



## Appendix J – Impact Assessment

## **DR 1797 Road Upgrade Project**

**DEA&DP Reference Number: 16/3/3/1/D1/9/0011/20** 

Hatch project number: H357403



112(1)

Table 1-2: Expected Impacts for the No-Go Alternative

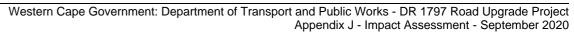
			No Go	Alternative										
Activity	Nature of Impact	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Conseque	nce	Probability	Overall	Status of Impact					
				` '	Combined Score	Rating	Obability	Significance	Ctatae of Impact					
			Agrice	ulture / Soils										
Should the DR 1797 Road not be upgraded, there will be no loss of agricultural land	Direct	1	1	1	3	Very Low	Definite	Very Low	Positive Impact					
be no loss of agricultural land			Lands	cape / Visual										
Should the DR 1797 Road not be upgraded, current	Direct	1	2	2	5	Low	Definite	Low	Negative Impact					
poor road alignment and visibility may remain.		·		and Cultural Heritage										
Not Applicable			Archaeologicar	and Cultural Heritage										
			Pale	eontology										
Not Applicable														
Continuation of infactation of alian invasive variation		Terre	strial Biodiversity inc	luding Plant and Anin	nal Species	T		_						
tinuation of infestation of alien invasive vegetation g the DR 1797 Road.  Direct  1 2 1 4 Very Low Definite Very Low Negative Impact  A a gricultural land will be expropriation, no Direct 1 2 3 6 Medium Definite Positive Impact														
As no agricultural land will be expropriation, no indigenous vegetation will be lost.	Direct	1	2	3	6	Medium	Definite	Medium	Positive Impact					
			Aquatio	Biodiversity										
Continuation of infestation of alien invasive vegetation along the DR 1797 Road and within channels may disperse and migrate into the water courses.	Direct	1	2	2	5	Low	Possible	Very Low	Negative Impact					
The drainage throughout the DR 1797 Road has not been maintained, this has compromised the flow of water and may continue to impact on the aquatic biodiversity.	Direct	1	2	2	5	Low	Definite	Low	Negative Impact					
blodivolotty.				Noise										
Not Applicable														
Nist Applicable				Traffic										
Not Applicable			Geo	otechnical										
Not Applicable				ncommou.										
			Socio-Econ	omic Environment										
Should the DR 1797 Road not be upgraded the current socio-economic status of the area may remain unchanged.	Direct	2	2	2	6	Medium	Possible	Low	Negative Impact					
Should the DR 1797 Road not be upgraded poor road conditions and safety problems may persist.	Direct	1	2	2	5	Low	Possible	Very Low	Negative Impact					
conditions and safety problems may persist.			Ai	L r Quality										
Nuisance dust fallout as result of traffic on the gravel DR 1797 Road will continue should the DR 1797 Road not be upgrade.	Direct	1	2	2	5	Low	Definite	Low	Negative Impact					
			Topograp	hy and Climate			•							
Not Applicable				) I										
Not Applicable			G	ieology										
ויטו האףוונמטוב														



HATCH

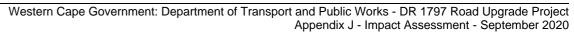
## Table 3: Expected Impacts, Cumulative Impacts and Residual Impacts for the Preferred Alternative – CONSTRUCTION PHASE

							Construction Ph	ase				
	Nature of	Impact	Extent	Intensity	Duration		equence		Overall	Status	****	Confidence
Activity	Impact	Туре	(1-3)	(1-3)	(1-3)	Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation	of Assessment
						00010	Agriculture / So	ils		paot		7.000001110111
Portion of small holding to be		Expected	1	2	3	6	Medium	Definite	Medium	Magativa	Landouver to be companyed of a syntantiated	
expropriated for the upgrade	Direct	Cumulative	1	2	3	6	Medium	Definite	Medium	Negative Impact	Landowner to be compensated for expropriated land	High
of the DR 1797 Road.		Residual	1	1	3	5	Low	Definite	Low	IIIIpact		
Areas with high land capability		Expected	1	2	3	6	Medium	Definite	Medium	_	Areas of high land capability avoided where	
to be expropriated for the		Cumulative	1	2	3	6	Medium	Definite	Medium	Nanativa	possible.	4
upgrade of the DR 1797 Road.	Direct	Residual	1	1	3	5	Low	Definite	Low	Negative Impact	<ul> <li>Disturbed areas as part of the construction activities (excluding the expropriation areas, , to be rehabilitation back to natural state, where possible.</li> </ul>	High
Clearance of vegetation due to the DR 1797 Road upgrade and expropriation of land may lead to soil erosion.		Expected	1	2	1	4	Very Low	Possible	Insignificant		<ul> <li>Remove all topsoil from construction areas and expropriation areas and stockpile in a demarcated area.</li> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas.</li> <li>During the construction phase, special attention must be given to the maintenance of topsoil, soil</li> </ul>	
	Direct	Cumulative	1	2	1	4	Very Low	Improbable	Insignificant	Negative Impact	<ul> <li>and subsoil stockpiles to avoid erosion and alien invasion.</li> <li>Stockpiles may not be higher than 2 m.</li> <li>Areas where rehabilitation occurs, removal of any topsoil must be sufficiently restored through sustainable measures and practices.</li> <li>Erosion control measures (for wind and water erosion) must be implemented and maintained in areas disturbed by construction such as berms to hinder stormwater flow, revegetation of areas with indigenous vegetation.</li> <li>In the case of dust fallout due to the topsoil stockpiled, water or an appropriate dust suppressant must be sprayed onto topsoil stockpiles until such time as the topsoil stockpiles natural seedbank has been restored. Water may not be used from any watercourse without a WUL.</li> <li>To reduce dust fallout due to the road upgrades, water or an appropriate dust suppressant must be sprayed onto the road.</li> <li>In areas where disturbance have occurred due to construction activities, a concerted effort must be made to actively rehabilitate, repaired or reshaped banks with indigenous local vegetation.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put in place to manage the impacts, then little to no residual impacts should remain.	



