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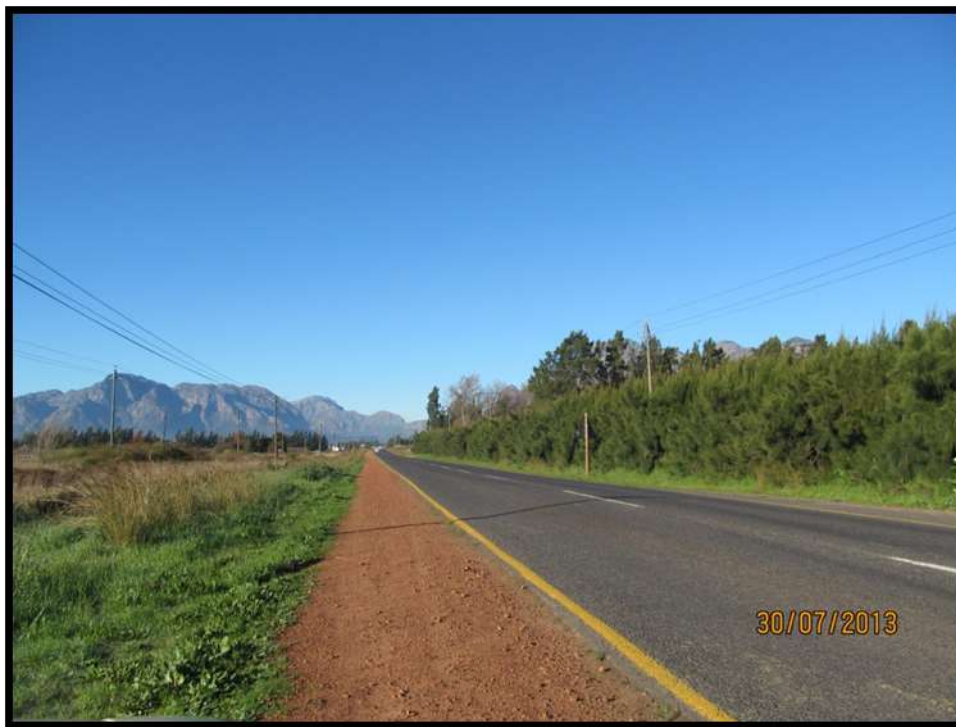
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THE PROPOSED UPGRADE OF MAIN ROAD 191 (R45), BETWEEN PAARL AND FRANSCHHOEK.

DRAFT

BASIC ASSESSMENT REPORT



JULY 2017

Prepared by:

Doug Jeffery Environmental Consultants

Prepared for:

Western Cape Government: Department of Transport and Public Works

DJEC Ref: 2010/03



Basic Assessment Report in terms of the NEMA Environmental Impact Assessment Regulations, 2010

AUGUST 2010

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by DEA&DP in terms of the EIA Regulations, 2010 and must be completed for all Basic Assessment applications.
2. This report must be used in all instances for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended, and the Environmental Impact Assessment Regulations, 2010, and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM: WA), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM: AQA).
3. This report is current as of 2 August 2010. It is the responsibility of the Applicant / EAP to ascertain whether subsequent versions of the report have been published or produced by the competent authority.
4. The required information must be typed within the spaces provided in the report. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. It is in the form of a table that will expand as each space is filled with typing.
5. Incomplete reports will be rejected. A rejected report may be amended and resubmitted.
6. The use of "not applicable" in the report must be done with circumspection. Where it is used in respect of material information that is required by the Department for assessing the application, this may result in the rejection of the report as provided for in the regulations.
7. **While the different sections of the report only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.**
8. Unless protected by law all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for the belief that the information is protected.
9. This report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. No faxed or e-mailed reports will be accepted. **Please note that for waste management licence applications, this report must be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office Region A.**
10. Unless indicated otherwise, two electronic copies (CD/DVD) and three hard copies of this report must be submitted to the Department.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE REGION A (Cape Winelands, City of Cape Town: Tygerberg and Oostenberg Administrations)	CAPE TOWN OFFICE REGION B (West Coast, Overberg, City of Cape Town: Helderberg, South Peninsula, Cape Town and Blaauwberg Administrations)	GEORGE OFFICE (Eden and Central Karoo)
Department of Environmental Affairs and Development Planning Attention: Directorate: Integrated Environmental Management (Region A2) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Integrated Environmental Management (Region A2) at: Tel: (021) 483-4793 Fax: (021) 483-3633	Department of Environmental Affairs and Development Planning Attention: Directorate: Integrated Environmental Management (Region B) Private Bag X 9086 Cape Town, 8000 Registry Office 1 st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Integrated Environmental Management (Region B) at: Tel: (021) 483-4094 Fax: (021) 483-4372	Department of Environmental Affairs and Development Planning Attention: Directorate: Integrated Environmental Management (Region A1) Private Bag X 6509 George, 6530 Registry Office 4 th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Integrated Environmental Management (Region A1) at: Tel: (044) 805 8600 Fax: (044) 874-2423

View the Department's website at <http://www.capegateway.gov.za/eadp> for the latest version of this document.

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	PRE-APP: 16/3/3/6/7/1/B3/28/1281/16
File reference number (Waste):	
File reference number (Other):	

PROJECT TITLE

THE PROPOSED UPGRADE OF MAIN ROAD 191 (R45), BETWEEN PAARL AND FRANSCHHOEK.

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Environmental Assessment Practitioner (EAP):	Doug Jeffery Environmental Consultants (Pty) Ltd.		
Contact person:	Lindsay Speirs		
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E-mail:	lindsay@dougjeff.co.za	Fax:	086 660 2635
EAP Qualifications	Lindsay Speirs: BA; BA (Hons); MA [Stell] Doug Jeffery: BSc; BSc (Hons); MSc [UCT]		
EAP Registrations/Associations	Doug Jeffery: Professional Natural Scientist registered with SACNASP (159/90); certified Environmental Practitioner with EAPSA; and member of IAIA.		

Details of the EAP's expertise to carry out Basic Assessment procedures**Report compiled by: Lindsay Speirs**

Lindsay Speirs obtained a BA degree majoring in Archaeology, Psychology, Geography and Environmental Studies, an Honours degree in GIS and a Master's degree in Geography & Environmental Sciences, all from the University of Stellenbosch. She has extensive experience (13 years) as an environmental assessment practitioner, and has worked on a great variety of projects throughout the Western Cape. Curriculum vitae attached as **Appendix I**.

Report reviewed by: Doug Jeffery

Doug Jeffery obtained a BSc. With majors in Botany and Zoology at the University of Cape Town and went on to obtain a MSc. in Botany. He has worked throughout South Africa both as a professional Botanist and has co-ordinated Environmental Impact Assessments (EIAs) for over 25 years.

EXECUTIVE SUMMARY/ ENVIRONMENTAL IMPACT STATEMENT:

INTRODUCTION:

Doug Jeffery Environmental Consultants has been appointed as the independent Environmental Assessment Practitioner (EAP) responsible for facilitating the legally required environmental Basic Assessment (BA) process for the proposed upgrade of Main Road 191 (MR191), between Paarl and Franschoek. The Applicant is the Provincial Government Western Cape: Department of Transport and Public Works (Roads Infrastructure Branch) who will undertake the activity should it be approved.

The existing Main Road 191 (MR191) starts at the intersection with Old Paarl Road (MR189) and continues past Simondium in a south easterly direction through Franschoek towards Villiersdorp. This proposal involves the upgrading of the MR191 between km 0,0 at the intersection with Old Paarl Road and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The study area is located within the Cape Winelands District Municipality (CWDM) of the Western Cape Province. The CWDM covers an area of 22 289 km² and coincides roughly with the boundaries of the geographical area commonly referred to as the Boland. The section of the MR191 earmarked for up-grading is located within the Drakenstein Local Municipality and Stellenbosch Local Municipality.

The portion of the road under assessment traverses seven streams, all of which are tributaries of the Berg River, with the general topography of the area being described as flat with gentle gradients and horizontal curvature. The existing pavement structure comprises mostly of a natural gravel subbase and natural gravel basecourse with a conventional chip and spray bituminous surfacing. Furthermore, the existing road has two lanes with surfaced width of 6,8 metres with a cross section of 2 x 3,4 metres lanes and un-surfaced gravel shoulders, for the most part.

The road is to be upgraded to a Class 1 cross-section and a climbing lane is to be implemented from km 1,0 to km 1,4. Furthermore, the preferred alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards on the eastern side of the existing historic bridge to accommodate both north and south bound traffic. The existing historical bridge, which is of heritage significance (circa. 1860) will remain. Access will be allowed from the 'discarded' section of the MR 191 directly onto the proposed Service Road parallel to MR 189.



Figure 1: A map of the proposed realignment of the road and the environmental sensitivity areas.

This draft Basic Assessment Report (BAR) follows on the Notice of Intent Form which was submitted to the Department on 15 September 2016 and acknowledged by them on the 24 October 2016. The Department instructed this office to proceed with the basic assessment which culminates in this report (**Appendix E1 – Correspondence DEA&DP**).

Comments and inputs on this document, received within the provided 30-day comment period will be considered and included in the final BAR which will be advertised for a further 30-day comment period prior to submission to the competent authority, Department Environmental Affairs & Development Planning (DEADP) for consideration and decision-making.

A Water Use Licence or General Authorisation will be required for the upgrading of the MR191. A Water Use Licence Application (WULA) has been submitted to the Department of Water and Sanitation (DW&S) in terms of the National Water Act (NWA) by Total Impact Assessments. This process ran in parallel to the EIA process and a copy of the Water Use Authorisation is included as **Appendix J**. The licensing authority in this regard is the DW&S who will also be a commenting authority in terms of this application.

Property details:

- Road & Road Reserve (MR191: km 0,0 – km 9,57)
- Portion 48 of the Remainder of Farm 832 (C05500080000083200048)
- Portion 36 of the Remainder of Farm 832 (C05500080000083200036)
- Portion 47 of the Remainder of Farm 832 (C05500080000083200047)
- Portion 50 of the Remainder of Farm 832 (C05500080000083200050)
- Portion 54 of the Remainder of Farm 832 (C05500080000083200054)
- Portion 56 of the Remainder of Farm 832 (C05500080000083200056)

ENVIRONMENTAL REQUIREMENTS:

The National Environmental Management Act (NEMA, Act 107 of 1998), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP). On the 4 December 2014 the Minister of Environmental Affairs promulgated regulations in terms of Chapter 5 of the NEMA, viz, the EIA Regulations 2014 (Government Notice (GN) No. R. 982, R. 983 (Listing Notice 1), R. 984 (Listing Notice 2) and R. 985 (Listing Notice 3) in Government Gazette No. 38282 of 4 December 2014. These new EIA Regulations came into effect on 8 December 2014 and were amended on 7 April 2017. According to the 2014 EIA regulations, as amended, authorisation is required for the following Listed Activities (basic assessment) applicable to this application: **Listing Notice 1: 12, 19, 24, 45, 48 & 56**. The procedures for a Basic Assessment process will therefore be followed.

