or E ° . '

Datum Type: ☐ Cape (Modified Clarke 1880) ☐ WGS-84

5.2 Name of Impending structure

5.3 Impeding structure

a) Height of structure* [ ][ ][ ].[ ] metres

* "Height" is the vertical difference between the lowest downstream ground elevation on the structure and the crest level or the general top level of the structure

b) Width of structure (measured at widest part of the structure) [ ][ ][ ][ ] metres

c) Length of structure [ ][ ][ ][ ][ ] metres

d) Materials used in building the structure (list)

5.4 Enter the number of impending structures on this property [ ][ ][ ]

6. DIVERTING THE FLOW IN A WATERCOURSE

6.1 Geographic location of the diversion

a) Geographic location of the start of the diversion (in one format only)

Latitude S 33 ° 21 ' 41.3 " or S [ ][ ].[ ][ ][ ][ ] ° or S [ ][ ] ° [ ][ ].[ ][ ][ ] '

Longitude E 21 ° 24 ' 35.4 " or E [ ][ ].[ ][ ][ ][ ] ° or E [ ][ ] ° [ ][ ].[ ][ ][ ] '

Datum Type: ☐ Cape (Modified Clarke 1880) ☒ WGS-84

b) Geographic location of the end of the diversion (in one format only)

Latitude S 33 ° 27 ' 35.0 " or S [ ][ ].[ ][ ][ ][ ] ° or S [ ][ ] ° [ ][ ].[ ][ ][ ] '

Longitude E 21 ° 25 ' 43.2 " or E [ ][ ].[ ][ ][ ][ ] ° or E [ ][ ] ° [ ][ ].[ ][ ][ ] '

Datum Type: ☐ Cape (Modified Clarke 1880) ☒ WGS-84

6.2 Name of Diversion structure

MR306 UPGRADE: 27 STRUCTURES ALONG MR306 ROAD OVER OR ADJACENT TO THE SEWEWEEKSPORRT RIVER. SEE TABLE FOR DETAILS OF EACH STRUCTURE

6.3 Diversion structure

a) Height of structure* [ ][ ][ ].[ ] metres

* "Height" is the vertical difference between the lowest downstream ground elevation on the structure and the crest level or the general top level of the structure

b) Width of structure (measured at widest part of the structure) [ ][ ][ ][ ] metres

c) Length of diversion along the watercourse (mark units with X) [ ][ ]17 ☒ kilometers ☐ metres

d) Materials used in building the structure

6.4 Enter the number of diversion structures on this property [ ][ ][ ]

7. ACTIVITY AFFECTING FLOW IN WATERCOURSE

7.1 Description of activity (mark only one block with X)

☒ Diversion through a pipe ☐ Diversion through a canal ☐ Impeding structure

☐ Other diversion (specify below)

7.2 Start date of activity (ccyymmdd)

7.3 Flow rate before diversion or impedance cubic metres per second

7.4 Flow rate after diversion or impedance cubic metres per second

7.5 Purpose of the activity (e.g. *"to continue with mining")*

THE SEWEWEEKSPOORT PASS, LOCATED ON MR309 APPROXIMATELY BETWEEN KM 40.9 TO 58.1, IS A GRAVEL ROAD LINKING THE TOWNS OF LAINGSBURG AND LADISMITH. THE ROAD MEANDERS THROUGH THE NARROW GORGE OF THE SEWEWEEKSPOORT. THE GORGE IS VERY NARROW WITH THE RESULT THAT THE GRAVEL ROAD CROSSES THE SEWEWEEKSPOORT RIVER NUMEROUS TIMES IN A SHORT DISTANCE OF 18KM. STRUCTURES HAVE BEEN CONSTRUCTED OVER MANY YEARS CONSISTING MOSTLY OF ONE OR TWO PIPES. THE RESULT IS THAT EVEN SMALL RAIN EVENTS CAUSE THE ROAD TO BE OVERTOPPED WITH ENSUING DAMAGE NOT ONLY AT THE RIVER CROSSING BUT ALSO ALONG THE ROAD SINCE THE ROAD ACTS AS A WEIR WHEN THE HYDRAULIC CAPACITY IS EXCEEDED. THE FREQUENT OVERTOPPING OF THE ROAD REQUIRES REPAIR WORK TO BE DONE. THE ROUTE IS CONSIDERED AN IMPORTANT LINK BETWEEN THE GROOT AND THE KLEIN KAROO AND IT IS PROPOSED TO UPGRADE THE STRUCTURES THROUGHOUT THE PASS WITH THE AIM OF IMPROVING THEIR FUNCTIONALITY, AND REDUCING THE LEVEL OF REPAIRS WHICH ARE CURRENTLY REQUIRED.

7.6 If the activity is mining-related, complete the following

e) Distance of the mining-related activity from the original watercourse metres

f) Distance of the mining-related activity from the watercourse after impedance or diversion metres

g) Depth of undermining of watercourse, if applicable metres

h) Mining method used in c), (if any)

8. DESCRIPTION OF WATER USE SECTOR(S)

8.1 Where applicable select one more of the following water use sectors

☐ Agriculture: Aquaculture
☐ Agriculture: Irrigation
☐ Agriculture: Watering Livestock
☐ Evaporation (Storage)
☒ Industry (Non-urban)
☐ Industry (Urban)
☐ Mining
☐ Power Generation
☐ Recreation
☐ Water Supply Service

9. EXISTING AUTHORISATION

9.1 Water use started on (ccyymmdd) | | | | | | | | |

9.2 If this is an existing water use, mark with X and enter permit numbers ☐

	Permit number	**Date** (ccyymmdd)
Permit No.		
Permit No.		
Permit No.		
Permit No.		
Permit No.		
Permit No.		