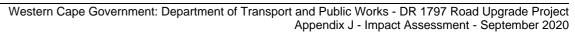


							Construction Ph	ase			
	Nature of	Impact	Extent	Intensity	Duration	Cons	equence		Overall	Status	Confidence
Activity	Impact	Туре	(1-3)	(1-3)	(1-3)	Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation of Assessment
	Indirect – Eroded soil could possibly	Expected	1	2	1	4	Very Low	Probable	Very Low		<ul> <li>Erosion control measures (for wind and water erosion) must be implemented and maintained in areas disturbed by construction such as berms to hinder stormwater flow, revegetation of areas with indigenous vegetation.</li> <li>Soil stockpiles must not be deposited / stored within riparian areas (watercourses and their</li> </ul>
	end up in surrounding surface water features	Cumulative	1	1	1	3	Very Low	Improbable	Insignificant	Negative Impact	<ul> <li>banks).</li> <li>Stormwater management on site must be in line with the DEA&amp;DP Maintenance Management Plan (MMP) Guidelines (DEA&amp;DP, 2017) to prevent soil erosion.</li> </ul>
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.
Soil compaction due to heavy machinery and equipment	hinery and equipment Expecte	Expected	1	2	1	4	Very Low	Probable	Very Low		Construction vehicles must be restricted to the physical footprint of road reserve and
	Cumulative	1	1	1	3	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>expropriation areas</li> <li>Construction activities are to remain within the physical footprint of road reserve and expropriation areas</li> <li>Physical footprint of road reserve and expropriation areas are to be demarcated.</li> <li>Where soil compaction has occurred in areas to be rehabilitated, these areas are to be ripped and seeded with indigenous vegetation mix.</li> </ul>	
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.
		Expected	1	2	1	4	Very Low	Probable	Very Low		Construction vehicles must be restricted to the physical footprint of road reserve and expropriation areas
Indirect – Soil compaction resulting poor infiltration and increased runoff to surrounding system	Cumulative	1	2	1	4	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>Construction activities are to remain within the physical footprint of road reserve and expropriation areas</li> <li>Physical footprint of road reserve and expropriation areas are to be demarcated.</li> <li>Where soil compaction has occurred in areas to be rehabilitated, these areas are to be ripped and seeded with indigenous vegetation mix.</li> <li>Where runoff occurs, stormwater berms must be used and silt traps must be installed and maintained.</li> </ul>	
	System	Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.



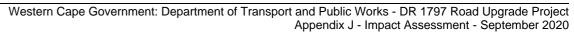


							Construction Ph	ase				
Activity	Nature of Impact	Impact Type	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Cons Combined Score	equence Consequence Rating	Probability	Overall Significance	Status of Impact	Mitigation	Confidence of Assessment
Soil pollution due to hazardous substances spills.		Expected	2	3	1	6	Medium	Probable	Medium		<ul> <li>Environmental conditions must be included in any construction contracts, thereby making contractors accountable for preventing accidental spillages and well as allowing contractors to cost for environmental conditions.</li> <li>All earth moving vehicles and equipment must be regularly maintained. No repairs may be undertaken on site unless it is an emergency repair and the vehicles cannot be moved. All repairs must be conduct on a impervious surfaces to prevent soil contamination.</li> <li>All earth moving vehicles and equipment must have the relevant drip trays (geyser drip trays are not acceptable) strategically placed underneath to prevent any soil contamination. In particular, drip trays are to be closely monitored during rain</li> </ul>	
	Direct	Cumulative	2	2	1	5	Low	Possible	Very Low	Negative Impact	<ul> <li>events to ensure that they do not overflow</li> <li>All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. Storage areas must have a roof and be well ventilated and marked with appropriate signage (volume of bunded areas, volume of hazardous substances within in bund). Material Safety Data Sheet (MSDS) must be available on site for all hazardous substances.</li> <li>If a spillage of a hazardous substance occurs, the spill must be stopped, minimized and the resultant hazardous waste must be cleaned up using absorbent material provided in spill kits on site and disposed of in a designated hazardous waste bin.</li> <li>Any incidents must be reported as soon as possible. Measures must be put in place to prevent similar incidences from occurring. If necessary, remediation of any contamination must be carried out.</li> <li>All hazardous waste must be stored in designated, lined and bunded areas (for no longer than 90 days</li> <li>All hazardous waste must be disposed of at a registered hazardous waste disposal facility.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	