DEVELOPMENT PROPOSALS:

The NEMA prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, inter alia, with respect to every application for environmental authorisation include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

Preferred Bridge Location Alternative (previously known as Alternative 3):

The preferred bridge location alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards ± 250 m east of the existing bridge and intersecting with the existing MR189 (R101) and Main Road 214 intersection, to accommodate both north and south bound traffic. The proposed bridge would pass over the existing railway line which would prevent the vertical clearance issues and ensure that the road is high enough and out of danger from potential flooding. This is considered the preferred option from a hydraulic

and geometrical point of view with provision being made for a new road over river bridge with 3 spans of 8,1m, 10,6m and 8,1m respectively orthogonal to the Van Wyks River, to accommodate the design flood. The bridge size was determined by the evaluation of the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owner downstream of the historical bridge for this recurrence interval flood. In addition a new 2 / 3,0m x 1,8m in situ concrete culvert is proposed at km 0,316 to drain the low point against the proposed road fill. Please refer to **Appendix B8** for the Bridge Layout and Design.

Furthermore, no alterations to the existing historical bridge are proposed which will remain to accommodate traffic as a lower order road. While numerous aspects were considered in terms of the viability of the section of the MR 191 that would no longer be required, in terms of this proposal, the following was concluded and would be implemented should this alternative be authorised:

- Access will be allowed from the 'discarded' section of the MR 191 directly onto the proposed Service Road parallel to MR 189.
- Maintenance will be undertaken on a regular basis with regards to ensuring that the culverts under the historical bridge are cleared of any debris.
- A service road will be constructed (**Appendix B1**) along the southern side of the MR 189 in order for all accesses along this strip to feed into the new access point proposed along the MR 189 in order to improve the safety aspects of the road.
- The service road will have access to MR 191 & MR 189

Furthermore, this alternative will involve the expropriation of the portion of land required for the proposed bridge and road realignment. The landowners that will be affected are: Portion 48 of the Remainder of Farm 832, Portion 36 of the Remainder of Farm 832, Portion 47 of the Remainder of Farm 832, Portion 50 of the Remainder of Farm 832, Portion 54 of the Remainder of Farm 832 and Portion 56 of the Remainder of Farm 832. It must be understood however that the expropriation of land is a separate legal process that follows the standard procedures as set out in the Road Ordinance, 1976 (Ordinance No. 19 of 1976), the Expropriation Act, 1975 (Act No 63 of 1975) and the Constitution of SA, 1996 (Act No 108 of 1996). The rights of each South African citizen are protected in our country's Constitution. In terms of the Constitution the expropriation process must be "just and equitable" in every way. The expropriation process involves the appointment of an independent evaluator to determine the value of the land expropriated as well as to assess whether the expropriation has any negative effect on the remainder of the affected properties. The landowner will therefore be compensated at 100% of the value of the land required for the road reserve as well as in respect of any negative impact which the expropriation and associated activities (within the road reserve) will have on the remainder of the property. The owner will further also be compensated in respect of any actual financial losses suffered as a direct result of the expropriation, if such losses can be proven. This process is separate and independent of the EIA process.

No-Go Alternative

This alternative is the "no-development alternative" or "in-situ" approach. The no-go option will result in the existing status quo of the MR 191 being maintained. The existing bridge is to remain and only the road markings will be maintained.

WorleyParsons RSA (previously Kv3 Engineers) were appointed to undertake a investigation report in 2010, on behalf of the Department of Transport and Public Works, to investigate whether MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) "C". It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS "D". Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS "E" in approximately 18 years time. The remaining pavement life of the road was calculated and it was deduced that the pavement structure, at the time, would reach the end of its life by 2010 for section 1 (km 0,0 to km 6,04) and 2014 for section 2 (km 6,04 to km 9,57).

Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in

the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement.

In addition drainage studies concluded that firstly the bridge across the Van Wyks River at km 0,2, has inadequate capacity for the design run-off and secondly a large portion of the run-off draining towards the culvert at km 6,53 (across the Meulstroom River) actually drains towards a small culvert at km 6,48 which has inadequate capacity for this extra run-off. Due to the substandard vertical clearance (3,8 m) of the Bridge the road would be unsafe for road users.

As a result of the above the no-go alternative is not considered a viable, practical alternative. It is inevitable that as the population growth increases roads need to be upgraded in accordance with the pressure of increased traffic experienced on these roads.

PUBLIC PARTICIPATION PROCESS:

Interested and Affected Parties (I&AP's), including landowners and occupiers of land adjacent to the site, the ward councilor, local and district municipalities, local ratepayers, environmental associations or interest groups, relevant organs of State and relevant State Departments are identified.

- All potential I&APs will be notified of a draft BAR (this document) including State Departments and Local Authorities.
- The project will be advertised in the *Paarl Post, Eikestadnuus & Die Burger*.
- Site notices will be placed on site informing the general public of the process.
- A letter drop, where possible, will be undertaken in order to inform occupiers of the site and adjacent land.
- A copy of the draft BAR will be made available in the Paarl & Pniel Public Libraries as well as on the Doug Jeffery company website (www.dougjeff.co.za).
- The Draft BAR and EMP will be made available for a 30-day commenting period.
- An Open House Meeting will be held during the commenting period where the information will be presented in poster format to all those who wish to attend. Engineers and consultants will be available to answer any queries.
- All comments received during the 30-day comment period will be responded to in the form of a comments and response table (C&R Table) to be included in the final BAR.
- The FINAL BAR and Provisional EMP will then be submitted to DEA&DP for a decision.

IMPACTS ASSOCIATED WITH THE ACTIVITY (negative & positive):

CONSTRUCTION PHASE (after mitigation):

FRESHWATER:

- *Loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, leading to erosion - **LOW Negative***
- *Direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands - **NEGLIGIBLE***
- *Loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication – **LOW Negative***
- *Dumping of building material and rubble – resulting in potential contamination of streams and wetlands - **NEGLIGIBLE***
- *Deterioration in wetland and riverine habitat through spillage of building materials and oil / fuel - **NEGLIGIBLE***
- *Introduction and spread of invasive alien plants (IAPs) through disturbance of soils and use of poor top soil – **LOW to MEDIUM Negative***
- *Increased disturbance of fauna and flora from noise and light – **LOW to NEGLIGIBLE***

SOCIAL:

- Creation of employment and business opportunities – **MEDIUM positive**
- Presence of construction workers and potential impacts on family structures and social networks – **LOW negative**
- Impact on irrigation infrastructure – **LOW negative**
- Impact on access and movement – **LOW negative**
- Impact on heavy vehicles and construction activities - potential noise, dust and safety impacts – **LOW negative**

OPERATION PHASE (after mitigation):

FRESHWATER:

- *Direct loss of riverine or wetland habitat and flora and fauna - **LOW negative***
- *Increased constriction of flow under road bridges – **NEGLIGIBLE***
- *Increased volumes and frequency of stormwater runoff from the road surface – **LOW negative***
- *Increased pollution from runoff from road surfaces that may be polluted with hydrocarbons (fuel) and oils, fine sediments and litter – **LOW negative***

SOCIAL:

- *Improved road infrastructure, road safety and access - **MEDIUM positive***
- *Extension of pedestrian and cycle path – **MEDIUM positive***
- *Loss of land, impact on sense of place, traffic noise, safety and security and environmental justice (affected landowners) - **MEDIUM negative***
- *Loss of land, impact on sense of place, traffic noise and safety and security (adjacent landowners) – **LOW negative***

HERITAGE:

The route traverses areas of particular cultural historical significance however these will not be impact on by the proposed upgrading of the MR191.

NOISE:

A Noise specialist was appointed to assess the impact of the proposed road realignment and bridge as described in the preferred alternative from the neighbouring residences. The noise specialist confirmed that the noise levels will not exceed 65dBA at any of the receptors and therefore in terms of the existing Noise Control Regulations (NCR) there would be no legal obligation to implement any noise mitigation procedures. However, the NCR are in the process of being revised to change the maximum noise level from 65dBA to 55dBA. Therefore mitigation measures have been provided for two of the receptors for which the noise will exceed 55dBA.

SPECIALIST STUDIES:

The following specialist studies were undertaken:

- Freshwater Impact Assessment (**Appendix G1**)
- Social Impact Assessment (**Appendix G2**)
- Noise Statement (**Appendix G3**)
- Heritage Input (**Appendix G4**)

CONCLUSION:

The 'best practicable environmental option' means the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. The preferred site development plan has evolved logically, taking into account the site's constraints and opportunities, the specialist's findings, the project team's findings and input from the public participation process. It is our opinion, that the Preferred Alternative, along with the recommendations listed in Section H, is considered the 'best practicable environmental option'.

The findings of the SIA indicate that the up-grading of the MR 191 is supported. The up-grading will improve road safety and access to the area as well as create employment and business opportunities during the construction phase. The potential negative impacts associated with the construction phase are linked to impact on access, specifically for local businesses located along the affected section of the MR 191. The impacts can however be effectively mitigated through careful planning and timing of construction related activities. The potential negative impacts are largely linked to the alternatives identified to address the challenges posed by the historic railway bridge and flooding of the Van Wyks River. These issues are confined to the northern section of the MR 191 and affect a relatively small number of landowners. The key social impacts are linked to the expropriation of land however the directly affected landowners have indicated that they are willing to consider compensation for the loss of land and the associated impact on their quality of life.

Seven streams and several wetland flats will be impacted by the upgrade of the MR191 between km 0.0 and 9.57. All potentially affected streams and wetlands were all found to be of low to moderate conservation importance.

WorleyParsons RSA undertook a investigation report in 2010, on behalf of the Department of Transport and Public Works, to investigate whether MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) "C". It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS "D". Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS "E" in approximately 18 years time. The remaining pavement life of the road was calculated and it was deduced that the pavement structure, at the time, would reach the end of its life by 2010 for section 1 (km 0,0 to km 6,04) and 2014 for section 2 (km 6,04 to km 9,57).

Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement.

Furthermore, flooding issues and substandard vertical clearance (3.8 m) experienced at the existing historical bridge makes the existing situation unsafe for road users. It is inevitable that as the population growth increases, roads need to be upgraded in accordance with the pressure of increased traffic experienced on these roads.

It is recommended that the Preferred Alternative be adopted with the implementation of the mitigation measures and recommendations listed in Section H of this document.

SECTION A: ACTIVITY INFORMATION

1. PROJECT DESCRIPTION

(a) Is the project a new development?	YES	NO
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(b) Provide a detailed description of the development project and associated infrastructure.

The section of MR 191 under consideration to be upgraded starts at km 0,0 at the intersection with the Old Paarl Road (MR 189) and continues pass Simondium in a south-easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The road is to be upgraded to a Class 1 cross-section and a climbing lane is to be implemented from km 1,0 to km 1,4. Furthermore, the preferred alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards on the eastern side of the existing historic bridge to accommodate both north and south bound traffic. Please refer to **Appendix B1 and B12**.

Traffic Signals

Traffic signals are recommended for the proposed realigned MR 191 / MR 189 intersection as well as the upgraded MR 191 / MR 205 intersection. The traffic signals will provide for a higher level of service and will also provide better and safer pedestrian crossing opportunities than the current scenario. This is especially required at the MR 191 / MR 205 intersection where many of the observed pedestrians are primary school children.

Climbing Lane

Speed profiles were done in both directions to determine the position of possible climbing lanes. In accordance with the GD Manual the warrants for climbing lanes are triggered, i.e.

- a speed reduction for trucks exceeding 25 km/h and
- the Design Hour Volume of Vehicles exceeding the appropriate value.

The Engineers therefore recommend that a climbing lane on the left-hand side be constructed from km 1,0 to km 1,4.

Intersection and Access

There are numerous intersections and accesses on this section of MR 191 from km 0,0 to km 9,57. **Appendix B4** displays the Western Cape Government standard intersection and farm access details.

Bus Stops

Currently there are nine bus stops along the road as indicated in Table 1 below.

Table 1: Existing bus stops.