9.3 If water use takes place in terms of the General Authorisation, mark with an X ☐

*****If yes complete the following details after confirmation with relevant DWAF/CMA officials:

Date(s) from which applicable GA is/was applicable to this water use

South African Act: _____ Applicable section of the act _____

[E.g. National Water Act (Act No. 36 of 1998)] [E.g. Section 21]

Date From (ccyymmdd) | | | | | | | | | Government Notice No. | | | |

Date To (ccyymmdd) | | | | | | | | | Government Notice Date (ccyymmdd) | | | | | | | | |

Applicable Section Of The General Authorisation _____

Date From (ccyymmdd) | | | | | | | | | Government Notice No. | | | |

Date To (ccyymmdd) | | | | | | | | | Government Notice Date (ccyymmdd) | | | | | | | | |

Applicable Section Of The General Authorisation _____

Date From (ccyymmdd) | | | | | | | | | Government Notice No. | | | |

Date To (ccyymmdd) | | | | | | | | | Government Notice Date (ccyymmdd) | | | | | | | | |

Applicable Section Of The General Authorisation _____

9.4 If an authorisation has been issued under other legislation

Law /Regulation | ENVIRONMENTAL AUTHORISATION IS BEING APPLIED FOR

10. PROPERTY RELATIONSHIP DETAILS *(Complete supplementary forms DW901 & DW902)*

Property Name	Surveyed Property		Unsurveyed property		Property Relationship Date	
					From:	To:
TIGERKLOOF	Title Deed Number	T37916/1994	Surname of the Leader of Village, Community or Tribal Authority		1994	Present
	Surveyor-General Cadastral Code	C042000000000630000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	63	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
DE POORT	Title Deed Number	T37916/1994	Surname of the Leader of Village, Community or Tribal Authority		1994	Present
	Surveyor-General Cadastral Code	C042000000000610000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	61	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
SEVENWEEKS	Title Deed Number	-	Surname of the Leader of Village, Community or Tribal Authority		-	-
	Surveyor-General Cadastral Code	C043000000000214000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	214	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
Bezemfontein	Title Deed Number	T1555/2003	Surname of the Leader of Village, Community or Tribal Authority		2003	Present
	Surveyor-General Cadastral Code	C043000000000213000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	213	Local Authority (if applicable)			
	Portion of property	3	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			

11. FOR OFFICE USE ONLY

11.1 List of attached forms and documents

11.1.1 Specify the number of other documents submitted with this form, if any

- ☐ Motivation for the proposed diversion or impedance
- ☐ Environment impact assessment
- ☐ Certified copy of agreement from each property owner involved, if more than one

11.1.2 Specify the other documents submitted with this form

- ☐ Other: (specify) D W
- ☐ Other: (specify) D W
- ☐ Other: (specify) D W
- ☐ Other: (specify) D W

11.2 Succession/Transfer and source Part 2 details

Source Register number	WU Number	WU Status to be allocated	WU Close Date (if applicable) (ccyymmdd)

11.3 District Municipality

District Municipality Name (if applicable)

11.4 Late Registration Penalty

Is this a late registration? ☐ Yes ☐ No

If yes, mark with an X, the applicable penalty to be levied

- ☐ R300.00 **OR**
- ☐ 10% (ten percent) of the annual water use charge outstanding at the date of registration which ever is greater

Specify the penalty amount payable

- ☐ Waive penalty

File number

Water Use Register Number

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Capured by:

Surname

Initials

Signature

Date stamp of receiving office

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Registration / Licensing | **Section 21(i) of the National Water Act**

Part 2 | **ALTERING THE BED, BANKS, COURSE OR CHARACTERISTICS OF A WATERCOURSE**

SPECIAL NOTE
This form is not applicable for any structure that impedes or diverts flow.
For these structures, please complete form DW763/775

1. GENERAL INFORMATION

Mark the applicable option(s) with an *X* and/or complete details where applicable/available.

1.1 Have you already registered a water use with the Department of Water Affairs and Forestry?

☐ Yes ☒ No

Registration Number:

Water Use Number:

☐ Licence Related WU

RLA Reference

NRWU Licence Number

RLA Business Unit

(NRWU = National Register of Water Use; RLA = Responsible Licensing Authority; WU = Water Use)

1.2 Applicant Type (mark only one block with X)

☐ Individual (complete 1.3)
☐ Company, business, partnership or community (complete 1.4)
☐ National Department (complete 1.5)
☒ Provincial Department (complete 1.6)
☐ Water Services Provider (complete 1.7)
☐ Water User Association (complete 1.8)

1.3 If the applicant is an individual

1.3.1 Title Surname Initials

For office use only

Allocated Reg. No. WU No.

1.3.2 **South African ID (if holder of South African Id) alternatively Passport Number:**

ID Number or Passport Number

Passport Expiry Date (ccyymmdd)

Passport Country Of Issue

1.4 **If the applicant is a company, business, partnership or community:**

1.4.1 Name of company, business, partnership or community:

1.4.2 Business Enterprise Registration Number /

1.4.3 Date Established (ccyymmdd)

Country Where Established

1.5 **If the applicant is a National Department:**

1.5.1 National Department Name:

1.6 **If the applicant is a Provincial Department:**

1.6.1 Province: Western Province

1.6.2 Provincial Department Name: Transport and Public Works

1.7 **If the applicant is a Water Services Provider:**

1.7.1 Name of WSP:

1.8 **If the applicant is a Water User Association:**

1.8.1 Name of WUA:

1.12 **BBBEE Status**

Mark the applicable option(s) with an X)

- ☐ Historically Disadvantaged Individual (HDI)
- ☐ Historically Advantaged Individual (HAI)
- ☒ Black Economic Empowerment (BEE) Compliant

Declaration by applicant

Delete the words that are not applicable I/we _____ (FULL NAME(S)) hereby declare that the information provided by me/us in this application form is, to the best of my/our knowledge, true and correct.

Signature	Thumb print	Contact number during office hours
Designation of signatory		Date (ccyy/mm/dd)

It is a criminal offence to provide information that is false or misleading.

2. SUCCESSION/TRANSFER AND SOURCE PART 2 DETAILS

2.1 Is this a "succession-in-title" related Water Use? ☐ Yes
(Mark only one box with an X) ☒ No

2.2 If yes, complete the following source details

2.3

Source Register Number		WU Number	
Source Register Number		WU Number	
Source Register Number		WU Number	

3. WATER RESOURCE INFORMATION

3.1 Name of water source

Seweweekspoort River and associated wetlands

3.2 Type of water source

☒ River/stream ☐ Estuary ☐ Spring/Eye ☒ Wetland ☐ Dam ☐ Lake

3.3 Quaternary Drainage Region: J25B

4. DETAILS OF WATER USE ACTIVITY

4.1 Name of alteration

MR306 Upgrade: 27 structures along the MR306 road, over or adjacent to the Seweweekspoort River. See table for details of each structure.