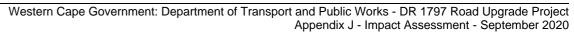


							Construction Ph	ase				
Activity	Nature of Impact	Impact Type	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Cons Combined Score	equence Consequence Rating	Probability	Overall Significance	Status of Impact	Mitigation	Confidence of Assessment
Loss of topsoil due to incorrect stockpiling and poor rehabilitation		Expected	1	3	1	5	Low	Improbable	Very Low		<ul> <li>Remove all topsoil from construction areas and expropriation areas and stockpile in a demarcated area.</li> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas.</li> <li>During the construction phase, special attention</li> </ul>	
Incorrect disposal of waste aggregate.	Direct	Cumulative	1	3	1	5	Low	Improbable	Very Low	Negative Impact	<ul> <li>must be given to the maintenance of topsoil, soil and subsoil stockpiles to avoid erosion and alien invasion.</li> <li>Topsoil stockpiles must be maintained to ensure no alien invasive vegetation growth or erosion occurs.</li> <li>Stockpiles may not be higher than 2 m.</li> <li>In the case of dust fallout due to the topsoil stockpiled, water or an appropriate dust suppressant must be sprayed onto topsoil stockpiles until such time as the topsoil stockpiles natural seedbank has been restored. Water may not be used from any watercourse without a WUL.</li> <li>Topsoil stockpiles to be monitored and inspected weekly for vegetation establishment, alien removal, and extent of erosion.</li> <li>If mitigation measures are put into place to</li> </ul>	High
		Residual	1	3	1	5	Low	Improbable	Very Low		manage the impacts, then little to no residual impacts should remain.	
Incorrect disposal of waste aggregate.	Indirect	Expected	1	2	1	4	Very Low	Possible	Insignificant		All waste aggregate to be removed from site immediately and disposed of at a license waste management facility, unless material is reused	
	Impact – Waste material not stockpiled and stored	Cumulative	1	2	1	4	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>during construction activities.</li> <li>Separate waste disposal skips to be obtained for various waste streams, where possible.</li> <li>If waste aggregate is stockpiled on site, this must be within the allocated demarcated area.</li> </ul>	High
	correctly	Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Loss of agricultural land due to poorly demarcate		Expected	1	3	3	7	High	Possible	Medium		During the engineering phase of the project, areas of environmental and socio-economic	
expropriation areas.	riation areas.	Cumulative	1	2	3	6	Medium	Improbable	Low	Negative Impact	<ul> <li>importance were avoided, where possible.</li> <li>All construction and expropriation areas to be demarcated prior to clearing activities.</li> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas.</li> </ul>	High
		Residual	1	1	3	5	Low	Improbable	Very Low		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
			l .				Landscape / Vis		.,			
	Direct	Expected	1	1	1	3	Very Low	Definite	Very Low			High



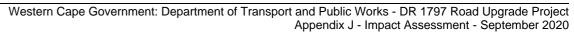


							Construction Ph	ase				
Activity	Nature of	Impact	Extent	Intensity	Duration	Cons Combined	equence Consequence	Probability	Overall	Status of	Mitigation	Confidence of
Activity	Impact	Type	(1-3)	(1-3)	(1-3)	Score	Rating	Probability	Significance	Impact	Mitigation	Assessment
Litter and bad housekeeping from construction staff.		Cumulative	1	1	1	3	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>All construction staff will be made aware of the waste management conditions in line the EMPr.</li> <li>Waste bins must to be made available by the contractor for the disposal of general and hazardous waste. Proof of disposal must be obtained and kept on site.</li> <li>Daily site walk throughs must be undertaken by the contractors before the shift ends to clean the site.</li> </ul>	
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Clearing of vegetation in expropriation areas.	Direct	Expected	1	2	3	6	Medium	Definite	Medium	Negative Impact	<ul> <li>During the engineering phase of the project, areas of environmental and socio-economic importance were avoided, where possible.</li> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas.</li> <li>Remove all topsoil from construction areas and expropriation areas and stockpile in a demarcated area.</li> <li>Ensure that all existing indigenous vegetation is retained wherever possible. Where possible, indigenous vegetation is to be stored in a nursery and used as part of rehabilitation. and</li> <li>Rehabilitate areas all disturbed areas caused by the construction activities (excluding the expropriation areas, where possible.</li> </ul>	High
		Cumulative	1	1	3	5	Low	Possible	Very Low		If mitigation measures for the expected impacts are adhered to, the cumulative impacts will be minimal.	
		Residual	1	1	3	5	Low	Improbable	Very Low		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Inadequate rehabilitation of the construction footprint.		Expected	1	3	2	6	Medium	Probable	Medium		Disturbed areas caused due to the construction activities are to be rehabilitated as soon as construction activities within those areas have ceased.	
	Direct	Cumulative	1	2	1	4	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>The ECO to conduct a close out inspection of rehabilitation areas before the contractor leaves site to ensure that effective rehabilitation has been carried out. A close-out audit must be compiled in this regard.</li> <li>Rehabilitation conditions must be incorporated into the construction contractors' requirements.</li> </ul>	High
	Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.		
		l				Archaeo	logical and Cultu	ıral Heritage				