Position (km)	Left	Right
0.50	x	
1.24	x	
2.56		x
3.16	x	
3.84	x	
4.74	x	
5.76	x	
5.84		x
8.20		x

A public transport study was conducted to evaluate the use of the existing bus stops and to identify other

positions which are frequently being used as public transport stops. Sixteen positions were identified during the study and will be investigated as official bus stop positions during the detail design stage and are indicated in Table 2. The bus stops will be implemented according to the Western Cape Government rural bus stop standards as displayed in **Appendix B4**.

Table 2: Potential bus stops identified during the study.

Position (km)	Left	Position (km)	Right
0.6	x	0.6	x
1.280	x	1.460	x
2.540	x	2.540	x
4.200	x	4.180	x
5.160	x	5.220	x
5.840	x	5.960	x
7.960	x	8.020	x
9.320	x	9.350	x

Fencing

The fencing over a portion of the road is in a sound state but in some places no fencing exists or the fencing is in a bad condition. It is recommended that new fencing be erected where required to match the existing fencing type.

Accommodation of Traffic

- 1) The safety and convenience of travelling public is to be considered of utmost importance and every effort must be made to ensure that all temporary road signs, cones, flagmen and speed controls are maintained and effective, and that courtesy is extended to the public at all times.
- 2) It is important that the traffic accommodation requirements described in these specifications are adhered to and that all installations meet with the approval of the relevant traffic authority.
- 3) Construction work, including the erection and removal of traffic control facilities, shall be executed between sunrise and sunset on Monday to Saturday, inclusive. Traffic accommodation will be provided for the duration of the construction period in the form of two way traffic, or where not possible due to limited width, one-way traffic with the necessary traffic controls. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Engineer. During the year end break the road sections must be open full width.
- 4) It should be noted that Sundays are specified as "Special non-working days" in the contract data. In terms of Clause 5.8.1 of the General Conditions of Contract (GCC) 2010, the Engineer's permission has to be obtained for work to be carried out on special non-working days, for which permission shall be applied for at least two weeks prior to the day.
- 5) For half width construction, a stop/go system shall be used during day time, and during night time hours a traffic signal system must be implemented.
- 6) The travelling public has the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on public roads.
- 7) Failure to maintain road signs, warning signs or flicker lights, etc, in good condition shall constitute ample reason for the Engineer to bring the works to a stop until the road signs, etc, have been repaired to his satisfaction.
- 8) The Contractor may not commence constructional activities before adequate provision has been made to accommodate traffic in accordance with the requirements of these specifications and Chapter 13 of Volume 2 of The South African Road Traffic Signs Manual (SARTSM) 2012.
- 9) The Contractor shall submit proposals in connection with all signs and accommodation of traffic etc. to the Engineer for approval.

10) Refer to **Appendix B5** for the layout of a Stop/Go operator.

Preferred Bridge Location Alternative

In addition, the preferred bridge location alternative involves the construction of a new double road-over-rail bridge to acceptable geometric standards ± 250 m east of the existing bridge and intersecting with the existing MR189 (R101) and Main Road 214 intersection, to accommodate both north and south bound traffic (Figure 2 below). The proposed bridge would pass over the existing railway line which would prevent the vertical clearance issues and ensure that the road is high enough and out of danger from potential flooding. This is considered the preferred option from a hydraulic and geometrical point of view with provision being made for a new road over river bridge with 3 spans of 8,1m, 10,6m and 8,1m respectively orthogonal to the Van Wyks River, to accommodate the design flood. The bridge size was determined by the evaluation of the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owner downstream of the historical bridge for this recurrence interval flood. In addition a new 2 / 3,0m x 1,8m in situ concrete culvert is proposed at km 0,316 to drain the low point against the proposed road fill. Please refer to **Appendix B8** for the Bridge Layout and Design.

Furthermore, no alterations to the existing historical bridge are proposed which will remain to accommodate traffic as a lower order road. While numerous aspects were considered in terms of the viability of the section of the MR 191 that would no longer be required, in terms of this proposal, the following was concluded and would be implemented should this alternative be authorised:

- Access will be allowed from the 'discarded' section of the MR 191 directly onto the proposed Service Road parallel to MR 189.
- Maintenance will be undertaken on a regular basis with regards to ensuring that the culverts under the historical bridge are cleared of any debris.
- A service road will be constructed (**Appendix B1**) along the southern side of the MR 189 in order for all accesses along this strip to feed into the new access point proposed along the MR 189 in order to improve the safety aspects of the road.
- The service road will have access to MR 191 & MR 189

Furthermore, this alternative will involve the expropriation of the portion of land required for the proposed bridge and road realignment. The landowners that will be affected are: Portion 48 of the Remainder of Farm 832, Portion 36 of the Remainder of Farm 832, Portion 47 of the Remainder of Farm 832, Portion 50 of the Remainder of Farm 832, Portion 54 of the Farm 832 and Portion 56 of the Farm 832. It must be understood however that the expropriation of land is a separate legal process that follows the standard procedures as set out in the Road Ordinance, 1976 (Ordinance No. 19 of 1976), the Expropriation Act, 1975 (Act No 63 of 1975) and the Constitution of SA, 1996 (Act No 108 of 1996). The rights of each South African citizen are protected in our country's Constitution. In terms of the Constitution the expropriation process must be "just and equitable" in every way. The expropriation process involves the appointment of an independent evaluator to determine the value of the land expropriated as well as to assess whether the expropriation has any negative effect on the remainder of the affected properties. The landowner will therefore be compensated at 100% of the value of the land required for the road reserve as well as in respect of any negative impact which the expropriation and associated activities (within the road reserve) will have on the remainder of the property. The owner will further also be compensated in respect of any actual financial losses suffered as a direct result of the expropriation, if such losses can be proven. This process is separate and independent of the EIA process.

The general arrangement drawings for the following bridges and culverts are included as **Appendix B11**:

- km 0,167 Proposed Road-over-Rail Bridge new plans will be submitted
- km 0,204 Proposed Access Road Culvert
- km 0,316 Proposed 2 / 3.0m x 1.8m Box Culvert
- km 0,391 Proposed Van Wyks River Bridge
- km 2,602 Widening of existing 1 / 4.5m x 2.5m Box Culvert
- km 3,081 Widening of existing 1 / 3.0m x 1.3m Box Culvert
- km 4,729 Proposed 2 / 3.0m x 1.8m Box Culvert to replace existing culvert
- km 6,475 Proposed 1 / 2.1m x 2.1m Box Culvert to replace existing culvert

- km 6,529 Proposed 2 / 3.6m x 2.6m Box Culvert to replace existing culvert
- km 9,193 Widening of existing 1 / 2.3m x 2.7m Box Culvert



Figure 2: Realigned portion of the MR191 showing a bridge over the Van Wyks River & the Railway Line (**Appendix B1 & B12**).

(c) List all the activities assessed during the Basic Assessment process:

GN No. 327 Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1	Describe the portion of the development as per the project description that relates to the applicable listed activity.
12	<p>The development of—</p> <ul style="list-style-type: none"> (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; <p>where such development occurs-</p> <ul style="list-style-type: none"> (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; - <p>excluding-</p> <ul style="list-style-type: none"> (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared. 	<p>The road crosses a number of streams and wetlands. Therefore, as a result of the expansion of the road, more than 100m² of the proposed road will be located within 32m from a watercourse.</p>
19	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving –</p> <ul style="list-style-type: none"> (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that 	<p>The road crosses a number of streams and wetlands. Therefore, as a result of the widening and realignment of the road, more than 10m³ of material will be deposited or moved within a watercourse.</p>

	<p>activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>	
24	<p>The development of a road –</p> <p>(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</p> <p>(i) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</p> <p>but excluding a road –</p> <p>(a) which is identified and included in activity 27 in Listing Notice 2 of 2014; or</p> <p>(b) where the entire road falls within an urban area; or</p> <p>(c) which is 1 kilometre or shorter.</p>	The road will be wider than 8 meters.
45	<p>The expansion of infrastructure for <i>the bulk transportation</i> of water or storm water where the existing infrastructure-</p> <p>(i) has an internal diameter of 0,36 metres or more; or</p> <p>(ii) has a peak throughput of 120 litres per second or more; and</p> <p>(a) where the facility or infrastructure is expanded by more than 1000 metres in length; or</p> <p>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;</p> <p>excluding where such expansion-</p> <p>(aa) relates to transportation of water or storm water within a road reserve or railway line reserve; or</p> <p>(bb) will occur within an urban area.</p>	Infrastructure along the route will be upgraded or expanded to ensure that the future stormwater requirements of the MR191 are catered for.
48	<p>The expansion of-</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</p> <p>(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more;</p> <p>where such expansion occurs –</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding-</p> <p>(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such expansion occurs within an urban area; or</p> <p>(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.</p>	The road crosses a number of streams and wetlands. Therefore, as a result of the expansion of the road, more than 100m ² of the proposed road will be located within 32m from a watercourse.
56	<p>The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometer-</p> <p>(i) where the existing reserve is wider than 13,5 meters; or</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 meters; excluding where widening or lengthening occur inside</p>	The existing road will be widened by more than 6 meters.

	urban areas.	
GN No. R. 985 Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 985)	Describe the portion of the development as per the project description that relates to the applicable listed activity.
N/A		

If the application is also for activities as per Listing Notice 2 and permission was granted to subject the application to Basic Assessment, also indicate the applicable Listing Notice 2 activities:

GN No. R. 984 Activity No(s):	If permission was granted in terms of Regulation 20, describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 2 (GN No. R. 984)	Describe the portion of the development as per the project description that relates to the applicable listed activity.
N/A		

Waste management activities in terms of the NEM: WA (Government Gazette No. 32368):

GN No. 718 - Category A Activity No(s):	Describe the relevant <u>Category A</u> waste management activity in writing.
N/A	

Please note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I**.

If the application is also for waste management activities as per Category B and permission was granted to subject the application to Basic Assessment, also indicate the applicable Category B activities:

GN No. 718 – Category B Activity No(s):	Describe the relevant <u>Category B</u> waste management activity in writing.
N/A	

Atmospheric emission activities in terms of the NEM: AQA (Government Gazette No. 33064):

GN No. 248 Activity No(s):	Describe the relevant atmospheric emission activity in writing.
N/A	

(d) Please provide details of all components of the proposed project and attach diagrams (e.g. architectural drawings or perspectives, engineering drawings, process flow charts etc.).

Buildings	YES	NO
Provide brief description:		
N/A		

Infrastructure (e.g. roads, power and water supply/ storage)	YES	NO
Provide brief description:		
<p>The section of MR 191 under consideration to be upgraded starts at km 0,0 at the intersection with the Old Paarl Road (MR 189) and continues pass Simondium in a south-easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The road is to be upgraded to a Class 1 cross-section and a climbing lane is to be implemented from km 1,0 to km 1,4. Furthermore, the preferred alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards on the eastern side of the existing historic bridge to accommodate both north and south bound traffic. Please refer to Appendix B1 & B12.</p> <p>Traffic Signals Traffic signals are recommended for the proposed realigned MR 191 / MR 189 intersection as well as the upgraded MR 191 / MR 205 intersection. The traffic signals will provide for a higher level of service and will also provide better and safer pedestrian crossing opportunities than the current scenario. This is especially required at the MR 191 / MR 205 intersection where many of the observed pedestrians are primary school children.</p> <p>Climbing Lane Speed profiles were done in both directions to determine the position of possible climbing lanes. In accordance with the GD Manual the warrants for climbing lanes are triggered, i.e.</p>		

- a speed reduction for trucks exceeding 25 km/h and
- the Design Hour Volume of Vehicles exceeding the appropriate value.