4.2 Location of the alteration

a) Geographic location of the start of the alteration

Latitude S 33 21 41 13 " or S . ° or S ° ' "

Longitude E 21 24 35 4 " or E . ° or E ° ' "

Datum Type: ☐ Cape (Modified Clarke 1880) ☒ WGS-84

b) Geographic location of the end of the alteration (if different from the start)

Latitude S 33 27 35 0 " or S . ° or S ° ' "

Longitude E 21 25 43.2 " or E . ° or E ° ' "

Datum Type: ☐ Cape (Modified Clarke 1880) ☒ WGS-84

4.3 Length of watercourse affected by the alteration: 16591 metres

4.4 Type of alteration (mark all applicable with an X)

☒ Bed ☒ Banks ☐ Course ☐ Other (specify below)

4.5 Purpose of the alteration

THE SEWEWEEKSPOORT PASS, LOCATED ON MR309 APPROXIMATELY BETWEEN KM 40.9 TO 58.1, IS A GRAVEL ROAD LINKING THE TOWNS OF LAINGSBURG AND LADISMITH. THE ROAD MEANDERS THROUGH THE NARROW GORGE OF THE SEWEWEEKSPOORT. THE GORGE IS VERY NARROW WITH THE RESULT THAT THE GRAVEL ROAD CROSSES THE SEWEWEEKSPOORT RIVER NUMEROUS TIMES IN A SHORT DISTANCE OF 18KM. STRUCTURES HAVE BEEN CONSTRUCTED OVER MANY YEARS CONSISTING MOSTLY OF ONE OR TWO PIPES. THE RESULT IS THAT EVEN SMALL RAIN EVENTS CAUSE THE ROAD TO BE OVERTOPPED WITH ENSUING DAMAGE NOT ONLY AT THE RIVER CROSSING BUT ALSO ALONG THE ROAD SINCE THE ROAD ACTS AS A WEIR WHEN THE HYDRAULIC CAPACITY IS EXCEEDED. THE FREQUENT OVERTOPPING OF THE ROAD REQUIRES REPAIR WORK TO BE DONE. THE ROUTE IS CONSIDERED AN IMPORTANT LINK BETWEEN THE GROOT AND THE KLEIN KAROO AND IT IS PROPOSED TO UPGRADE THE STRUCTURES THROUGHOUT THE PASS WITH THE AIM OF IMPROVING THEIR FUNCTIONALITY, AND REDUCING THE LEVEL OF REPAIRS WHICH ARE CURRENTLY REQUIRED.

4.6 The activity is (mark only one block with X) ☐ Temporary ☒ Permanent

4.7 Start date of the alteration **Start Date** (ccyymmdd)

4.8 End date of the alteration (if temporary) **End Date** (ccyymmdd)

4.9 Enter the number of alterations on this property

	2	7

5. DESCRIPTION OF WATER USE SECTOR(S)

5.1 Where applicable select one or more of the following water use sectors

- ☐ Agriculture: Aquaculture
- ☐ Agriculture: Irrigation
- ☐ Agriculture: Watering Livestock
- ☐ Evaporation (Storage)
- ☐ Conservation
- ☒ Industry (Urban)
- ☐ Mining
- ☐ Power Generation
- ☐ Recreation
- ☐ Water Supply Service

6. EXISTING AUTHORISATION

6.1 Water use started on **Date** (ccyymmdd)

6.2 If water use is an existing water use, mark with X and enter permit numbers ☐

	Permit number	Date (ccyymmdd)
Permit No.		
Permit No.		
Permit No.		
Permit No.		
Permit No.		
Permit No.		

6.3 If water use is in terms of the General Authorisation, mark with X ☐

*****If yes complete the following details after confirmation with relevant DWAF/CMA officials:

Date(s) from which applicable GA is/was applicable to this water use

South African Act: _____ Applicable section of the act _____

[E.g. National Water Act (Act No. 36 of 1998)] [E.g. Section 21]

Date From (ccyymmdd)		Government Notice No.	
Date To (ccyymmdd)		Government Notice Date (ccyymmdd)	
Applicable Section Of The General Authorisation			

Date From (ccyymmdd)		Government Notice No.	
Date To (ccyymmdd)		Government Notice Date (ccyymmdd)	
Applicable Section Of The General Authorisation			

Date From (ccyymmdd)		Government Notice No.	
Date To (ccyymmdd)		Government Notice Date (ccyymmdd)	
Applicable Section Of The General Authorisation			

6.4 If an authorisation has been issued under other legislation

Law /Regulation	Environmental Authorisation being applied for

7. PROPERTY RELATIONSHIP DETAILS *(Complete supplementary forms DW901 & DW902)*

Property Name	Surveyed Property		Unsurveyed property		Property Relationship Date	
					From:	To:
Tigerkloof	Title Deed Number	T37916/1994	Surname of the Leader of Village, Community or Tribal Authority		1994	Present
	Surveyor-General Cadastral Code	C04200000000006300000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	63	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
De Poort	Title Deed Number	T37916/1994	Surname of the Leader of Village, Community or Tribal Authority		1994	Present
	Surveyor-General Cadastral Code	C04200000000006100000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	61	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
Sevenweeks	Title Deed Number	-	Surname of the Leader of Village, Community or Tribal Authority		-	-
	Surveyor-General Cadastral Code	C04300000000021400000	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	214	Local Authority (if applicable)			
	Portion of property	0	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			
Bezemfontein	Title Deed Number	T1555/2003	Surname of the Leader of Village, Community or Tribal Authority		2003	Present
	Surveyor-General Cadastral Code	C04300000000021300003	Initial of the Leader of Village, Community or Tribal Authority			
	Property Number	213	Local Authority (if applicable)			
	Portion of property	3	Magisterial District (if applicable)			
			Tribal Authority/Council (if applicable)			

8. FOR OFFICE USE ONLY

8.1 List of attached forms and documents

8.1.1 Specify the number of other documents submitted with this form, if any

- ☐ Motivation for the proposed alteration
- ☐ Environmental impact assessment
- ☐ Certified copy of agreement from each property owner involved, if more than one

Specify the other documents submitted with this form (mark with an X)