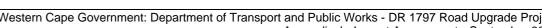


							Construction Ph	ase				
A contraction	Nature of	Impact	Extent	Intensity	Duration		equence	Bush shilling	Overall	Status	Military	Confidence
Activity	Impact	Type	(1-3)	(1-3)	(1-3)	Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation	of Assessment
Archaeological and cultural heritage chance finds during the excavation within the expropriation areas.	Direct	Expected	1	3	1	5	Low	Possible	Very Low	Negative Impact	<ul> <li>All contractors to implement "Chance Find Procedure" as per the EMPr.</li> <li>Should any archaeological artefacts be exposed during construction, the activities near the findings must be stopped immediately. Under no circumstances shall any artefact be destroyed. Such an archaeological site must be marked and fenced off, and the South African Heritage Agency must be contacted immediately. If these appear to be human remains. the South African Police Service must also be contacted.</li> </ul>	High
		Cumulative	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures for the expected impacts are adhered to, the cumulative impacts will be minimal.	
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
							Paleontology					
Paleontological chance finds during the excavation within the expropriation areas.	Direct	Expected	1	3	1	5	Low	Possible	Very Low	Negative Impact	<ul> <li>All contractors to implement "Chance Find Procedure" as per the EMPr.</li> <li>Should any paleontological artefacts be exposed during construction, the activities near the findings must be stopped immediately. Under no circumstances shall any artefact be destroyed. Such a paleontological site must be marked and fenced off, and the South African Heritage Agency must be contacted immediately.</li> </ul>	High
		Cumulative	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures for the expected impacts are adhered to, the cumulative impacts will be minimal.	
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
					Terres	strial Biodiver	sity including Pla	nt and Anima	l Species			
Loss of Tsitsikamma Sandstone Fynbos.	Direct	Expected	1	1	3	5	Low	Probable	Low	Negative Impact	<ul> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas</li> <li>Prior to the commencement of vegetation clearing, search and rescue for fynbos bulb populations by a trained specialist.</li> <li>Where possible, Where possible, the fynbos bulbs should be stored in a nursery and used as part of rehabilitation t.</li> </ul>	High





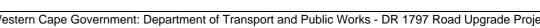
							Construction Pha	ase				
Activity	Nature of	Impact	Extent	Intensity	Duration	Cons Combined	equence Consequence	Probability	Overall	Status of	Mitigation	Confidence of
Activity	Impact	Туре	(1-3)	(1-3)	(1-3)	Score	Rating	Frobability	Significance	Impact		Assessment
		Cumulative	1	1	2	4	Very Low	Probable	Very Low		<ul> <li>Where possible, aloes planted within the road reserve, should be removed and stored in a nursery and used as part of rehabilitation</li> <li>Where <i>Dovyalis caffra</i> (Kei Apple) has been planted on private property to form security hedges, the plants should be removed and, where possible, kept in a nursery for later replanting. This must be negotiated with the respective landowners.</li> </ul>	
		Residual	1	1	2	4	Very Low	Probable	Very Low		<ul> <li>If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.</li> </ul>	
Potential loss of species of concern (namely <i>Afrocarpus</i>		Expected	1	2	3	6	Medium	Definite	Medium		If avoidance is not possible, impacted protected tree species are to be replaced (like-for-like)	
falcatus (Outeniqua	Direct	Cumulative	1	2	3	6	Medium	Definite	Medium	Negative	where possible), in a suitable nearby location.	High
Yellowwood) and Pittosporum viridiflorum (Cheesewood).		Residual	1	1	3	5	Low	Definite	Low	Impact	<ul> <li>Protected species permits are required from the DEFF for disturbance (cutting or removal) of the Protected trees.</li> </ul>	
Potential sedimentation and		Expected	1	2	1	4	Very Low	Definite	Very Low		Erosion control measures (for wind and water	
erosion due to construction activities.		Cumulative	1	2	1	4	Very Low	Probable	Very Low		<ul> <li>erosion) must be implemented and maintained in areas disturbed by construction such as berms to hinder stormwater flow, revegetation of areas with indigenous vegetation.</li> <li>Topsoil, soil and subsoil must be stockpiled separately, for rehabilitation purposes.</li> <li>Stockpiles must not be deposited / stored within riparian areas (watercourses and their banks).</li> <li>Stockpiles may not be higher than 2 m.</li> <li>During rehabilitation, prompt and progressive</li> </ul>	
	Direct	Residual	1	1	1	3	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>reinstatement of bare areas is required. The topsoil layer is to be replaced on top during reinstatement.</li> <li>Erosion control measures (for wind and water erosion) must be implemented and maintained in areas disturbed by construction such as berms to hinder stormwater flow, revegetation of areas with indigenous vegetation.</li> <li>Any disturbed areas caused as a result of the construction activities which may lay bare for an extended periods, should be temporarily grassed.</li> <li>Checks must be carried out at regular intervals to identify areas where erosion is occurring.</li> <li>Where paths may cause erosion, these paths should be relocated and rehabilitated to reduce further erosion.</li> <li>Increased sediment loads must be prevented from entering watercourses.</li> </ul>	High