The Engineers therefore recommend that a climbing lane on the left-hand side be constructed from km 1,0 to km 1,4.

Intersection and Access

There are numerous intersections and accesses on this section of MR 191 from km 0,0 to km 9,57. **Appendix B4** displays the Western Cape Government standard intersection and farm access details.

Bus Stops

Currently there are nine bus stops along this section of the MR191. A public transport study was conducted to evaluate the use of the existing bus stops and to identify other positions which are frequently being used as public transport stops. Sixteen positions were identified during the study and will be investigated as official bus stop positions during the detail design stage and are indicated in Table 2 above. The bus stops will be implemented according to the Western Cape Government rural bus stop standards as displayed in **Appendix B4**.

Fencing

The fencing over a portion of the road is in a sound state but in some places no fencing exists or the fencing is in a bad condition. It is recommended that new fencing be erected where required to match the existing fencing type.

Preferred Bridge Location Alternative

In addition, the preferred bridge location alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards ± 250 m east of the existing bridge and intersecting with the existing MR189 (R101) and Main Road 214 intersection, to accommodate both north and south bound traffic (Figure 1 above). The proposed bridge would pass over the existing railway line which would prevent the vertical clearance issues and ensure that the road is high enough and out of danger from potential flooding. This is considered the preferred option from a hydraulic and geometrical point of view with provision being made for a new road over river bridge with 3 spans of 8,1m, 10,6m and 8,1m respectively orthogonal to the Van Wyks River, to accommodate the design flood. The bridge size was determined by the evaluation of the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owner downstream of the historical bridge for this recurrence interval flood. In addition a new 2 / 3,0m x 1,8m in situ concrete culvert is proposed at km 0,316 to drain the low point against the proposed road fill. Please refer to **Appendix B8** for the Bridge Layout and Design.

Furthermore, no alterations to the existing historical bridge are proposed which will remain to accommodate traffic as a lower order road. While numerous aspects were considered in terms of the viability of the section of the MR 191 that would no longer be required, in terms of this proposal, the following was concluded and would be implemented should this alternative be authorised:

- Access will be allowed from the 'discarded' section of the MR 191 directly onto the proposed Service Road parallel to MR 189.
- Maintenance will be undertaken on a regular basis with regards to ensuring that the culverts under the historical bridge are cleared of any debris.
- A service road will be constructed (**Appendix B1**) along the southern side of the MR 189 in order for all accesses along this strip to feed into the new access point proposed along the MR 189 in order to improve the safety aspects of the road.
- The service road will have access to MR 191 & MR 189

Furthermore, this alternative will involve the expropriation of the portion of land required for the proposed bridge and road realignment. This process is separate and independent of the EIA process.

The general arrangement drawings for the following bridges and culverts are included as **Appendix B11**:

- km 0,167 Proposed Road-over-rail Bridge new plans to be submitted
- km 0,204 Proposed Access Road Culvert
- km 0,316 Proposed 2 / 3.0m x 1.8m Box Culvert

<ul style="list-style-type: none"> • km 0,391 Proposed Van Wyks River Bridge • km 2,602 Widening of existing 1 / 4.5m x 2.5m Box Culvert • km 3,081 Widening of existing 1 / 3.0m x 1.3m Box Culvert • km 4,729 Proposed 2 / 3.0m x 1.8m Box Culvert to replace existing culvert • km 6,475 Proposed 1 / 2.1m x 2.1m Box Culvert to replace existing culvert • km 6,529 Proposed 2 / 3.6m x 2.6m Box Culvert to replace existing culvert • km 9,193 Widening of existing 1 / 2.3m x 2.7m Box Culvert 		
Processing activities (e.g. manufacturing, storage, distribution)	YES	NO
Provide brief description:		
N/A		
Storage facilities for raw materials and products (e.g. volume and substances to be stored)		
Provide brief description	YES	NO
N/A		
Storage and treatment facilities for solid waste and effluent generated by the project		
Provide brief description	YES	NO
N/A		
Other activities (e.g. water abstraction activities, crop planting activities)		
Provide brief description	YES	NO
N/A		

2. PHYSICAL SIZE OF THE ACTIVITY

(a) Indicate the size of the property (cadastral unit) on which the activity is to be undertaken. Road & Road Reserve (MR191: km 0,0 – km 9,57) Portion 48 of the Remainder of Farm 832 (SG Code: C05500080000083200048) Portion 36 of the Remainder of Farm 832 (SG Code: C05500080000083200036) Portion 47 of the Remainder of Farm 832 (SG Code: C05500080000083200047) Portion 50 of the Remainder of Farm 832 (SG Code: C05500080000083200050) Portion 54 of the Remainder of Farm 832 (SG Code: C05500080000083200054) Portion 56 of the Remainder of Farm 832 (SG Code: C05500080000083200056)	Size of the property: 504 546m ² Existing area inside road reserve of MR191 (205 000m ²) and cadastral sizes of erven to be expropriated (299 546m ²)
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(b) Indicate the size of the facility (development area) on which the activity is to be undertaken. (Existing area inside road reserve of MR191 (205 000m ²) and only area to be expropriated (22 739m ²)).	Size of the facility: 227 739 m ²
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(c) Indicate the physical size (footprint) of the activity together with its associated infrastructure:	Size of the activity: 227739 m ²
(d) Indicate the physical size (footprint) of the activity:	135 000 m ²
(e) Indicate the physical size (footprint) of the associated infrastructure:	92 739 m ²

and, for linear activities:

(f) Indicate the length of the activity:	Length of the activity: ±9.5 km
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3. SITE ACCESS

(a) Is there an existing access road?	YES	NO
(b) If no, what is the distance over which a new access road will be built?	m	

(c) Describe the type of access road planned:

N/A

Please Note: indicate the position of the proposed access road on the site plan.

4. DESCRIPTION OF THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND THE LOCATION OF THE ACTIVITY ON THE PROPERTY

(a) Provide a description of the property on which the activity is to be undertaken and the location of the activity on the property.

The section of the MR 191 under consideration starts at km 0,0 at the intersection with Old Paarl Road (MR 189) near Paarl and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172), in the direction of Franschoek. The route generally passes through a farming environment, although the section through Simondium could be described as urban. A separate walkway on the eastern side of the road prism has been proposed for protection of pedestrians.

Two City of Cape Town Bulk Water Pipelines will be encountered along the road:

- The proposed new R45 (MR191) alignment crosses the 700mm Ø bulk water pipeline towards Paarl just before the proposed R45 (MR191)/R101 (MR189) intersection.
- The 1525mm Ø Wemmershoek bulk water pipeline lies to the west and parallel to the R45 (MR191) past Simondium for approximately 1.6km from SV km 6.1 to SV km 7.7.

A large (450 mmØ) bulk water pipeline belonging to the Suider Agter-Paarl Irrigation Board (SAPIB) passes underneath the road in the vicinity of km 1.6. The line is the main source of water for a number of large, well-established agricultural estates located south of Paarlberg (north of the N1). The pipeline is situated 1.8m below the surface of the road and is unlikely to be impacted by road works.

The railway bridge at km 0,2 currently poses safety problems due to insufficient vertical clearance. Existing bridges and culverts with spans larger than 3m along the MR191 between km 0,0 and 9,57 include:

- Km 0,22: Van Wyks River bridge
- Km 2,50: in situ concrete box culvert
- Km 2,98: in situ concrete box culvert
- Km 6,05: in situ concrete box culvert
- Km 6,41: Meulstroom River culvert

The general road topography can be described as flat with gentle gradients and horizontal curvature. The existing pavement structure comprises mostly of a natural gravel subbase and natural gravel basecourse with a conventional chip and spray bituminous surfacing. Furthermore, the existing road has two lanes with surfaced width of 6.8 meters with a cross section of 2 x 3.4 meters lanes and un-surfaced gravel shoulders. Please refer to **Appendix A - Locality Map & Appendix C - Photographs**.

(b) Please provide a location map (see below) as **Appendix A** to this report which shows the location of the property and the location of the activity on the property; as well as a site map (see below) as **Appendix B** to this report; and if applicable all alternative properties and locations.

Locality map: Appendix A	The scale of the locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: <ul style="list-style-type: none"> • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).
Site Plans: Appendix B	Detailed site plan(s) must be prepared for each alternative site or alternative activity. The site plan must contain or conform to the following: <ul style="list-style-type: none"> • The detailed site plan must be at a scale preferably at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan.

- The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan.
- The position of each element of the application as well as any other structures on the site must be indicated on the site plan.
- Services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the development must be indicated on the site plan.
- Servitudes indicating the purpose of the servitude must be indicated on the site plan.
- Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to):
 - Rivers.
 - Flood lines (i.e. 1:10, 1:50, year and 32 meter set back line from the banks of a river/stream).
 - Ridges.
 - Cultural and historical features.
 - Areas with indigenous vegetation (even if it is degraded or infested with alien species).
- Whenever the slope of the site exceeds 1:10, then a contour map of the site must be submitted.

(c) For a linear activity, please also provide a description of the route.

This proposal involves the upgrading of the MR191 between km 0,0 at the intersection with Old Paarl Road and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). Please refer to Figure 3 below.



Figure 3: Aerial photograph showing site location/route (red line).

Indicate the position of the activity using the latitude and longitude of the centre point of the site. The co-ordinates must be in degrees, minutes and seconds. The minutes should be given to at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. **N/A**

Latitude (S):			Longitude (E):		

(d) or:

For linear activities:	Latitude (S):			Longitude (E):		
	Start:	33°	46'	56.71"	18°	57'
End:	33°	51'	50.20"	18°	58'	41.05"

Please Note: For linear activities that are longer than 500m, please provide an addendum with co-ordinates taken every 100 meters along the route.

5. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken of the site and from the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. It should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Site/Area Description

For linear activities (pipelines, etc.) as well as activities that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area which is covered by each copy No. on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	Flatter than 1:10	1:10 – 1:4	Steeper than 1:4
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2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es)).

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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(b) Please provide a description of the location in the landscape.

The section of the MR191 earmarked for up-grading is located within the Drakenstein Local Municipality and Stellenbosch Local Municipality. The existing Main Road 191 (MR191) starts at the intersection with Old Paarl Road (MR189) and continues past Simondium in a south easterly direction through Franschoek towards Villiersdorp. This proposal involves the upgrading of the MR191 between km 0,0 at the intersection with Old Paarl Road and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The portion of the road under assessment traverses seven streams, all of which are tributaries of the Berg River, with the general topography of the area being described as flat with gentle gradients and horizontal curvature.

The section of the road to be upgraded traverses through a rural, agricultural environment which also addresses the needs of many tourists visiting the area in the form of various wine farms, restaurants, accommodation facilities etc. scattered along the route. Farming activities, residences, labourers housing and related agri-industrial activities are abundant with the most 'urban' area being the town of Simondium. Furthermore, a brick-making factory, holiday resort, schools and an electrical sub-station are some of the other land-uses located along this stretch of the MR191. Please refer to **Appendix A - Locality Map**.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	YES	NO	UNSURE
Seasonally wet soils (often close to water bodies)	YES	NO	UNSURE
Unstable rocky slopes or steep slopes with loose soil	YES	NO	UNSURE
Dispersive soils (soils that dissolve in water)	YES	NO	UNSURE
Soils with high clay content	YES	NO	UNSURE
Any other unstable soil or geological feature	YES	NO	UNSURE
An area sensitive to erosion	YES	NO	UNSURE
An area adjacent to or above an aquifer.	YES	NO	UNSURE
An area within 100m of the source of surface water	YES	NO	UNSURE

(b) If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department. (Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

(c) Please indicate the type of geological formation underlying the site.