☐ Other: (specify)	D	W																		
☐ Other: (specify)	D	W																		
☐ Other: (specify)	D	W																		
☐ Other: (specify)	D	W																		

8.2 Succession transfer and source Part 2 details

Source Register number	WU Number	WU Status to be allocated	WU Close Date (if applicable) (ccyymmdd)

8.3 District Municipality

District Municipality Name (if applicable)

8.4 Late Registration Penalty

Is this a late registration? ☐ Yes ☐ No

If yes, mark with an X, the applicable penalty to be levied

- ☐ R300.00 **OR**
- ☐ 10% (ten percent) of the annual water use charge outstanding at the date of registration which ever is greater

Specify the penalty amount payable

- ☐ Waive penalty

File number

Water Use Register Number

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Capured by:

Surname

Initials

Signature

Date stamp of receiving office

water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

SUPPLEMENTARY WATER USE INFORMATION
PROPERTY WHERE WATER USE OCCURS

DW901 serves to address the following: The property (or properties) where water use(s) is to take place.

•Complete one DW901 form for each property impacted / applicable to a water use registration application.

•Should more than one property owner be applicable to a "property where water occurs" an additional DW902 must be completed for each additional property owner.

1. PROPERTY WHERE WATER USE(S) OCCURS

1.1 **Property where water use takes place (farm, stand or community): description as per the Deeds Act if applicable, or name of agricultural holding, farm, township, town or city.**

Bezemfontein

Registration Date (ccyymmdd): 2 0 0 3 0 1 1 0

1.2 **Property Type** (mark only one with an X)

- ☐ Agricultural Holding
- ☐ Erf
- ☐ Exclusive Use Areas (EUA)
- ☒ Farm
- ☐ Sectional Scheme (To Obtain EUA)
- ☐ Sectional Scheme (to obtain units)
- ☐ Sectional Scheme Unit
- ☐ Township
- ☐ Unspecified
- ☐ Unsurveyed

1.3 **If the property type is unsurveyed, complete the following:**

a) Surname and initials of leader of village, community or tribal authority

Initials

b) Local Authority

&/or

c) Magisterial District

&/or

d) Tribal Authority/Council

1.4 **If the property type is not equal to unsurveyed, complete the following:**

a) Deeds Office: Cape Town

b) Registration Division: Laingsburg RD

c) Property No (i.e. Farm No./Erf No./Holding Area No./Scheme No.): 213

d) Portion of Property: 3

e) Title Deed Number: T1555/2003

f) Surveyor-General Cadastral Code

1		2		3		4		5
0	-	0420	-	0000	-	00000213	-	00003

1. Refers to the Surveyor's-General Office (T = Pretoria, F = Free State, C = Cape Town & N = Kwazulu-Natal)
2. Major Code (Registration Division)
3. Minor code
4. Property No (i.e. Farm No./Erf No./Holding Area No./Sheme No.)
5. Portion Number

Note: *All fields "left padded with 0"*

1.5 Property Area Size

				1	1	8	4

Measure Unit: ☒ Hectares ☐ Square Meters ☐ Acres

1.6 Ownership of the property (mark only one with an X)

☐ Property owned by applicant (100% Share value)
☐ Property owned by applicant (Share value less than 100%)
☐ Property leased by applicant
☐ The property is communal land

2. PROPERTY OWNER RELATIONSHIP

Individual (Identity Number or Passport Number)	Company, Business, Partnership or Community (Business Enterprise Registration Number)	Property Owner Name	Property Owner Document Number (Owner's Title Deed Reference Number)	Property Owner and Property Relationship Date		Owner Share Value %
				From:	To:	
	199802905823	Hunlun Broers CC	T1555/2003	2003	Present	100

3. DECLARATION BY APPLICANT *(or person that was granted power of attorney by the applicant)*

I declare that the property information given by me for registering this Water Use is true and correct.

Signature

Date (ccyymmdd)

Thumbprint (only if requested)

4. FOR OFFICE USE ONLY

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

SUPPLEMENTARY WATER USE INFORMATION
PROPERTY WHERE WATER USE OCCURS

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•Should more than one property owner be applicable to a "property where water occurs" an additional DW902 must be completed for each additional property owner.

1. PROPERTY WHERE WATER USE(S) OCCURS

1.1 **Property where water use takes place (farm, stand or community): description as per the Deeds Act if applicable, or name of agricultural holding, farm, township, town or city.**

De Poort

Registration Date (ccyymmdd): 1 9 9 4 0 6 0 8

1.2 **Property Type** (mark only one with an X)

- ☐ Agricultural Holding
- ☐ Erf
- ☐ Exclusive Use Areas (EUA)
- ☒ Farm
- ☐ Sectional Scheme (To Obtain EUA)
- ☐ Sectional Scheme (to obtain units)
- ☐ Sectional Scheme Unit
- ☐ Township
- ☐ Unspecified
- ☐ Unsurveyed

1.3 **If the property type is unsurveyed, complete the following:**

a) Surname and initials of leader of village, community or tribal authority

Initials

b) Local Authority

&/or

c) Magisterial District

&/or

d) Tribal Authority/Council

1.4 **If the property type is not equal to unsurveyed, complete the following:**

a) Deeds Office: Cape Town

b) Registration Division: Ladismith RD

c) Property No (i.e. Farm No./Erf No./Holding Area No./Scheme No.): 61

d) Portion of Property: 0

e) Title Deed Number: T37916/1994

f) Surveyor-General Cadastral Code

1		2		3		4		5
0	-	0420	-	0000	-	00000061	-	00000

1. Refers to the Surveyor's-General Office (T = Pretoria, F = Free State, C = Cape Town & N = Kwazulu-Natal)
2. Major Code (Registration Division)
3. Minor code
4. Property No (i.e. Farm No./Erf No./Holding Area No./Sheme No.)
5. Portion Number

Note: *All fields "left padded with 0"*

1.5 Property Area Size

				1	5	2	1

Measure Unit: ☒ Hectares ☐ Square Meters ☐ Acres

1.6 Ownership of the property (mark only one with an X)

☐ Property owned by applicant (100% Share value)
☐ Property owned by applicant (Share value less than 100%)
☐ Property leased by applicant
☐ The property is communal land

2. PROPERTY OWNER RELATIONSHIP

Individual (Identity Number or Passport Number)	Company, Business, Partnership or Community (Business Enterprise Registration Number)	Property Owner Name	Property Owner Document Number (Owner's Title Deed Reference Number)	Property Owner and Property Relationship Date		Owner Share Value %
				From:	To:	
		Province of the Western Cape	**T37916/1994**	**1999**	**Present**	**100**

3. DECLARATION BY APPLICANT *(or person that was granted power of attorney by the applicant)*

I declare that the property information given by me for registering this Water Use is true and correct.