Western Cape Government: Department of Transport and Public Works - DR 1797 Road Upgrade Project Appendix J - Impact Assessment - September 2020

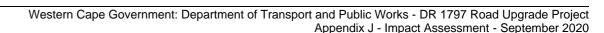
Activity  Mature of Impact  Impact  Mitigation  Assessmen  Indicatation of allein invasive species within areas where construction activities have occurred.  Expected  1 2 3 6 Medium  Possible  Low  Cumulative  1 1 1 1 3 Very Low  Possible  Insignificant  Insignificant  Possible  Insignificant  Insignificant  Insignificant  Activity  Mitigation  Assessmen  Activity  Mitigation  Assessmen  Asse								Construction Ph	ase				
Infestation of allen invasive species within areas where construction activities have occurred.  Expected 1 2 3 6 Medium Possible Low Cumulative 1 1 1 1 1 3 Very Low Possible Insignificant  Expected 1 2 3 6 Medium Possible Low Occurred.  Cumulative 1 1 1 1 1 3 Very Low Possible Insignificant  Direct  Direct  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Activity						Cons	equence				Mitigation	Confidence of
Expected 1 2 3 6 Medium Possible Low Cumulative 1 1 1 1 3 Very Low Possible Insignificant  Cumulative 1 1 1 1 3 Very Low Possible Insignificant  Direct  Presidual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 1 3 Very Low Possible Insignificant  Were Low Possible Insignificant Insignifican	Infrartation of all and a section	impact	Туре	(1-3)	(1-3)	(1-3)				Significance	Impact		Assessment
Cumulative 1 1 1 3 Very Low Possible Insignificant    Cumulative   1	species within areas where construction activities have		Expected	1	2	3	6	Medium	Possible	Low		road reserve and expropriation areas  • Upon commencement of construction, a	
Direct  Direct  Residual 1 1 1 3 Very Low Possible Insignificant  Residual 1 1 1 1 0 3 Very Low Possible Insignificant  Residual 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	occurred.		Cumulative	1	1	1	3	Very Low	Possible	Insignificant		present in the physical footprint of road reserve and expropriation areas must be made.  • After revegetation has been completed, the Contractor must remove weeds and alien	
Aquatic Biodiversity		Direct	Residual	1	1	1				Insignificant		<ul> <li>adjacent areas on a monthly basis, until the end of the defects liability period of the contract.</li> <li>Special care must be taken when removing alien invasive plants from site, so as to not to leave any part of the plant behind. When removing alien invasive plants, soil disturbance must be minimised to prevent as little germination as possible as alien invasive plants can spread their seeds when disturbed.</li> <li>All felled or cut alien invasive plants must be removed from site and appropriately disposed of.</li> <li>Care must be taken to avoid the introduction of alien invasive plant species to the site. Particular attention must be paid to imported material such as building material, fill material or dirty earth - moving equipment. Stockpiles should be checked regularly and any weeds emerging from material stockpiles must be removed.</li> <li>A monitoring program should be put in place to remove alien vegetation and maintain areas free from alien invasions during construction.</li> <li>Within, and in proximity to the wetland, successful re-vegetation, if required, is crucial to stabilise soils and limit infestation by invasive alien plant species. Rehabilitation should be undertaken on a progressive basis in these</li> </ul>	High





Western Cape Government: Department of Transport and Public Works - DR 1797 Road Upgrade Project Appendix J - Impact Assessment - September 2020

							Construction Ph	ase				
Activity	Nature of Impact	Impact Type	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Cons Combined Score	equence Consequence Rating	Probability	Overall Significance	Status of Impact	Mitigation	Confidence of Assessment
Potential impact on the aquatic habitats adjacent to the proposed work areas.		Expected	1	3	2	6	Medium	Definite	Medium		<ul> <li>Work within the watercourses and wetland areas must be limited as far as possible to remain within the physical footprint of road reserve and expropriation areas.</li> <li>The disturbed areas should be rehabilitated on a progressive basis in these areas to reduce soil erosion and alien invasive vegetation growth.</li> <li>Where possible, the construction within watercourses should take place during the drier months of the year.</li> <li>Limit vegetation removal to physical footprint of road reserve and expropriation areas</li> <li>Care must be taken to avoid the introduction of alien invasive plant species to the undisturbed areas.</li> <li>The upgraded culvert structures should be</li> </ul>	
	Direct	Cumulative	1	2	2	5	Low	Probable	Low	Negative Impact	<ul> <li>adequately sized and installed in the watercourses in such a manner so as to not increase the rate of deposition or erosion at the structure.</li> <li>Only existing disturbed areas should be utilised as laydown and stockpile areas if required.</li> <li>Waste material should be removed to authorized waste facilities.</li> <li>Where there are steeper gradients along the road, erosion control measures (for wind and water erosion) must be implemented and maintained such as berms to hinder stormwater flow, revegetation of areas with indigenous vegetation.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	



the contractors before the shift ends to clean the

If mitigation measures are put into place to

impacts should remain.