Granite	Shale	Sandstone	Quartzite	Dolomite	Dolorite	Other (describe)
<p>The general road topography between km 0,0 outside Paarl and km 9,57 at MR 172 can be described as flat with gentle gradients and horizontal curvature. The road traverses typically variable geological conditions associated with the Western Cape. From Paarl, which is characterised by the Paarl Granite Pluton, it traverses the shales, graywackes, quartz bands and phyllites of the Tygerberg Formation (Malmesbury Group) for some 3km. Thereafter it is underlain by the light grey to reddish brown sandy soils of the Springfontein Formation of Quaternary age and which characterises the Cape Flats area. The road traverses the sandy flats for about 15km before moving into more mountainous terrain associated with the metamorphosed sedimentary rocks of the Tygerberg Formation of the Malmesbury Formation.</p> <p>Furthermore, as can be seen from the variable rock geology the soil cover, comprising mostly of transported soils and less frequently of residual soils developed from the in situ weathering of the bedrock, can be expected to be very variable. On the whole, it can be expected to be fairly thin where it is underlain by the Malmesbury and Table Mountain Group rocks. The relatively long, flat section between Paarl and Franschoek which is underlain by the Quaternary sands is characterised by deep soil cover comprising generally silty sands of generally windblown origin, with associated zones of gravel bars, conglomerates and calcrete bands.</p>						

4. SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

(b) Please provide a description.

<p>The road traverses seven rivers, all of which are tributaries of the Berg River in catchment G10C. Three of these are named: the Werda River originates on the slopes of Simonsberg, and flows under the MR191 just north of the intersection with the Helshoogte Road, the Groot River also flows off the slopes of Simonsberg and flows under the MR191 at Simondium, and the Van Wyks River originates in the low hills around the N1, flowing under the MR191 just before it joins the MR189. Many of the streams have been highly modified as a result of the construction of the MR191 and the railway line, the direct drainage of agricultural runoff from cultivated fields into the streams, channelisation (i.e. the process of shaping the bed and banks of a river into a straighter channel with concentrated flow and little riparian vegetation) and dumping of building rubble and litter. Water quality appears generally poor, based on visual observation of turbidity, odour, and the presence of benthic algae, a good indicator of nutrient enrichment (such as occurs from the discharge of nutrient-rich agricultural runoff).</p> <p>As it flows between the N1 and the MR189, the Van Wyks River, which will be most affected by the alignment of the MR191 as it approaches the MR189, can be classified as a “wetland transitional” or, using the more recent wetland classification system, as an unchannelled valley bottom wetland. These wetlands are typified by seasonal seeps, flats and depressions within a valley bottom. Due to the construction of numerous roads, residential, industrial and commercial buildings, and the railway line, and the cultivation of much of the surrounding catchment, the river is now less like a wetland (except for the reaches close to Simonsvlei, where the river and wetlands are protected), and more like a river channel.</p>
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From the point at which the river/wetland flows under the MR189 and eastwards towards the new Zandwyk Industrial Park, the river is now constrained to flow along a channel, which is impacted by litter and dumping, and which has poor water quality due to the destruction of the floodplain wetlands that would have served to take up excess nutrients and sediments. The riparian zone of the river is now dominated by the common reed (*Phragmites australis*), the bulrush (*Typha capensis*), and the sedge *Cyperus textilis*. Alien trees such as acacias, syringe and gums are common around the river. Eastwards of the MR191 and the study site, the Van Wyks River flows as a narrow channel between vineyards, until it reaches the Berg River.

In many places along the road route, there are patches of wetland that lie between the road and the railway line. According to the Freshwater Specialist, it is difficult to determine whether these are natural wetlands, or whether they have been formed as a result of restricted drainage between the road and the railway line, on an underlying geology that is less permeable, such as clay. These are seasonal wetlands, dominated by *Pennisetum macrourum* and *Cliffortia* sp., typed as “flats” according to the National Wetland Classification System (SANBI, 2009). At the time of the field visit in August 2011, the Freshwater Specialist reported that there was clear standing water in these wetlands, with little or no benthic algae. A seasonal flat wetland is located on erf 832, which will be impacted by the re-alignment of the MR191 eastwards of its current position, and the construction of a bridge over the Van Wyks River and the railway line. The wetland is dominated by *Pennisetum macrourum*, and was moist but not inundated on the 11th July 2013, when this site was visited by the Freshwater Specialist. It is likely that this wetland used to be part of the seasonal valley bottom wetland that is the Van Wyks River, which would have had seasonal seeps, flats and depressions associated with it. According to the Freshwater Specialist, the characteristics of the wetland can be assessed by looking further upstream, opposite Simonsvlei, where the valley bottom and its wetlands are currently conserved and managed by the Simonsvlei Wetlands Trust.

5. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix D** to this report.

- (a) Highlight the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category).

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The MR191 traverses through patches of CBAs and various ESAs. The crossing of ESAs is largely due to the location of streams which are then incorporated into ESAs. Please refer to Appendix D .

(b) Highlight and describe the habitat condition on site.

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing/harvesting regimes etc).
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	10 %	The high levels of disturbance in the road reserve and adjacent farmland have resulted in the removal of natural vegetation for the majority of the route. The additional road area required for the diversion of the MR191 crosses the Van Wyks River and a wetland area. The wetland is dominated by Pennisetum macroum. It is likely that this wetland used to be part of the seasonal valley bottom wetland that is the Van Wyks River. The riparian zone of the river is now dominated by the common reed (<i>Phragmites australis</i>), the bulrush (<i>Typha capensis</i>), and the sedge <i>Cyperus textilis</i> . Alien trees such as acacias, syringe and gums are common around the river.
Degraded (includes areas heavily invaded by alien plants)	10%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	80%	Tar road & gravel shoulder/ pavement.

(c) Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (Historically)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened							
		YES	NO	UNSURE	YES	NO	YES	NO

(d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats).

<p>Vegetation type: Historically, the section of road to be upgraded passes through Swartland Alluvium Fynbos (mostly in the southern section), Boland Granite Fynbos and Swartland Shale Renosterveld (mostly in the northern section). Currently, very few remnants of these vegetation types persist as the route is largely transformed by agricultural activities (predominantly viticulture). Therefore, from an ecological perspective, the main concerns lie around freshwater issues.</p>
<p>Aquatic Ecosystem: The road traverses seven rivers, all of which are tributaries of the Berg River in catchment G10C. Three of these are named: the Werda River originates on the slopes of Simonsberg, and flows under the MR191 just north of the intersection with the Helshoogte Road, the Groot River also flows off the slopes of Simonsberg and flows under the MR191 at Simondium, and the Van Wyks River originates in the low hills around the N1, flowing under the MR191 just before it joins the MR189 (Figure 4 below). Many of the streams have been highly modified as a result of the construction of the MR191 and the railway line, the direct drainage of agricultural runoff from cultivated fields into the streams, channelisation (i.e. the process of shaping the bed and banks of a river into a straighter channel with concentrated flow and little riparian vegetation) and dumping of building rubble and litter. Water quality appears generally poor, based on visual observation of turbidity, odour, and the presence of benthic algae, a good indicator of nutrient enrichment (such as occurs from the discharge of nutrient-rich agricultural runoff).</p>



Figure 4: Overview of the MR191 road to be upgraded between the Dwars River and the MR189 south of Paarl, showing the seven rivers crossed by the road.

As it flows between the N1 and the MR189, the Van Wyks River, which will be most affected by the alignment of the MR191 as it approaches the MR189, can be classified as a “wetland transitional” or, using the more recent wetland classification system, as an unchannelled valley bottom wetland. These wetlands are typified by seasonal seeps, flats and depressions within a valley bottom. Due to the construction of numerous roads, residential, industrial and commercial buildings, and the railway line, and the cultivation of much of the surrounding catchment, the river is now less like a wetland (except for the reaches close to Simonsvlei, where the river and wetlands are protected), and more like a river channel. From the point at which the river/wetland flows under the MR189 and eastwards towards the new Zandwyk Industrial Park, the river is now constrained to flow along a channel, which is impacted by litter and dumping, and which has poor water quality due to the destruction of the floodplain wetlands that would have served to take up excess nutrients and sediments. The riparian zone of the river is now dominated by the common reed (*Phragmites australis*), the bulrush (*Typha capensis*), and the sedge *Cyperus textilis*. Alien trees such as acacias, syringe and gums are common around the river. Eastwards of the MR191 and the study site, the Van Wyks River flows as a narrow channel between vineyards, until it reaches the Berg River.

In many places along the road route, there are patches of wetland that lie between the road and the railway line (see Figure 5). According to the Freshwater Specialist, it is difficult to determine whether these are natural wetlands, or whether they have been formed as a result of restricted drainage between the road and the railway line, on an underlying geology that is less permeable, such as clay. These are seasonal wetlands, dominated by *Pennisetum macrourum* and *Cliffortia* sp., typed as “flats” according to the National Wetland Classification System (SANBI, 2009). At the time of the field visit in August 2011, the Freshwater Specialist reported that there was clear standing water in these wetlands, with little or no benthic algae. A seasonal flat wetland is located on erf 832, which will be impacted by the re-alignment of the MR191 eastwards of its current position, and the construction of a bridge over the Van Wyks River and the railway line. The wetland is dominated by *Pennisetum macrourum*, and was moist but not inundated on the 11th July 2013, when this site was visited by the Freshwater Specialist. It is likely that this wetland used to be part of the seasonal valley bottom wetland that is the Van Wyks River, which would have had seasonal seeps, flats and depressions associated with it. According to the Freshwater Specialist, the characteristics of the wetland can be assessed by looking further upstream, opposite Simonsvlei, where the valley bottom and its wetlands are currently conserved and managed by the Simonsvlei Wetlands Trust.



Figure 5: Typical wetland flat between the MR191 and the railway line (Photograph: Kate Snaddon).

The small seasonal wetland on erf 832 does hold standing water at times (anecdotal evidence from local resident on erf 832), especially when the Van Wyks River floods its banks. Please refer to Figure 6 below.



Figure 6: Google Earth image of the site affected by the re-alignment of the MR191. The green polygons show the location of the wetland (smaller polygon) on Erf 832, and the riparian zone (larger polygon) of the Van Wyks River.

6. LAND USE OF THE SITE

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies.

Untransformed area	Low density residential	Medium density residential	High density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism & Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes or more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):	See below.			

(a) Please provide a description.

The section of the MR 191 under consideration starts at km 0,0 at the intersection with Old Paarl Road (MR 189) near Paarl and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172), in the direction of Franschoek. The existing road has two lanes with surfaced width of 6,8 meters with a cross section of 2 x 3,4 meter lanes and un-surfaced gravel shoulders. The general road topography can be described as flat with gentle gradients and horizontal curvature. The existing pavement structure comprises mostly of a natural gravel subbase and natural gravel basecourse with a conventional chip and spray bituminous surfacing. The site therefore includes the existing MR191 tar road and its road reserve as well as an additional portion of land that will be expropriated should approval be obtained. The area required for expropriation has a railway line and the Van Wyks River running through it. A bridge will be constructed across the River and the Railway Line.

7. LAND USE CHARACTER OF SURROUNDING AREA

(a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Untransformed area	Low density residential	Medium density residential	High density residential	Informal residential
Retail	Commercial & warehousing	Light industrial	Medium industrial	Heavy industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Tourism & Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes or more)	Airport
Harbour	Sport facilities	Golf course	Polo fields	Filling station
Landfill or waste treatment site	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):	See below.			