Signature

Date (ccyymmdd)

Thumbprint (only if requested)

4. FOR OFFICE USE ONLY

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

SUPPLEMENTARY WATER USE INFORMATION
PROPERTY WHERE WATER USE OCCURS

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•Complete one DW901 form for each property impacted / applicable to a water use registration application.

•Should more than one property owner be applicable to a "property where water occurs" an additional DW902 must be completed for each additional property owner.

1. PROPERTY WHERE WATER USE(S) OCCURS

1.1 **Property where water use takes place (farm, stand or community): description as per the Deeds Act if applicable, or name of agricultural holding, farm, township, town or city.**

Elandsfontein

Registration Date (ccyymmdd): 1 9 9 4 0 6 0 8

1.2 **Property Type** (mark only one with an X)

- ☐ Agricultural Holding
- ☐ Erf
- ☐ Exclusive Use Areas (EUA)
- ☒ Farm
- ☐ Sectional Scheme (To Obtain EUA)
- ☐ Sectional Scheme (to obtain units)
- ☐ Sectional Scheme Unit
- ☐ Township
- ☐ Unspecified
- ☐ Unsurveyed

1.3 **If the property type is unsurveyed, complete the following:**

a) Surname and initials of leader of village, community or tribal authority

Initials

b) Local Authority

&/or

c) Magisterial District

&/or

d) Tribal Authority/Council

1.4 **If the property type is not equal to unsurveyed, complete the following:**

a) Deeds Office: Cape Town

b) Registration Division: Ladismith RD

c) Property No (i.e. Farm No./Erf No./Holding Area No./Scheme No.): 63

d) Portion of Property: 0

e) Title Deed Number: T37916/1994

f) Surveyor-General Cadastral Code

1		2		3		4		5
0	-	0420	-	0000	-	00000064	-	00000

1. Refers to the Surveyor's-General Office (T = Pretoria, F = Free State, C = Cape Town & N = Kwazulu-Natal)
2. Major Code (Registration Division)
3. Minor code
4. Property No (i.e. Farm No./Erf No./Holding Area No./Sheme No.)
5. Portion Number

Note: *All fields "left padded with 0"*

1.5 Property Area Size

				2	0	2	1

Measure Unit: ☒ Hectares ☐ Square Meters ☐ Acres

1.6 Ownership of the property (mark only one with an X)

☐ Property owned by applicant (100% Share value)
☐ Property owned by applicant (Share value less than 100%)
☐ Property leased by applicant
☐ The property is communal land

2. PROPERTY OWNER RELATIONSHIP

Individual (Identity Number or Passport Number)	Company, Business, Partnership or Community (Business Enterprise Registration Number)	Property Owner Name	Property Owner Document Number (Owner's Title Deed Reference Number)	Property Owner and Property Relationship Date		Owner Share Value %
				From:	To:	
		Province of the Western Cape	**T37916/1994**	**1994**	**Present**	**100**

3. DECLARATION BY APPLICANT *(or person that was granted power of attorney by the applicant)*

I declare that the property information given by me for registering this Water Use is true and correct.

Signature

Date (ccyymmdd)

Thumbprint (only if requested)

4. FOR OFFICE USE ONLY

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

SUPPLEMENTARY WATER USE INFORMATION
PROPERTY WHERE WATER USE OCCURS

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1. PROPERTY WHERE WATER USE(S) OCCURS

1.1 **Property where water use takes place (farm, stand or community): description as per the Deeds Act if applicable, or name of agricultural holding, farm, township, town or city.**

Sewenweeks Poort

Registration Date (ccyymmdd): | | | | | | | | |

1.2 **Property Type** (mark only one with an X)

- ☐ Agricultural Holding
- ☐ Erf
- ☐ Exclusive Use Areas (EUA)
- ☒ Farm
- ☐ Sectional Scheme (To Obtain EUA)
- ☐ Sectional Scheme (to obtain units)
- ☐ Sectional Scheme Unit
- ☐ Township
- ☐ Unspecified
- ☐ Unsurveyed

1.3 **If the property type is unsurveyed, complete the following:**

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Initials

b) Local Authority

&/or

c) Magisterial District

&/or

d) Tribal Authority/Council

1.4 **If the property type is not equal to unsurveyed, complete the following:**

a) Deeds Office: Cape Town

b) Registration Division: Laingsburg RD

c) Property No (i.e. Farm No./Erf No./Holding Area No./Scheme No.): 214

d) Portion of Property: 0

e) Title Deed Number: DUM

f) Surveyor-General Cadastral Code

1		2		3		4		5
C	-	0420	-	0000	-	00000214	-	00000

1. Refers to the Surveyor's-General Office (T = Pretoria, F = Free State, C = Cape Town & N = Kwazulu-Natal)
2. Major Code (Registration Division)
3. Minor code
4. Property No (i.e. Farm No./Erf No./Holding Area No./Sheme No.)
5. Portion Number

Note: *All fields "left padded with 0"*

1.5 Property Area Size

				2	0	2	7

Measure Unit: ☒ Hectares ☐ Square Meters ☐ Acres

1.6 Ownership of the property (mark only one with an X)

☐ Property owned by applicant (100% Share value)
☐ Property owned by applicant (Share value less than 100%)
☐ Property leased by applicant
☐ The property is communal land

2. PROPERTY OWNER RELATIONSHIP

Individual (Identity Number or Passport Number)	Company, Business, Partnership or Community (Business Enterprise Registration Number)	Property Owner Name	Property Owner Document Number (Owner's Title Deed Reference Number)	Property Owner and Property Relationship Date		Owner Share Value %
				From:	To:	
		Unknown	**DUM**			

3. DECLARATION BY APPLICANT *(or person that was granted power of attorney by the applicant)*

I declare that the property information given by me for registering this Water Use is true and correct.