manage the impacts, then little to no residual

The watercourse channels should remain open

and not be constricted as a result of the works



Consequence Status Confidence Extent Intensity Duration Nature of Impact Overall Activity Combined Consequence Probability Mitigation of of **Impact** Type (1-3)(1-3) (1-3)**Significance** Impact Score Rating **Assessment** Impairment of the surface Where possible, the construction should take water quality could potentially place during the drier months of the year to occur during the construction minimise the risk of contaminated runoff and phase. sediment washing into the adjacent aquatic habitats. Contaminated runoff from the construction site(s) should be prevented from entering the watercourses and wetland areas. The laydown area and main construction site for 2 Probable Expected 1 1 Very Low Very Low 4 the road upgrade should be located away at least 30 m from the indicated freshwater constraints The laydown area and main construction site must be bunded (i.e. natural soil berms) to prevent any run-off from these areas. Where construction site(s) need to be located close to the rivers / streams, all materials on the construction site(s) must be properly stored and contained in bunded and impermeable areas. Construction workers must be provided with Negative High Direct ablution facilities at the construction works that Impact are located away from the river systems (at least 30 m) in a bunded and impermeable areas and regularly serviced. Proof of service must be maintained on site for inspection. Increased sedimentation or turbidity at each of the construction works should be mitigated as far as possible by making use of sandbags, settling Cumulative 1 2 1 4 Very Low Possible Insignificant ponds or screens to minimize the load of sediment being washed downstream of the sites. Waste bins must to be made available by the contractor for the disposal of general and hazardous waste. Proof of disposal must be obtained and kept on site. Daily site walk throughs must be undertaken by

Very Low

Very Low

Possible

Possible

Insignificant

Insignificant

Negative

Impact

**Construction Phase** 

High

Potential of longer-term

modification of the flow

Residual

Expected

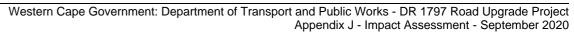
Direct

1

1

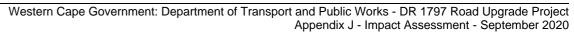
3

4





							Construction Ph	ase				
	Nature of	Impact	Extent	Intensity	Duration		equence		Overall	Status		Confidence
Activity	Impact	Туре	(1-3)	(1-3)	(1-3)	Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation	of Assessment
characteristics to downstream watercourse habitats as a result of the proposed activities due to the modification of the stormwater drains and the culvert structures.		Cumulative	1	1	1	3	Very Low	Possible	Insignificant		<ul> <li>(i.e. the conveyance capacity of the channels should not be reduced). The base level of the watercourses should also not be raised or deepened at the culvert as a result of any of the works.</li> <li>Once the works is complete, the area should be rehabilitated to resemble that of the surrounding landscape to ensure that the flow in the watercourses and to the more natural wetland areas is not modified by the activities.</li> </ul>	
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
							Noise				The state of the s	
Noise from construction vehicles and excavation activities.	Direct	Expected	1	2	1	4	Very Low	Definite	Very Low	Negative Impact	<ul> <li>Construction to only take place during the daytime (06h00 – 18h00) where ambient noise levels are expected to be elevated and therefore will not be too noticeable by the surrounding land users.</li> <li>Construction vehicles and machinery shall not be left to idle when not in use.</li> <li>All construction machinery to be serviced regularly and maintained to ensure that noise levels are kept to a minimum.</li> </ul>	High
		Cumulative	1	1	1	3	Very Low	Probable	Very Low		If mitigation measures for the expected impact are adhered to, this impact will be insignificant.	
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
							Traffic					
Interrupted traffic due to construction activities.		Expected	1	3	1	5	Low	Definite	Low		<ul> <li>Temporary traffic control measures to be implemented for the duration of the construction activities.</li> <li>Traffic will be accommodated to minimize traffic congestions.</li> </ul>	
	Direct	Cumulative	1	1	1	3	Very Low	Probable	Very Low	Negative Impact	<ul> <li>Traffic shall be controlled by means of a stop- and-go system during the day and a traffic light signalling system at night.</li> <li>The culvert is to be constructed in two phases for traffic accommodation purposes.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Increase construction vehicles on the road.	Direct	Expected	1	3	1	5	Low	Definite	Low	Negative Impact	Traffic to be controlled by means of a stop-and- go system during the day and a traffic light signalling system at night.	High