(b) Please provide a description, including the distance and direction to the nearest residential area and industrial area.

The route generally passes through a farming environment, although the section through Simondium could be described as urban. The section of the road to be upgraded traverses through a rural, agricultural environment which also addresses the needs of many tourists visiting the area in the form of various wine farms, restaurants, accommodation facilities etc. scattered along the route. Farming activities, residences, labourers housing and related agri-industrial activities are abundant with the most 'urban' area being the town of Simondium. Furthermore, a brick-making factory, holiday resort, schools and an electrical sub-station are some of the other land-uses located along this stretch of the MR191. The MR191 also traverses numerous streams and wetlands. A main railway line crosses the MR191.

8. SOCIO-ECONOMIC ASPECTS

Describe the existing social and economic characteristics of the community in order to provide baseline information.

The relevant section of the MR191 is located within the Drakenstein municipality (DLM), just to the north of the boundary with the Stellenbosch Local Municipalities (SLM), both of which are located within the Cape Winelands District Municipality (CWDM) of the Western Cape Province.

Drakenstein is a Category B Municipality, and is one of five constituent B-Municipalities that make up the CWDM. The administrative seat of the DLM is in Paarl. The DLM covers an area of approximately 1 538 km² and is bordered in the north by the Berg River Local Municipality (West Coast District Municipality), in the east by the Witzenberg and Breede Valley Local Municipalities (CWDM), in the south by the Theewaterskloof Local Municipality (Overberg District Municipality), and in the west by the City of Cape Town (CCT) Metropolitan area. The DLM is essentially a rural municipality. Paarl and Wellington are the only large towns. Smaller towns and settlements include Gouda, Saron, Hermon, Windmeul and Agter-Paarl.

The DLM consists of 31 wards. The bulk of the relevant portion of the MR191 is located in Ward 1. With the exception of Simondium Ward 1 is essentially rural in nature and includes the DLM area west of the Berg River and south of the N1, as well as area to the south and south-west of Paarlberg (north of the N1). The preferred Bridge Alternative is located in the extreme western corner of Ward 28. Ward 28 is essentially located to the east of the Berg River, south of the N2. Ward 28 includes a number of lifestyle estates located to the east of the Berg, including Pearl Valley and Val de Vie.

Local Communities:

Paarl

Paarl is the economic and administrative hub of the Drakenstein. It is also the largest town and home to the seat of the DLM. The town is well-located next to the N1, providing easy access to the Cape Metropolitan Area to the south-west. In this regard Paarl is only 60 km from Central Cape Town with access to Cape Town International Airport and Cape Town Harbour.

The Berg River runs through the town from south to north. The Berg, together with the railway line running parallel to it, have been effectively used as a barrier to divide the community along racial and class lines. Three distinct residential zones can be identified with Paarl West (containing the Paarl North and South communities) providing for low-density high-income residential areas representing the historically white suburbs of town. Historically disadvantaged communities reside in the higher density middle to low income areas to the east of the Berg River with Mbekweni, a Black African township located in the north-eastern portion of town. The bulk of Paarl's population is therefore resident in the eastern portion of the town.

A number of lifestyle estates are located to the east of the Berg River, south of the N1. These include Val de Vie, Boschenmeer, and Pearl Valley. All of these estates are accessed off the MR201. None are accessible off the relevant stretch of the MR191 due to the absence of a bridge across the Berg River in the area.

Franschhoek

Franschhoek is one of the oldest towns in South Africa and has a population of ~ 16 000. The town was incorporated into the Stellenbosch LM in 2000. The valley was originally settled in 1688 by 176 French Huguenot refugees, many of whom were given land by the Dutch government in a valley called Olifantshoek, so named because of the large herds of elephants that roamed the area. The name of the area soon changed to le Coin Français ("the French Corner"), and later to Franschhoek (Dutch for "French Corner"), with many of the settlers naming their new farms after the areas in France from which they came. La Motte, La Cotte, Cabrière, Provence, Chamonix, Dieu Donné and La Dauphine were among some of the first established farms — most of which still retain their original farm houses today. These farms have grown into renowned wineries.

Once a sleepy country retreat the village has experienced a tourist and lifestyle related boom since the 1990s and property prices have increased sharply. Franschhoek is known for having some of the top restaurants in the country. This combined with the strong wine culture and natural and architectural beauty of the town and surrounding area has turned Franschhoek into a popular tourist destination and the town has become the "food and wine capital" of South Africa.

Meerlust Bosbou

Meerlust Bosbou – officially known as the “Groot Drakenstein” settlement – is a tiny worker-class settlement located immediately to the north of the MR191. The access road to Meerlust from the MR191 is located approximately 250 m west of the MR172/ MR191 intersection. The settlement is located on a small portion of a larger undeveloped land parcel.

Meerlust traces its origins back to the 1960's when the then Forestry Department constructed 30 houses to provide housing to forestry workers working at the Wemmershoek Sawmill. Following a land swap with the then CPA in 1991, the original forestry community was resettled in La Motte, and the houses made available to Cape Provincial Administration (CPA) staff. By 2003 all of the settlement's workers had been retrenched from their former positions. The land currently belongs to the Western Cape Department of Public Works, and falls within the Stellenbosch LM. As a result of its small size, and its history in terms of providing housing to CPA workers, the community is very cohesive and relatively homogenous.

Simondium

The bulk of the small settlement of Simondium is located to the east of the MR191 along the Southern Section of the road. Simondium is essentially a non-residential, localized service center for the adjacent farming area. Road-adjacent properties include the large Simondium Agrimark complex, two fuel stations, a superette, liquor store and a number of assorted shops. Two churches, a post office facility (boxes) and two schools are also located in Simondium. Simondium Country Lodge is located on the southern-most part of Simondium. A pedestrian path runs along the MR191 to the east of the road, from Meerlust Bosbou in the south, to north of the MR191/ Klapmuts road junction. People from the area tend to do their main shopping in the Paarl.

Simondium rural areas

For purposes of the study the rural area along the Southern and Middle Sections are described as the Simondium rural area. The area falls within the broader Franschhoek/ Simonsberg farming area, as identified in the Drakenstein Spatial Development Framework (SDF), and also includes this historic Dwarsrivier Valley (e.g. Boschendal) and Groot Drakenstein (e.g. Bien Donne) farms areas.

The Dwars River and Groot Drakenstein areas have been important centers of agricultural production since European settlement in the late 17th century. Traditional activities were comprised largely of livestock farming, cultivation of fruit and vegetables, and viticulture. Viticulture was the dominant activity up until the phylloxera epidemic of the late 19th century. The establishment of orchards on the lands, which in 1902 collectively became formally known as Rhodes Fruit Farms (now Boschendal), heralded a switch to fructiculture as the dominant activity in the study area. The climate and soils are well suited to the cultivation of various types of deciduous fruit and the area is regarded as one of the best areas in the country for the cultivation of pears. The area's location is enhanced by its convenient access to the Cape Town market and harbor.

However, over the past few decades a number of factors, including land and labour costs, have seen Tulbagh, Wolseley and especially Ceres overtake the area in importance as fruit growing area. However, during the same period viticulture has increased and much of the land in the study area has reverted to vineyard. Significant plantings of pears and plums, supplemented by citrus and more recently persimmons, still exist, but all indications are that fruit growing in the area is on a slow decline.

The Dwarsrivier-Franschhoek-Simonsberg rural area may be described as scenic and agricultural activities are often linked to tourism and hospitality activities on well-developed, up-market estates. The Southern Section of the relevant stretch of the MR191 is bounded by extremely well-developed tourism areas to the east (Franschhoek Valley along MR191), south (Dwarsrivier along the MR172), and west (Simonsberg area along Klapmuts-Simondium).

The Franschhoek Valley has become established as one of the primary food and wine destinations in South Africa, and includes top-rated restaurants like Ruebens, and wine estates such as La Motte. The Dwarsriver mainly consists of farms associated with the historic Boschendal Estate, but also includes Allée Bleue and Solms Delta Estates. The Klapmuts-Simondium Road is also an important tourist route and provides access to a number of well-known wine farms, including Rupert and Rothschild, Backsberg, and Babylonstoren. Many of these estates are also renowned as up-market wedding venues.

Road infrastructure and access

The DLM has a well-developed road infrastructure. Of key relevance to the study area are the N1, MR191 and MR172. The N1 National Road cuts across the DLM municipality from east to west and provides access to the Cape Metropolitan area to the south west and Worcester and the Northern provinces to the north east. The Paarl Main Road runs north-south through the centre of the most urbanized area in the municipality (Paarl) and becomes the MR191 connecting the town to Malmesbury in the north-west and Franschhoek in the south. The MR172 (Helshoogte Road) provides a link to Stellenbosch in the south.

In terms of movement the Drakenstein Municipality is the gateway to some of the best scenic routes/mountain passes in the Boland providing tourist links to Ceres, Tulbagh and Wolseley (Bainskloof Pass and Nuwekloof Pass), Stellenbosch (Helshoogte) and Worcester and beyond (Du Toitskloof Pass).

Demographics:

The population of the CWDM increased by 157 206 over the period 2001-2011, which represents an increase of ~ 20%, or an average annual increase of 2.23% per annum. The increase in the population of the DLM increased by 56 845 (~ 23%) over the same period. This represents a significant increase for both the CWDM and DLM over the 10 year period. The increase in population has been accompanied by a significant increase in the level of services has over the same period. The increase in the population in both the CWDM and DLM was linked to an increase in the 15-64 age groups. At the same time there was a decrease in the less than 15 age group in both the CWDM and DLM. As expected, the number of households in both the NMMDM and DLM increased, however, the size of the household sizes in both areas decreased slightly.

Of significance, the dependency ratio in both the CWDM and DLM decreased by a ratio of ~ 5, which indicates that there are a decreasing number of people dependent the economically active 15-64 age group. The age dependency ratio is the ratio of dependents, people younger than 15 or older than 64, to the working, age population, those ages 15-64. The age dependency ratio (% of working-age population) in South Africa in 2010 was 53.29. Over the past 50 years, the value for this indicator has fluctuated between 84.43 in 1966 and 53.29 in 2010. The dependency ratio in the CWDM and DLM are lower than the national average which reflects the growth in the economically active 15-64 age group since 2001.

The percentage of formal dwellings in the CWDM decreased by 3.3% over the ten year period of 2001-2011, which reflects migration into the area from the rural areas in search of employment, specifically the Eastern Cape. This implies that a number of the increased households in the CWDM are informal dwellings, which creates potential challenges in terms of delivery. However, as indicated in Table 3.2, there has been a significant improvement in the level of services since 2001. The percentage of formal dwellings in the DLM increased by ~3.2% between 2001 and 2011.

In terms of employment the official unemployment rate in both the CWDM and DLM decreased for the ten year period between 2001 and 2011. In the CWDM the rate fell from 18.4% to 14.1%, a decrease of 4.3%. The decrease in the DLM was 6%. Youth unemployment in both the CWDM and DLM also dropped by similar levels over the same period. At the same time the education levels improved, with the percentage of the population over 20 years of age with no schooling dropping to 4.4% and 6.6% for the CWDM and DLM respectively. The percentage of the population over the age of 20 with matric also increased in both the CWDM and DLM by 4.6% and 5.2% respectively.