Signature

Date (ccyymmdd)

Thumbprint (only if requested)

4. FOR OFFICE USE ONLY

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

SUPPLEMENTARY WATER USE INFORMATION
PROPERTY WHERE WATER USE OCCURS

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1. PROPERTY WHERE WATER USE(S) OCCURS

1.1 **Property where water use takes place (farm, stand or community): description as per the Deeds Act if applicable, or name of agricultural holding, farm, township, town or city.**

Tiger kloof

Registration Date (ccyymmdd): 1 9 9 4 0 6 0 8

1.2 **Property Type** (mark only one with an X)

- ☐ Agricultural Holding
- ☐ Erf
- ☐ Exclusive Use Areas (EUA)
- ☒ Farm
- ☐ Sectional Scheme (To Obtain EUA)
- ☐ Sectional Scheme (to obtain units)
- ☐ Sectional Scheme Unit
- ☐ Township
- ☐ Unspecified
- ☐ Unsurveyed

1.3 **If the property type is unsurveyed, complete the following:**

a) Surname and initials of leader of village, community or tribal authority

Initials

b) Local Authority

&/or

c) Magisterial District

&/or

d) Tribal Authority/Council

1.4 **If the property type is not equal to unsurveyed, complete the following:**

a) Deeds Office: Cape Town

b) Registration Division: Ladismith RD

c) Property No (i.e. Farm No./Erf No./Holding Area No./Scheme No.): 63

d) Portion of Property: 0

e) Title Deed Number: T37916/1994

f) Surveyor-General Cadastral Code

1		2		3		4		5
C	-	0420	-	0000	-	00000063	-	00000

1. Refers to the Surveyor's-General Office (T = Pretoria, F = Free State, C = Cape Town & N = Kwazulu-Natal)
2. Major Code (Registration Division)
3. Minor code
4. Property No (i.e. Farm No./Erf No./Holding Area No./Sheme No.)
5. Portion Number

Note: *All fields "left padded with 0"*

1.5 Property Area Size

				3	3	5	3

Measure Unit: ☒ Hectares ☐ Square Meters ☐ Acres

1.6 Ownership of the property (mark only one with an X)

☐ Property owned by applicant (100% Share value)
☐ Property owned by applicant (Share value less than 100%)
☐ Property leased by applicant
☐ The property is communal land

2. PROPERTY OWNER RELATIONSHIP

Individual (Identity Number or Passport Number)	Company, Business, Partnership or Community (Business Enterprise Registration Number)	Property Owner Name	Property Owner Document Number (Owner's Title Deed Reference Number)	Property Owner and Property Relationship Date		Owner Share Value %
				From:	To:	
		Province of the Western Cape	**T37916/1994**	**1994**	**Present**	**100**

3. DECLARATION BY APPLICANT *(or person that was granted power of attorney by the applicant)*

I declare that the property information given by me for registering this Water Use is true and correct.

Signature

Date (ccyymmdd)

Thumbprint (only if requested)

4. FOR OFFICE USE ONLY

Received by:

Surname

Initials

Position / Rank

Signature

Captured on NRWU database (ccyymmdd)

Captured by:

Surname

Initials

Signature

Date stamp of receiving office

Quality Assurance Executed by:

Surname

Initials

Position / Rank

Signature

Date (ccyymmdd)

SECTION 27 MOTIVATION

THE SECTION 27 MOTIVATION WHERE RELEVANT HAS BEEN INCLUDED IN THE SECTION 21 C AND I SUPPLEMENTARY FORM SUBMITTED AS PART OF THE WULA. IT IS REPEATED IN THIS APPENDIX.

SECTION 27(1)(A) : EXISTING WATER USE

The road to be upgraded is considered to be an existing lawful use.

The landcover within the study area and its surroundings is mapped as comprising largely of natural areas (pale green in Figure 1). The area is also mapped as largely being located within the CapeNature Towerkop Nature Reserve which is a formally protected area.

The road to be upgraded lies across the boundary between the Laingburg Local Municipality (Central Karoo District Municipality) and the Kanneland Local Municipality (Eden District Municipality). The closest urban areas are Ladismith to the west, Calitzdorp to the east, Vanwyksdorp and Riversdale to the south and Laingsburg to the north. The communities of Zoar and Seweweekspoort are located to the south and north of the pass respectively. Some cultivated areas occur immediately to the north and to the south of the area (yellow in Figure 1). The blue areas in Figure 1 that are mapped as wetland areas consist largely of small farm dams that have been constructed to irrigate the cultivated areas. The pass provides an important access route between the little Karoo to the south and the Great Karoo to the north.

