

# **APPENDIX F**

## **IMPACT ASSESSMENT**

**F1 – PREFERRED ALTERNATIVE**

**F2 – ALTERNATIVE 2**

**F3 – ALTERNATIVE 3**

# **APPENDIX F1**

## **PREFERRED ALTERNATIVE**

Impact	Details	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
General construction impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Increased traffic</li> <li>Dust</li> <li>Emissions</li> <li>Aesthetic / visual impacts</li> <li>Waste generation</li> <li>Cement mixing and contamination of soil and water</li> </ul>	Yes	-	2	1	4	4	28	LOW
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Contamination of soil and water from chemical ablution facilities</li> <li>Incorrect waste storage and handling, resulting in contamination of the environment</li> <li>Increased risk of veld fire</li> <li>Deterioration of road surfaces resulting from increased heavy vehicle traffic</li> </ul>	Yes	-	2	2	2	3	18	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Disposal of wastes impacting capacity of disposal facilities</li> <li>Increased ambient noise and dust levels.</li> </ul>	Yes	-	3	2	2	3	21	LOW
Soil impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Compaction, physical removal and pollution of soils</li> <li>Increased potential for erosion</li> </ul>	Yes	-	1	2	2	3	15	LOW
Hydrology Impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of riparian vegetation and wetland habitat</li> <li>Disturbance and modification of the bed and banks of watercourses</li> </ul>	Yes	-	2	2	6	4	40	MEDIUM
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Impairment of water quality.</li> </ul>	Yes	-	2	2	4	3	24	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of aquatic biodiversity.</li> <li>Altered hydrological regime</li> <li>Increased erosion.</li> </ul>	Yes	-	1	2	2	4	20	LOW

<b>Vegetation impacts</b>	<b>DIRECT IMPACTS</b> • Loss of terrestrial vegetation and habitat • Need to relocate two protected plant species	Yes	-	1	2	2	4	20	LOW
	• Clearance of alien vegetation.	Not required	+	1	2	4	3	21	LOW
	<b>INDIRECT IMPACTS</b> • Spread of alien invasive vegetation as a result of vegetation and soil disturbances	Yes	-	1	2	4	3	21	LOW
	<b>CUMULATIVE IMPACTS</b> • Loss of vegetation / biodiversity for conservation purposes. • Increased habitat fragmentation	Yes	-	2	3	2	3	21	LOW
<b>Faunal impacts</b>	<b>DIRECT IMPACTS</b> • Destruction and loss of habitat	Yes	-	1	2	2	3	15	LOW
	<b>INDIRECT IMPACTS</b> • Development within a corridor identified in the ECBCP.	Yes	-	2	2	2	3	18	LOW
<b>Heritage impacts</b>	<b>DIRECT IMPACTS</b> • Impact on three identified heritage sites. • Impact on graves	Yes	-	1	2	2	2	10	LOW
	<b>INDIRECT IMPACTS</b> • Damage to sub-surface heritage resources	Yes	-	1	2	2	2	10	LOW
<b>Social Impacts</b>	<b>DIRECT IMPACTS</b> • Impact on land uses which have encroached into the SANRAL servitude	Yes	-	1	4	6	4	44	MEDIUM
	• Creation of skilled, semi-skilled and unskilled jobs	Not required	+	3	2	4	4	36	MEDIUM
	<b>INDIRECT IMPACTS</b> • Promotion of skills transfer • Stimulated economic growth • Economic benefits for construction-related industry / business	Not required	+	3	2	4	4	36	MEDIUM
	<b>CUMULATIVE IMPACTS</b> • Loss of agricultural land.	No	-	1	4	2	3	21	LOW
<b>Economic impacts</b>	<b>DIRECT IMPACTS</b> • Economic empowerment of construction workers.	Not required	+	2	2	4	4	32	MEDIUM

	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>• Economic benefits for construction-related industry / business</li> <li>• Economic stimulation of the region.</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>• Improved livelihoods</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM

## **APPENDIX F2**

### **ALTERNATIVE 2**

Impact	Details	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
General construction impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Increased traffic</li> <li>Dust</li> <li>Emissions</li> <li>Aesthetic / visual impacts</li> <li>Waste generation</li> <li>Cement mixing and contamination of soil and water</li> </ul>	Yes	-	2	1	4	4	28	LOW
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Contamination of soil and water from chemical ablution facilities</li> <li>Incorrect waste storage and handling, resulting in contamination of the environment</li> <li>Increased risk of veld fire</li> <li>Deterioration of road surfaces resulting from increased heavy vehicle traffic</li> </ul>	Yes	-	2	2	2	3	18	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Disposal of wastes impacting capacity of disposal facilities</li> <li>Increased ambient noise and dust levels.</li> </ul>	Yes	-	3	2	2	3	21	LOW
Soil impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Compaction, physical removal and pollution of soils</li> <li>Increased potential for erosion</li> </ul>	Yes	-	1	2	2	3	15	LOW
Hydrology Impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of riparian vegetation and wetland habitat</li> <li>Disturbance and modification of the bed and banks of watercourses</li> </ul>	Yes	-	2	2	6	4	40	MEDIUM
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Impairment of water quality.</li> </ul>	Yes	-	2	2	4	3	24	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of aquatic biodiversity.</li> <li>Altered hydrological regime</li> <li>Increased erosion.</li> </ul>	Yes	-	1	2	2	4	20	LOW

<b>Vegetation impacts</b>	<b>DIRECT IMPACTS</b> • Loss of terrestrial vegetation and habitat • Need to relocate two protected plant species	Yes	-	1	2	2	4	20	LOW
	• Clearance of alien vegetation.	Not required	+	1	2	4	3	21	LOW
	<b>INDIRECT IMPACTS</b> • Spread of alien invasive vegetation as a result of vegetation and soil disturbances	Yes	-	1	2	4	3	21	LOW
	<b>CUMULATIVE IMPACTS</b> • Loss of vegetation / biodiversity for conservation purposes. • Increased habitat fragmentation	Yes	-	2	3	2	3	21	LOW
<b>Faunal impacts</b>	<b>DIRECT IMPACTS</b> • Destruction and loss of habitat	Yes	-	1	2	2	3	15	LOW
	<b>INDIRECT IMPACTS</b> • Development within a corridor identified in the ECBCP.	Yes	-	2	2	2	3	18	LOW
<b>Heritage impacts</b>	<b>DIRECT IMPACTS</b> • Impact on three identified heritage sites. • Impact on graves	Yes	-	1	2	2	2	10	LOW
	<b>INDIRECT IMPACTS</b> • Damage to sub-surface heritage resources	Yes	-	1	2	2	2	10	LOW
<b>Social Impacts</b>	<b>DIRECT IMPACTS</b> • Impact on land uses which have encroached into the SANRAL servitude	Yes	-	1	4	6	4	44	MEDIUM
	• Creation of skilled, semi-skilled and unskilled jobs	Not required	+	3	2	4	4	36	MEDIUM
	<b>INDIRECT IMPACTS</b> • Promotion of skills transfer • Stimulated economic growth • Economic benefits for construction-related industry / business	Not required	+	3	2	4	4	36	MEDIUM
	<b>CUMULATIVE IMPACTS</b> • Loss of agricultural land.	No	-	1	4	2	3	21	LOW
<b>Economic impacts</b>	<b>DIRECT IMPACTS</b> • Economic empowerment of construction workers.	Not required	+	2	2	4	4	32	MEDIUM



	<ul style="list-style-type: none"> <li>The cost for SANRAL of constructing alternative 2 is approximately R 10 million more than the cost of constructing the preferred alternative</li> </ul>	Construct the preferred alternative.	-	5	2	6	4	52	MEDIUM
	<p><b>INDIRECT IMPACTS</b></p> <ul style="list-style-type: none"> <li>Economic benefits for construction-related industry / business</li> <li>Economic stimulation of the region.</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM
	<p><b>CUMULATIVE IMPACTS</b></p> <ul style="list-style-type: none"> <li>Improved livelihoods</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM

## **APPENDIX F3**

### **ALTERNATIVE 3**

Impact	Details	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
General construction impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Increased traffic</li> <li>Dust</li> <li>Emissions</li> <li>Aesthetic / visual impacts</li> <li>Waste generation</li> <li>Cement mixing and contamination of soil and water</li> </ul>	Yes	-	2	1	4	4	28	LOW
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Contamination of soil and water from chemical ablution facilities</li> <li>Incorrect waste storage and handling, resulting in contamination of the environment</li> <li>Increased risk of veld fire</li> <li>Deterioration of road surfaces resulting from increased heavy vehicle traffic</li> </ul>	Yes	-	2	2	2	3	18	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Disposal of wastes impacting capacity of disposal facilities</li> <li>Increased ambient noise and dust levels.</li> </ul>	Yes	-	3	2	2	3	21	LOW
Soil impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Compaction, physical removal and pollution of soils</li> <li>Increased potential for erosion</li> </ul>	Yes	-	1	2	2	3	15	LOW
Hydrology Impacts	<b>DIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of riparian vegetation and wetland habitat</li> <li>Disturbance and modification of the bed and banks of watercourses</li> </ul>	Yes	-	2	2	6	4	40	MEDIUM
	<b>INDIRECT IMPACTS</b> <ul style="list-style-type: none"> <li>Impairment of water quality.</li> </ul>	Yes	-	2	2	4	3	24	LOW
	<b>CUMULATIVE IMPACTS</b> <ul style="list-style-type: none"> <li>Loss of aquatic biodiversity.</li> <li>Altered hydrological regime</li> <li>Increased erosion.</li> </ul>	Yes	-	1	2	2	4	20	LOW

<b>Vegetation impacts</b>	<b>DIRECT IMPACTS</b> • Loss of terrestrial vegetation and habitat • Need to relocate two protected plant species	Yes	-	1	2	2	4	20	LOW
	• Clearance of alien vegetation.	Not required	+	1	2	4	3	21	LOW
	<b>INDIRECT IMPACTS</b> • Spread of alien invasive vegetation as a result of vegetation and soil disturbances	Yes	-	1	2	4	3	21	LOW
	<b>CUMULATIVE IMPACTS</b> • Loss of vegetation / biodiversity for conservation purposes. • Increased habitat fragmentation	Yes	-	2	3	2	3	21	LOW
<b>Faunal impacts</b>	<b>DIRECT IMPACTS</b> • Destruction and loss of habitat	Yes	-	1	2	2	3	15	LOW
	<b>INDIRECT IMPACTS</b> • Development within a corridor identified in the ECBCP.	Yes	-	2	2	2	3	18	LOW
<b>Heritage impacts</b>	<b>DIRECT IMPACTS</b> • Impact on three identified heritage sites. • Impact on graves	Yes	-	1	2	2	2	10	LOW
	<b>INDIRECT IMPACTS</b> • Damage to sub-surface heritage resources	Yes	-	1	2	2	2	10	LOW
<b>Social Impacts</b>	<b>DIRECT IMPACTS</b> • Impact on land uses which have encroached into the SANRAL servitude	Yes	-	1	4	6	4	44	MEDIUM
	• Creation of skilled, semi-skilled and unskilled jobs	Not required	+	3	2	4	4	36	MEDIUM
	<b>INDIRECT IMPACTS</b> • Promotion of skills transfer • Stimulated economic growth • Economic benefits for construction-related industry / business	Not required	+	3	2	4	4	36	MEDIUM
	<b>CUMULATIVE IMPACTS</b> • Loss of agricultural land.	No	-	1	4	2	3	21	LOW
<b>Economic impacts</b>	<b>DIRECT IMPACTS</b> • Economic empowerment of construction workers.	Not required	+	2	2	4	4	32	MEDIUM

	<ul style="list-style-type: none"> <li>Surfacing alternative 3 will not enable SANRAL to meet its stated objective of achieving a 25 year design horizon.</li> </ul>	Construct the preferred alternative.	-	4	5	8	4	68	HIGH FATAL FLAW
	<p><b>INDIRECT IMPACTS</b></p> <ul style="list-style-type: none"> <li>Economic benefits for construction-related industry / business</li> <li>Economic stimulation of the region.</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM
	<p><b>CUMULATIVE IMPACTS</b></p> <ul style="list-style-type: none"> <li>Improved livelihoods</li> </ul>	Not required	+	3	2	4	4	36	MEDIUM