The municipal service levels within both the CWDM and the DLM for all four household service indicators have improved significantly over the 10 year period between 2001 and 2011. The most significant improvements have been in households with access to flush toilets and piped water inside their dwellings. These improvements translate into an overall improvement in the quality of the life of the residents of the CWDM and DLM.

Economic Overview:

The DLM is the second largest economic centre in the Western Cape and the largest contributor towards the CWDM GDP (40%). Following closely behind is the manufacturing sector, whose relative GDP contribution declined from 32.4% in 1995 to 25.6% in 2007. The DLM economy grew from R 5.3 billion in 2001 to R 6.8 billion in 2009. The growth of the local economy is higher than that of the district for every year under review except for the years 2002, 2007 and 2008.

The manufacturing sector is the biggest contributor to the GGP (26.6%) followed by the retail and trade sector (22%) and agriculture sector (14, 9%). In terms of employment the Community Survey of 2007 found that the most important sectors were the agriculture, hunting, forestry and fishing (16.7 %), manufacturing (15.1%), community; social and personal services (13.4%) and wholesale and retail trade sector (11.1%). Tourism is also a key sector with both the CWDM and DLM.

The manufacturing sector is closely linked to the agricultural sector. In this regard there are a number of large firms based in the LM that do business internationally and nationally, such as KVV, Pioneer Foods, South African Dried Fruit and Monis Fruit Juices. Manufacturing has however been in decline since 1998, specifically the clothing and textile industry. A large percentage of the employment in the agricultural sector is also seasonal.

Please refer to **Appendix G2 - Social Impact Assessment**.

9. HISTORICAL AND CULTURAL ASPECTS

- (a) Please be advised that if section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), is applicable to your proposed development, then you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Section 38 of the Act states as follows: "38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
- (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
 - (b) the construction of a bridge or similar structure exceeding 50m in length;
 - (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m2 in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
- must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."
- (b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), must also be investigated, assessed and evaluated. Section 3(2) states as follows: "3(2) Without limiting the generality of subsection (1), the national estate may include—
- (a) places, buildings, structures and equipment of cultural significance;
 - (b) places to which oral traditions are attached or which are associated with living heritage;
 - (c) historical settlements and townscapes;
 - (d) landscapes and natural features of cultural significance;
 - (e) geological sites of scientific or cultural importance;
 - (f) archaeological and palaeontological sites;
 - (g) graves and burial grounds, including—
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
 - (h) sites of significance relating to the history of slavery in South Africa;
 - (i) movable objects, including—
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)."

Is section 38 of the National Heritage Resources Act, 1999, applicable to the development?		YES	NO
		UNCERTAIN	
If YES, explain:	<p>A Heritage Practitioner has been appointed to ensure that the upgrading of the MR191 adheres to the National Heritage Resources Act (NHRA). In response to a Notification of Intent to Develop (NID) submitted to Heritage Western Cape (HWC), (reference 1109285B30), HWC stated that no further heritage studies were required. A submission was also made to the South African Heritage Agency (SAHRA) and a letter was received from the professional officer, Sonja Warwich-Stemmet stating that the SAHRA Built Environment Committee (BELCOM), dated 23 May 2013 supporting the recommendations of the heritage practitioner that the road widening would have a low impact (SAHRA reference 9/2/084/181).</p> <p>Since then a letter was written to HWC (Andrew Hall and Calvin van Wijk) and SAHRA (Greg Ontong) dated 23 May 2013 with supportive documentation indicating the amendments to the road alignment and concluding that there would be no heritage impact. The recommendation was made that SAHRA Comment to HWC, in terms of the Memorandum of Agreement, that</p>		

<p>the realignment of the portion of the road would have no heritage impact, that no further heritage analysis is required and that the road widening may proceed. This submission was uploaded onto SAHRIS on the 30th May 2013. In the absence of any response to the contrary it can be assumed that the heritage authorities concur with the recommendations of the heritage consultant.</p> <p>Please refer to Appendix E2 for the comment from HWC and SAHRA.</p>	
<p>Will the development impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999?</p>	<p>YES NO</p> <p>UNCERTAIN</p>
<p>If YES, explain:</p>	
<p>Will any building or structure older than 60 years be affected in any way?</p>	<p>YES NO UNCERTAIN</p>
<p>If YES, explain:</p>	

Please Note: If uncertain, the Department may request that specialist input be provided.

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

- Please list all legislation, policies and/or guidelines that have been considered in the preparation of this Basic Assessment Report.

LEGISLATION	ADMINISTERING AUTHORITY	TYPE Permit/ license/ authorisation/comment / relevant consideration (e.g. rezoning or consent use, building plan approval)	DATE (if already obtained):
National Environmental Management Act, as amended [Act 107 of 1998].	Department of Environmental Affairs & Development Planning	This application	Pending
National Water Act [Act 36 of 1998]	Department of Water Affairs	WULA	9 March 2017
National Heritage Resources Act [Act 25 of 1999].	Heritage Western Cape	NID/ Comment	15 August 2014

POLICY/ GUIDELINES	ADMINISTERING AUTHORITY
EIA Regulations 2014, as amended.	DEA
Guidelines for EIA Regulations	DEA&DP
Guidelines for Determining the Scope of Specialist Involvement in EIA Processes	DEA&DP
Guidelines on Need and Desirability	DEA&DP and DEA
Guidelines on Public Participation	DEA&DP and DEA
Guidelines on Alternatives	DEA&DP

(b) Please describe how the legislation, policies and/or guidelines were taken into account in the preparation of this Basic Assessment Report.

LEGISLATION / POLICY / GUIDELINE	DESCRIBE HOW THE LEGISLATION / POLICY / GUIDELINE WERE TAKEN INTO ACCOUNT (e.g. describe the extent to which it was adhered to, or deviated from, etc).
National Environmental Management Act, 1998 (Act 107, 1998).	This application is being undertaken according to the National Environmental Management Act, 1998, as amended. This includes the 2014 EIA Regulations, as amended.
EIA Guideline and Information Document Series.	All guidelines were consulted and adhered to when undertaking this Basic Assessment Process.
National Water Act, 1998 (Act 36 of 1998).	A water use license application has been submitted to the Department of Water and Sanitation (DWS) Western Cape Regional Office for approval of the proposed activities. The General Authorisation has been issued by DWS (Appendix J).
National Heritage Resources Act, 1999 (Act 25 of 1999).	A Notice of Intent to Develop (NID) has been submitted to Heritage Western Cape (HWC) for comment. Refer to Appendix E2 for HWCs final comment.
Land Use Planning Ordinance	A subdivision and rezoning application will be undertaken after the expropriation phase only. This forms part of a separate legal process and is not dealt with in this EIA.

Please note: Copies of any permit(s) or licences received from any other organ of state must be attached this report as **Appendix E**.

SECTION C: PUBLIC PARTICIPATION

The public participation process must fulfil the requirements outlined in NEMA, the EIA Regulations, and if applicable the NEM: WA and/or the NEM: AQA. This Department's *Guideline on Public Participation* (August 2010) and *Guideline on Exemption Applications* (August 2010), both of which are available on the Department's website (<http://www.capegateway.gov.za/eadp>), must also be taken into account.

Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was a deviation that was agreed to by the Department.

1. Were all potential interested and affected parties notified of the application by –			
(a) fixing a notice board at a place conspicuous to the public at the boundary or on the fence of –			
(i) the site where the activity to which the application relates is to be undertaken; and	YES	DEVIATED	
(ii) any alternative site mentioned in the application; N/A	YES	DEVIATED	
(b) giving written notice to –			
(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;	YES	N/A	
(ii) the occupiers of the site where the activity is to be undertaken and to any alternative site where the activity is to be undertaken;	YES	DEVIATED	
(iii) owners and occupiers of land adjacent to the site where the activity is to be undertaken and to any alternative site where the activity is to be undertaken;	YES	DEVIATED	
(iv) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;	YES	DEVIATED	
(v) the municipality which has jurisdiction in the area;	YES	DEVIATED	
(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES	DEVIATED	
(vii) any other party as required by the competent authority;	YES	DEVIATED	
1 placing an advertisement in –			
(i) one* local newspaper; and	YES	DEVIATED	
(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	YES	DEVIATED	N/A
(d) placing an advertisement in at least one* provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken.	YES	DEVIATED	N/A

* **Please note:** In terms of the NEM: WA and NEM: AQA a notice must be placed in at least two newspapers circulating in the area in which the activity applied for is to be carried out.

2. Provide a list of all the state departments that were consulted:
Cape Nature
Department of Water & Sanitation
Heritage Western Cape
Department of Agriculture
Transnet
SAHRA
Department of Transport & Public Works

3. Please provide an overall summary of the Public Participation Process that was followed. (The detailed outcomes of this process must be included in a comments and response report to be attached to the final Basic Assessment Report (see note below) as **Appendix F**).

The identification of Interested and Affected Parties (I&AP's), including landowners and occupiers of land adjacent to the site, the ward councilor, local and district municipalities, local ratepayers, environmental associations or interest groups, relevant organs of State and relevant State Departments. Refer to **Appendix F1** for a list of I&APs.

- All potential I&APs will be notified of a draft BAR (this document) including State Departments and Local Authorities.
- The project will be advertised in the *Paarl Post*, *Eikestad Nuus* and *Die Burger*.
- Site notices will be placed on site informing the general public of the process.
- A letter drop, where possible, will be undertaken in order to inform occupiers of the site and adjacent land.
- A copy of the draft BAR will be made available in the Paarl and Pniel Public Library, as well as on the Doug Jeffery company website (www.dougjeff.co.za).
- The Draft BAR and EMP will be made available for a 30-day commenting period to all potential I&APs, State Departments and Local Authorities.
- An Open House Meeting will be held during this commenting period. Information will be presented in poster format. Engineers and Consultants will be present to answer any queries raised by those attending the meeting.
- All comments received during the 30-day comment period will be responded to in the form of a comments and response table (C&R Table) to be included in the final BAR.
- The FINAL BAR and Provisional EMP will then be submitted to DEA&DP, for a decision.

Proof of the public participation followed will be provided in the Final BAR.

Please note:

Should any of the responses be "No" and no deviation or exemption from that requirement was requested and agreed to /granted by the Department, the Basic Assessment Report will be rejected.

A list of all the potential interested and affected parties, including the organs of State, notified and a list of all the register of interested and affected parties, must be submitted with the final Basic Assessment Report. The list of registered interested and affected parties must be opened, maintained and made available to any person requesting access to the register in writing.

The draft Basic Assessment Report must be submitted to the Department before it is made available to interested and affected parties, including the relevant organs of State and State departments which have jurisdiction with regard to any aspect of the activity, for a 40-day commenting period. With regard to State departments, the 40-day period commences the day after the date on which the Department as the competent/licensing authority requests such State department in writing to submit comment. The applicant/EAP is therefore required to inform this Department in writing when the draft Basic Assessment Report will be made available to the relevant State departments for comment. Upon receipt of the Draft Basic Assessment Report and this confirmation, this Department will in accordance with Section 24O(2) and (3) of the NEMA request the relevant State departments to comment on the draft report within 40 days.

All comments of interested and affected parties on the draft Basic Assessment Report must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** to the final Basic Assessment Report. If necessary, any amendments in response to comments received must be effected in the Basic Assessment Report itself. The Comments and Responses Report must also include a description of the public participation process followed.

The final Basic Assessment Report must be made available to registered interested and affected parties for comment before submitting it to the Department for consideration. Unless otherwise indicated by the Department, a final Basic Assessment Report must be made available to the registered interested and affected parties for comment for a minimum of 21-days. Comments on the final Basic Assessment Report does not have to be responded to, but the comments must be attached to the final Basic Assessment Report.