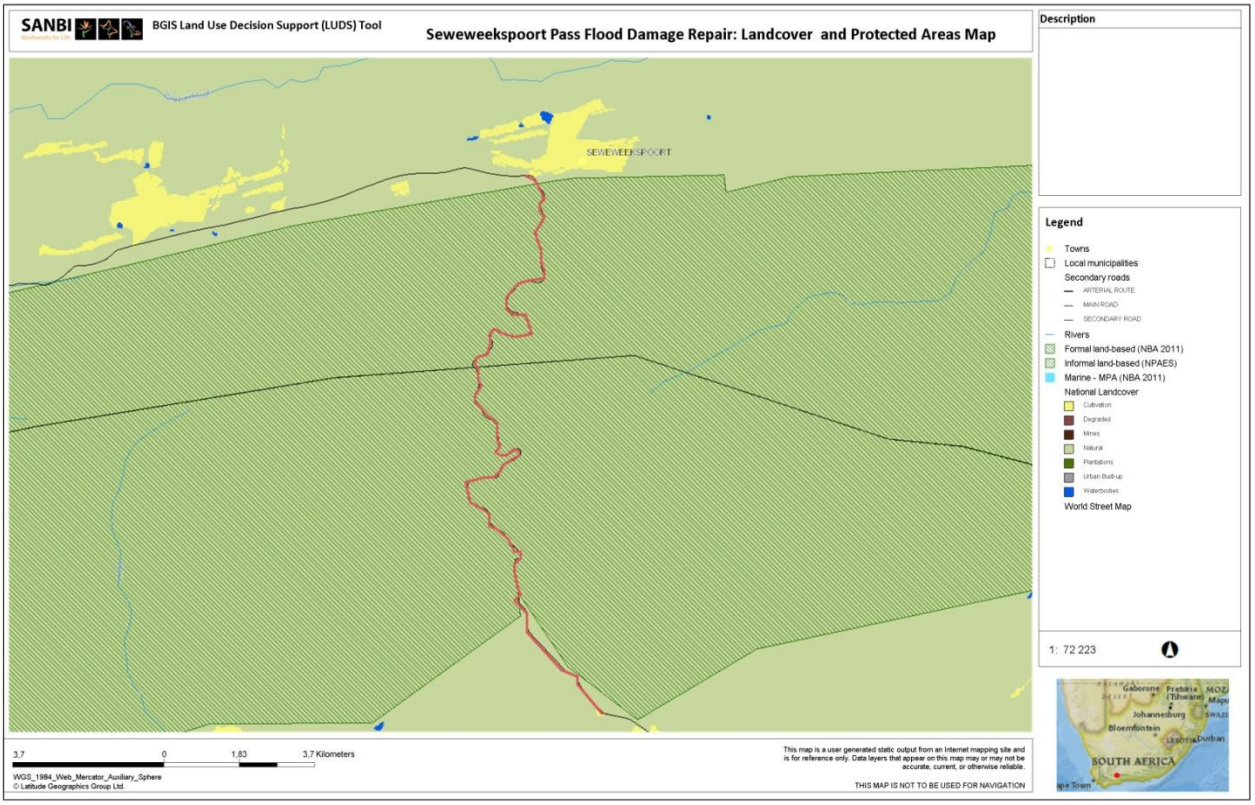

Figure 1: Land cover for the surrounding area (SANBI BiodiversityGIS, 2016)

SECTION 27(1) (B): THE NEED TO REDRESS THE RESULTS OF PAST RACIAL AND GENDER DISCRIMINATION

The proposed activity involves the upgrade of an existing road. As the proposed activity does not entail consumptive water use, no additional water will be made available for redistribution to previously

disadvantaged individuals. There is the potential to create temporary employment during the construction phase of the project.

SECTION 27(1)(C): EFFICIENT AND BENEFICIAL USE OF WATER IN THE PUBLIC INTEREST

The proposed water use activity (the subject of this application) does not involve the consumptive use of water however the upgrade of the road is considered to be beneficial to the economy of the area as an important tourism route.

SECTION 27(1) (D): THE SOCIO-ECONOMIC IMPACT OF THE WATER USE OR USES OR THE FAILURE TO AUTHORIZE THE WATER USE OR USES

The capital value of the activity on completion is expected to be R17 130 000. The proposed upgrades have the potential to contribute towards economic growth in the area as they are an improvement to the transport infrastructure.

SECTION 27(1(E): THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE

A catchment management strategy for the Gouritz Water Management Area has not been compiled. The study area falls within the Towerkop Nature Reserve which itself is part of the wider Swartberg Nature Reserve. These reserves contain most of the regions mountain catchment areas. Any loss of natural vegetation, invasion of the area by alien vegetation, or water quality impacts in the catchment areas can have significant consequences downstream.

SECTION 27(1)(F): THE LIKELY EFFECT OF THE WATER USE TO BE AUTHORISED ON THE WATER RESOURCE AND ON OTHER WATER USERS

CONSTRUCTION PHASE:

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Limited disturbance of freshwater related habitats at the road crossing sites	None
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Medium	-
Probability of occurrence:	Probable as a result of construction activities at road crossings over the identified rivers and streams	-
Degree to which impact can be reversed:	Partially reversible	-
Irreplaceability of resources:	Medium to low	-
Cumulative impact prior to mitigation:	Low due to the existing modification by the roads within the river channel	-
Significance of impact pre-mitigation	Low	-
Degree of mitigation possible:	Low to Very low	-
Proposed mitigation:	Work within the river channel should be limited as far as possible and the river bed and banks rehabilitated immediately afterwards. Construction within the river channel should preferably take place during the drier months of the year. The	-

	temporary bypass should be according to the recommended methods was provided in the previous section.	
Cumulative impact post mitigation:	Very Low	-
Significance after mitigation	Very Low/negligible	-

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Downstream ***water quality impacts*** as a result of runoff from construction activities	None
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Low	-
Probability of occurrence:	Probable	-
Degree to which impact can be reversed:	Reversible	-
Irreplaceability of resources:	Low	-
Cumulative impact prior to mitigation:	Low	-
Significance of impact pre-mitigation	Very Low	-
Degree of mitigation possible:	Low	-
Proposed mitigation:	Contaminated runoff from the construction site(s) should be prevented from entering the rivers/streams. All materials on the construction sites should be properly stored and contained. Disposal of waste from the sites should also be properly managed. Construction workers should be given ablution facilities at the construction sites that are located away from the river (at least 30m) and regularly serviced. These measures should be addressed, implemented and monitored in terms of the EMP for the construction phase. Sediment loads to river from construction activities should be prevented or minimized.	-
Cumulative impact post mitigation:	Very Low	-
Significance after mitigation	Very Low	-

Potential impact on freshwater features	Proposed upgrade to road crossings over watercourses	No-go Alternative
Nature of impact:	A temporary ***impedance of flow*** during construction activities	-
Extent and duration of impact:	Localised short term impacts	-
Intensity of Impact	Low	-
Probability of occurrence:	Probable	-
Degree to which impact can be reversed:	Reversible	-

Irreplaceability of resources:	Medium	-
Cumulative impact prior to mitigation:	Low	-
Significance of impact pre-mitigation	Very low	-
Degree of mitigation possible:	Very low	-
Proposed mitigation:	Activities within the river channel during the construction phase should be limited as far as possible in terms of their spatial and temporal extent. Construction work within the river channel should preferably take place before the onset of the rainfall period to ensure minimal impact on flow. In the longer term, the upgraded structures and the box culverts/pipes should not impede the flow and in particular the low flow in the river. In particular, the new culvert structures should not be placed higher than the base level of the river channel to ensure that low flows are not impeded. In addition, the culvert structures must be placed within the natural drainage line of the river. The structures should not impede the migration of fish species. All rubble and waste material associated with the river crossing upgrades that are within the channel should be removed after construction is complete.	-
Cumulative impact post mitigation:	Very Low to negligible impact	-
Significance after mitigation	Very Low	-