							Construction Ph	ase				
	Noture of	Impost	Extent	Intensity	Duration	Cons	equence		Overall	Status		Confidence
Activity	Nature of Impact	Impact Type	(1-3)	(1-3)	(1-3)	Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation	of Assessment
		Cumulative	1	1	1	3	Very Low	Probable	Very Low		The culvert is to be constructed in two phases for traffic accommodation purposes.	
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
							Geotechnical				impacis snould remain.	
No geotechnical impacts have b	een identified.											
	1			T -	T .	I	o-Economic Envi					
Job opportunities.		Expected	2	2	1	5	Low	Improbable	Very Low	D	As part of the contractor's contract, contractors	
	Direct	Cumulative	2	2	1	5	Low	Improbable	Very Low	Positive	will be required to meet a certain target of	High
		Residual	1	1	1	3	Very Low	Improbable	Insignificant	Impact	<ul><li>employing laborers from the local community.</li><li>General jobs can be filled by local employees.</li></ul>	
Influx of people to the area seeking employment.		Expected	1	2	2	5	Low	Probable	Low		As part of the contractor's contract, contractors will be required to meet a certain target of employing laborers from the local community.	
	Direct	Cumulative	1	2	2	5	Low	Possible	Very Low	Negative Impact	Should labour be required during the construction phase, this should be sourced from the local communities. This requirement must be specified within the contract signed by the contractor. This will contribute to the local economy of the area.	High
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Safety and security problems.		Expected	1	2	2	5	Low	Improbable	Very Low		Where fencing is removed as part of the	
	Direct	Cumulative	1	1	1	3	Very Low	Improbable	Insignificant	Negative Impact	<ul> <li>construction activities, these must be replaced in line with the Western Cape Standards.</li> <li>Flagmen will be used to raise caution to oncoming motorists from both ends.</li> <li>Traffic shall be controlled by means of a stopand-go system during the day and a traffic light signalling system at night.</li> <li>Placing road signs notifying road users of construction activity ahead.</li> <li>Reduction in speed limit during construction to 20 km/hr for all vehicles.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Improbable	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
	1				T		Air Quality					
Increased nuisance dust fall rates associated with construction activities.		Expected	1	2	1	4	Very Low	Definite	Very Low		Dust suppression to be used such as the use of water or other dust suppressants sprayed onto open areas / topsoil stockpiles.	
	Direct	Cumulative	1	1	1	3	Very Low	Possible	Insignificant	Negative Impact	<ul> <li>Water may not be used from any watercourse without a WUL.</li> <li>Reduction in speed limit during construction to 20 km/hr for all vehicles.</li> </ul>	High
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	





Western Cape Government: Department of Transport and Public Works - DR 1797 Road Upgrade Project Appendix J - Impact Assessment - September 2020

							<b>Construction Phase</b>	ase				
Activity	Nature of Impact	Impact Type	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Consequence			Overall	Status		Confidence
						Combined Score	Consequence Rating	Probability	Significance	of Impact	Mitigation	of Assessment
						To	pography and Cl	imate				
Alteration to topography due to the infilling and raising of the DR 1797 Road at km 0.705.	Direct	Expected	1	2	3	6	Medium	Definite	Medium	Negative Impact	<ul> <li>Restrict all activities, materials, equipment and persons within the area(s) specified.</li> <li>Stockpiles created during the construction phase must be removed prior to the operation phase of the project.</li> <li>Erosion control measures (for wind and water erosion) must be implemented and maintained where necessary in areas disturbed by the construction.</li> <li>All rubble is to be removed from the site to a certified landfill.</li> </ul>	High
		Cumulative	1	1	2	4	Very Low	Definite	Very Low		There will be no substantive increase to topographic impacts when compared to the existing level of impact on site, and thus the cumulative impact will be the same as the expected impact.	
		Residual	1	2	2	5	Low	Definite	Low		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
Not Applicable							Geology					



HATCH

Table 4: Expected Impacts, Cumulative Impacts and Residual Impacts for the Preferred Alternative – OPERATIONAL PHASE