OPERATION PHASE

Potential impact on freshwater features	Proposed upgrade of road crossings over watercourses	No-go Alternative
Nature of impact:	Limited ***disturbance of freshwater related habitats*** at the road crossings where construction activities have taken place, with reduced the potential for flow modification and erosion	Ongoing ***disturbance of freshwater related habitats*** at the road crossings, with the potential for flow modification and erosion
Extent and duration of impact:	Localised longer term impacts	Localised longer term impacts
Intensity of Impact	Low	Low
Probability of occurrence:	Probable as a result of operation activities within the river channel and riparian zones	Probable as a result of operation activities within the river channel and riparian zones
Degree to which impact can be reversed:	Reversible	Reversible
Irreplaceability of resources:	Low	Medium
Cumulative impact prior to mitigation:	Low positive	Low negative
Significance of impact pre-mitigation	Low positive	Low negative
Degree of mitigation possible:	Very low	Very low
Proposed mitigation:	Disturbed areas should be revegetated post-construction phase to reduce the risk	Disturbed areas should be monitored and kept free of invasive alien plant growth.

	of erosion – these areas should be monitored and kept free of invasive alien plant growth. The channel upstream of the river crossings should be kept free of debris and sediment build-up, particularly at the culvert structures where it might impede flows. The roads should be maintained such that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road.	The channel upstream of the river crossings should be kept free of debris and sediment build-up, particularly at the culvert structures where it might impede flows. The roads should be maintained such that the concentration/intensity of runoff along the road is reduced to dissipate the energy and erosion potential of the flow from the road.
Cumulative impact post mitigation:	Low positive	Low negative
Significance after mitigation	Low positive	Low negative

SECTION 27(1)(G): THE CLASS AND RESOURCE QUALITY OBJECTIVES OF THE WATER RESOURCE

The main freshwater features in the study area are the Seweweekspoort River, a tributary of the Kobus Tributary (J25B) in the Gouritz River System. There are some turbutaries and valley bottom wetland areas associated with the river in the area where the road will be upgraded. The present ecological state of the river system within the pass is largely natural. The ecological importance and sensitivity of the river is high and for the wetland areas is moderate to high. The Seweweekspoort River and tributaries is mapped as a Fish Support Area. Most of the study area is located within the formally protected Towerkop Nature Reserve, with the southern portion also forming part of a Mountain Catchment Area. The portions of the study area immediately north and south of the protected areas are mapped as Critical Biodiversity Areas that should be protected.

SECTION 27(1)(H): INVESTMENTS ALREADY MADE AND TO BE MADE BY THE WATER USER IN RESPECT OF THE WATER IN QUESTION

The capital value of the activity on completion is expected to be R17 130 000.

SECTION 27(1)(I): THE STRATEGIC IMPORTANCE OF THE WATER USE TO BE AUTHORISED

The proposed activity is not considered a strategic water use

SECTION 27(1)(J): THE QUALITY OF THE WATER RESOURCE WHICH MAY BE REQUIRED FOR THE RESERVE AND FOR MEETING INTERNATIONAL OBLIGATIONS

The present ecological state of the river system within the pass is largely natural. The ecological importance and sensitivity of the river is high and for the wetland areas is moderate to high. The Seweweekspoort River and tributaries is mapped as a Fish Support Area. Most of the study area is located within the formally protected Towerkop Nature Reserve, with the southern portion also forming part of a Mountain Catchment Area. The portions of the study area immediately north and south of the protected areas are mapped as Critical Biodiversity Areas that should be protected. See the Freshwater Assessment Report for more details.

SECTION 27(1)(K):THE PROBABLE DURATION OF ANY UNDERTAKING FOR WHICH A WATER USE IS TO BE AUTHORISED

The water use is long term in accordance with the lifespan of the infrastructure.

BLUE SCIENCE®
www.bluescience.co.za

Ref: P309-Aug16 Seweweekspoort road upgrade
Your reference:

PO Box 455
Somerset Mall
7137
Tel: (021) 851 0555

email: toni.b@iburst.co.za
Email: dana@bluescience.co.za

20 March 2017

Breede-Gouritz Catchment Management Agency
101 York Street
George
6530

BREEDE-GOURITZ CMA
20 MAR 2017

Zama Mbunquka

Dear Sir/Madam

WATER USE AUTHORISATION APPLICATION: PROPOSED FLOOD DAMAGE REPAIRS TO STRUCTURES ON MR309 IN SEWEWEEKSPOORT PASS

Attached please find the water use authorisation application for the proposed flood damage repairs to structures on MR309 in the Seweweekspoort Pass near Ladismith in the Western Cape. Included in the application is the following documentation:

DOCUMENT	√
Payment of Registration fee of R114.00 – *will be paid once it is confirmed that this is a WULA process*	
Fully completed licence application forms: • DW758 – Part 1: Applicant Details • DW763 – Section 21 c water use • DW768 – Section 21 i water use • DW901 – Property details • DW902 – Property owner details	√
Supplementary form for 21 c and i	√
Section 27 Motivation	√
BEE Certificate and / or information – *the applicant is a Government Department*	
Certified ID of applicant/company registration certificate	√
Property's title deed information / Land owner agreements	√
Copy of property's zoning document	
A copy of 1:50 000 topographic map / 1:10 000 indicating map name number of farm boundaries including subdivision.	√
Civil drawings and engineering report	√
Environment Impact Assessment Report and related documentation (*this has been sent as part of the Environmental Authorisation process to your offices for comment*)	
Freshwater Assessment Report	√
Risk Assessment	√

It would be appreciated it if you could provide us with an acknowledgement letter for the receipt of the application and give the application your attention at your soonest convenience. We are of the opinion that all potential significant impacts have been mitigated as far as possible within the Environmental Impact Assessment for the project. Due to the extent of the works and the sensitivity of the section of river in which the works are to be undertaken it is however likely that the proposed activities will need to be authorised in terms of the National Water Act (Act 36 of 1998) by means of a water use licence.

Please do not hesitate to contact me should have any questions in this regard.

Kind Regards

Toni Belcher

Aquatic Scientist (Pr. Sci. Nat 400040/10)