							Operational Ph	nase				
Activity	Nature of Impact	Impact Type	Extent (1-3)	Intensity (1-3)	Duration (1-3)	Cons Combined Score	sequence Consequence Rating	Probability	Overall Significance	Status of Impact	Mitigation	Confidence of Assessment
Not Applicable							Agriculture / S	oils				
Not Applicable							Landscape / Vi	sual				
Not Applicable							Lanascape / Vi	Juai				
						Archae	ological and Cult	tural Heritage				
Not Applicable												
Not Applicable							Palaeontolog	ЗУ				
Not Applicable					Terre	strial Biodive	ersity including P	lant and Anima	al Species			
Infestation of alien invasive											Any existing or new alien invasive vegetation	
species.		Expected	1	2	2	5	Low	Possible	Very Low		within the road reserve areas must be	
										<u> </u>	eradicated. Special care must be taken when removing alien	
	Direct	Cumulative	1	2	2	5	Low	Possible	Very Low	Negative	invasive plants from site, so as to not to leave any part of the plant behind. When removing alien invasive plants, soil disturbance must be	High
		Residual	1	2	2	5	Low	Possible	Very Low	Impact	<ul> <li>minimised to prevent as little germination as possible as alien invasive plants can spread their seeds when disturbed.</li> <li>All felled or cut alien invasive plants must be removed from site and appropriately disposed of.</li> <li>A monitoring program should be put into place to remove alien vegetation and maintain areas free from alien invasive vegetation</li> </ul>	
							Aquatic Biodive	rsity				
Potential impact of the aquatic	Direct	Expected	1	2	2	5	Low	Definite	Low		Maintenance works on the structures should be in accordance with the DEA&DP Maintenance	
habitats adjacent to the proposed work areas.		Cumulative	1	2	2	5	Low	Probable	Low	<ul> <li>Management Plan (MMP) Guidelines (DEA&amp;DP 2017).</li> <li>Any invasive alien plants within the road reserve should be monitored and removed on an ongoing basis according to methods as provided by the Working for Water Programme.</li> <li>Minimise the frequency of, or requirement for, maintenance activities within the aquatic features.</li> </ul>	High	
			Residual	1	2	2	5	Low	Probable	Low	Positive Impact	If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.
Potential of longer-term modification of the flow characteristics to downstream watercourse habitats as a result of the proposed activities due to	Diroct	Expected	1	2	2	5	Low	Improbable	Very Low	of invasive alien plant growth and ensure that the crossings do not be blocked and result in localised floor	The watercourse crossings should be kept clear of invasive alien plant growth and debris to ensure that the crossings do not become blocked and result in localised flooding of the area.	High
of the proposed activities due to the modification of the		Cumulative	1	1	1	3	Very Low	Improbable	Insignificant			J
stormwater drains and the culvert structures.		Residual	1	1	1	3	Very Low	Improbable	Insignificant	Positive Impact	If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain	
							Noise					





Potential of increased noise levels due to increased use of the road.	Direct	Expected	1	2	2	5	Medium	Definite	Low		Placement of road safety signage along the road to ensure the speed limits, as well as advanced warning signage at one sharp horizontal curve.	High
		Cumulative	1	1	3	5	Low	Probable	Low	Negative Impact	If mitigation measures for the expected impacts are adhered to, these impacts will be insignificant.	
		Residual	1	1	1	3	Very Low	Possible	Insignificant		If mitigation measures are put into place to manage the impacts, then little to no residual impacts should remain.	
							Traffic					
Increased vehicles on the road.		Expected	1	1	3	5	Low	Possible	Very Low	Mogativa	Placement of road safety signage along the road	
	Direct	Cumulative	1	1	3	5	Low	Possible	Very Low	Negative Impact	to reduce speed limits, as well as advanced warning signage at one sharp horizontal curve.	High
		Residual	1	1	3	5	Low	Possible	Very Low			
							Geotechnic	al				
Not Applicable						0	·					
Potential job opportunities in		Expected	2	2	3	500	io-Economic En	Improbable	Medium	1	Legalise the small business and tourism signage	
surrounding businesses due to better access to the area as a	Direct	Cumulative	2	2	3	7	High	Improbable	Medium		along the road to notify passing residents and job seekers.	High
result of improved road conditions.		Residual	2	2	3	7	High	Improbable	Medium	Positive Impact		_
Potential increase in tourism of		Expected	1	2	3	6	Medium	Probable	Medium	Positive Impact	The WCG to maintain the road in accordance with the MMP  Legalise the small business and tourism signage along the road to notify passing residents and job seekers.	
the surrounding areas due to better access to the area as a	Direct	Cumulative	1	2	3	6	Medium	Possible	Low			High
result of improved road conditions.	Direct	Residual	1	2	2	5	Low	Possible	Very Low			High
Improved road safety due to the	Direct	Expected	1	3	3	7	High	Probable	High		The DR 1797 Road has been engineered in	
road upgrade (e.g. no blind		Cumulative	1	3	3	7	High	Possible	Medium	Desire a	accordance with SANS to improve overall road	
rises).		Residual	1	3	3	7	High	Possible	Medium	Positive Impact	<ul> <li>conditions and safety.</li> <li>The WCG to maintain the road in accordance with the DEA&amp;DP Maintenance Management Plan (MMP) Guidelines (DEA&amp;DP, 2017).</li> </ul>	High
							Air Quality	1				
Reduction in dust due to the		Expected	1	3	3	7	High	Probable	High	Danitiva	The WCG to maintain the road in accordance with the DEA&DP Maintenance Management	
upgrade of the road from a Class 4 (gravel) to and Special	Direct	Cumulative	1	3	2	6	Medium	Possible	Low	Positive Impact		High
Class 4 (surfaced).		Residual	1	2	2	5	Low	Possible	Very Low	impaot	Plan (MMP) Guidelines (DEA&DP, 2017).	
					•	. T	opography and	Climate				
Improved road alignment and gradient due to the road upgrade (e.g. no blind rises).	Direct	Expected	1	3	3	7	High	Improbable	Medium	Positive Impact	The DR 1797 Road has been engineered in accordance with SANS to improve overall road conditions and safety.  The WCG to maintain the road in accordance with the DEA&DP Maintenance Management Plan (MMP) Guidelines (DEA&DP, 2017).	
		Cumulative	1	2	2	5	Low	Improbable	Very Low			
		Residual	1	2	2	5	Low	Improbable	Very Low			High
							Geology					
Not Applicable												