The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants must also be submitted as part of the public participation information to be attached to the final Basic Assessment Report as **Appendix F**.

Proof of all the notices given as indicated, as well as of notice to the interested and affected parties of the availability of the draft Basic Assessment Report and final Basic Assessment Report must be submitted as part of the public participation information to be attached to the final Basic Assessment Report as **Appendix F**.

SECTION D: NEED AND DESIRABILITY

Please Note: Before completing this section, first consult this Department's *Guideline on Need and Desirability* (August 2010) available on the Department's website (<http://www.capegateway.gov.za/eadp>).

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
<p>This proposal involves the upgrading of the MR191 between km 0,0 at the intersection with Old Paarl Road and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The upgrade will take place along the same route as the existing MR191, however, a portion of the existing Mr191 between km 0.0 to ± km 0.5 will be diverted in order to avoid the complications surrounding the historical bridge. This will be undertaken through the means of expropriation. It must be understood however that the expropriation of land is a separate legal process that follows the standard procedures as set out in the Road Ordinance, 1976 (Ordinance No. 19 of 1976), the Expropriation Act, 1975 (Act No 63 of 1975) and the Constitution of SA, 1996 (Act No 108 of 1996). The rights of each South African citizen are protected in our country's Constitution. In terms of the Constitution the expropriation process must be "just and equitable" in every way. The expropriation process involves the appointment of an independent evaluator to determine the value of the land expropriated as well as to assess whether the expropriation has any negative effect on the remainder of the affected properties. The landowner will therefore be compensated at 100% of the value of the land required for the road reserve as well as in respect of any negative impact which the expropriation and associated activities (within the road reserve) will have on the remainder of the property. The owner will further also be compensated in respect of any actual financial losses suffered as a direct result of the expropriation, if such losses can be proven. This process is separate and independent of the EIA process.</p>			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
<p>The Western Cape Provincial Spatial Development Framework, 2009, ("PSDF") was approved as a structure plan in terms of Section 4(6) of the Western Cape Land Use Planning Ordinance (LUPO) in June 2009, and therefore has statutory status. The PSDF is a long-term planning instrument, which is to be reviewed every five years. The overarching function of the PSDF is to provide spatial planning guidance aimed at sustainable development, including social justice and equity, at provincial level. The purpose of the PSDF is to:</p> <ul style="list-style-type: none"> • Be the spatial expression of the Provincial Growth and Development Strategy (PGDS). • Guide (metropolitan, district and local) municipal integrated development plans (IDPs) and spatial development frameworks (SDFs) and provincial and municipal framework plans (i.e. sub-SDF spatial plans). • Help prioritise and align investment and infrastructure plans of other provincial departments, as well as national departments' and parastatals' plans and programmes in the Province. • Provide clear signals to the private sector about desired development directions. • Increase predictability in the development environment, for example by establishing no-go, conditional and "go" areas for development and redress the spatial legacy of apartheid. <p>The proposed activity involves the upgrading of the existing MR191. Transport facilities are built primarily with a view to improve existing mobility and the prime objective is to reduce user cost, i.e. vehicle running cost, accident costs and travel time. The upgrading of this road will therefore contribute to the socio-economic development of the area which is a principle of the Western Cape PSDF.</p>			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
<p>The site falls outside the Urban Edge. However, this application relates to the upgrading of an existing road.</p>			

(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
<p>The Drakenstein Municipality Integrated Development Plan (IDP) [2012 – 2017] was approved on the 30 May 2012. The Vision of the Drakenstein Local Municipality IDP is “Working together to create a place of opportunity.” Linked to the vision is the mission and values statement. The Mission is to: “Develop and grow a sustainable, drivers and equitable Drakenstein, promoting culture and opportunities which:</p> <ul style="list-style-type: none"> • Are economically viable and contributes to long term economic prosperity for all; • Are socially just and contributes to social equality, upliftment and well-being; • Contribute towards a quality living environment and does not impact on the integrity of the environment”. <p>The IDP notes that in achieving the Vision and Mission, the Drakenstein Municipality subscribes to the following values and supporting principles:</p> <ul style="list-style-type: none"> • Foster people development by being orientated towards and responsive to the people’s needs, with special reference to vulnerable groups; • Develop a culture of participatory governance and contribute to building the capacity for such participation; • To exercise rights and duties within the financial and administrative capacity of the municipality; • To exercise rights and duties in a transparent and accountable fashion; • Create sustainable and quality living environments; • Effective & efficient administration. <p>The IDP identifies a number of strategic development priorities and objectives which serve as the drivers of the development agenda. The following development priorities are relevant to the proposed up-grade:</p> <p>Strategic development priorities</p> <ul style="list-style-type: none"> • SP 1: Local Economic Development (LED) and Job Creation; • SP 2: Social Upliftment; • SP 3: Municipal Infrastructure and Environment. <p>Strategic objectives</p> <ul style="list-style-type: none"> • SO 1: Sustainable and quality living environment with efficient infrastructure • SO 2: Economic prosperity based on a dynamic, diverse and shared economic base • SO 3: Improve quality of life and social well being <p>The IDP notes that Ward Development Plans were developed for each of ward, which reflects on specific needs of the wards for 2011/2012. Ward plans mainly focuses on unemployment and job creation, housing development, skills development, and maintenance of existing facilities, need of recreational facilities, sanitation, safety and Municipal basic services.</p> <p>The study area falls largely within Ward 1 (Simondium). The IDP identifies the following strategic development priorities for Ward 1:</p> <ul style="list-style-type: none"> • Local Economic Development and Job Creation • Infrastructure and Environment <p>In terms of ward level specific needs, the IDP lists the following for Ward 1:</p> <ul style="list-style-type: none"> • Skills development & job creation, small business empowerment, sustainable projects, Youth Development, skills development and promotion of tourism • Street lights, clean drinking water, maintenance of roads and maintenance of existing facilities, maintenance of sidewalks, traffic lights, electricity. 			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
Refer to the above regarding the Drakenstein Municipality Integrated Development Plan (IDP).			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
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Environmental Management Framework for the Drakenstein Municipal Area:

In summary the objectives of the EMF are to provide:

1. A framework to facilitate the pursuit of a sustainable development path in the geographical area with which it is concerned, specifically in relation to land use and development.
2. A comprehensive and integrated information base on the environmental attributes of an area and their sensitivity, together with management information in respect of these attributes (e.g. limits of acceptable change, thresholds, management objectives).
3. A tool to support the identification of issues that require consideration / investigation in an Environmental Impact Assessment process through referring to the information base of environmental attributes.
4. A decision-support tool for environmental authorities when considering environmental applications in terms of section 24 of NEMA and the associated EIA Regulations.
5. Guidance to applicants with respect to the appropriateness of development or land use proposals and to any professionals that are assisting in the application process, particularly in the environmental and planning fields.
6. Assistance and support to other authorities in the consideration of environmental factors in their decision-making processes, especially where these are concerned with the use of land and resources.
7. Support for cooperative governance, particularly as regards land and resource use planning and development.

In summary, the EMF is aimed at providing information that can be used by the authorities to support decision-making that will take development in the "right direction." Similarly, applicants can use the EMF to inform their development proposals. The idea is to find the best possible match between protecting resources (i.e. preventing their loss or degradation) on which humankind depends, whilst taking account of the need for development to address pressing social needs such as poverty and unemployment.

According to Section 5.1.2 *Issues and trends related to social infrastructure and development* the following issues have been identified:

- The capacity of the bulk services infrastructure, i.e. major roads, potable water supply dams and reservoirs, solid waste disposal sites and wastewater treatment works is at the limits of its ability to function efficiently. Annual water restrictions contaminated effluent run-off into the river systems and waste disposal in un-permitted sites are the most obvious symptoms for the inability of the system to cope with the development pressure.
- Infrastructure is at the limit of its capacity.
- Development pressure is primarily in the Paarl area – also towards Wellington and towards Franschhoek. There is rapid urban expansion with Paarl being considered is part of greater Cape Town functional region manifested as sprawl.

According to the EMF: Develop with Care (Restrictive Conditions) Map the only restrictive criteria are for Mining Resources along the starting portion of the MR191. Furthermore, according to the EMF: Develop with Care (Resource Criteria) Map the MR191 under study is identified as an important tourist route with a number of tourist attractions along the route. In addition, the map also identifies the MR191 route traversing through a Preliminary Heritage Resources Overlay Zone (Cultural Landscapes) as well as important ecological corridors, artificial wetlands and non FEPA wetlands. As mentioned the MR191 traverses numerous streams and associated wetlands which has been assessed by the Freshwater Specialist. The confirmation that this portion of the MR191 is a tourist route is considered further motivation to ensure that it is upgraded to acceptable standards.

(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
<p>Additional legislation, not directly related to environmental legislation, that could be relevant to the broader project to be undertaken could include:</p> <ul style="list-style-type: none"> • Hazardous Substances Act, 15 of 1973; • Occupational Health and Safety Act, 85 of 1993; • Development Facilitation Act, 67 of 1995; • National Road Transport Act, 93 of 1996; • Basic Conditions of Employment Act, 75 of 1997; • Prevention of Illegal Eviction from and Unlawful Occupation of Land Act, 19 of 1998; • South Africa National Road Agency and National Roads Act, 7 of 1998; • Promotion for Administrative Justice Act, 3 of 2000; • The National Environmental Management: Waste Act, 59 of 2008; • The Expropriation Act, 1975 (Act No 63 of 1975); • National Railway Safety Regulator Act, 16 of 2002. 			


3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
The activity involves the upgrading of the MR191. The provision of infrastructure to facilitate and sustain economic growth falls in line with the Local Municipalities policies.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?	YES	NO	Please explain
<p>The activity involves the upgrading of the MR191. The provision of infrastructure to facilitate and sustain economic growth falls in line with the Local Municipalities policies. An investigation report was compiled by then Kwezi V3 (Kv3) Engineers, on the appointment of the Department of Transport and Public Works, in 2004 into the reseal of the MR 191 between km 0,00 and 41,95. At the time it was found that major structural rehabilitation of a large portion of the route can be deferred for at least 10 years on condition that proper pre-treatment prior to resealing is carried out. In 2010, Kv3 Engineers (now WorleyParsons) were once again appointed to undertake a investigation report, on behalf of the Department of Transport and Public Works, to investigate whether the MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) "C". It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS "D". Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS "E" in approximately 18 years time. Furthermore, based on this analysis, the widening of the road to two 3,7m lanes and a 2,0m paved shoulder on either side of the road (Class 1) would have little effect on the operations of the road. However, it is important to note, that the analysis did not take local driver behaviour into account, such as shoulder driving. Furthermore, the economic analysis, indicated that the upgrading to a Class 1 cross-section is preferred and that this would be in accordance with the existing cross-section from km 9, 57 to Franschoek.</p> <p>Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement."</p> <p>A pavement evaluation was performed which included a visual assessment, material survey/ pavement trenching and surveillance measurements of the existing road. Two distinct uniform sections were identified namely, section 1 (km 0,0 to km 6,04) and section 2 (km 6,04 to km 9,57). The remaining life of the road was calculated and it was deduced that the pavement structure will reach the end of its life by 2010 for section 1 and 2014 for section 2. In addition, drainage studies conducted indicated two existing problem areas along the proposed upgrade portion of the MR191. Firstly, the bridge across the Van Wyks River at km 0,2 has inadequate capacity for the design run-off (Figure 7). The possible upgrading of this bridge will have to be done in conjunction with possible geometric changes to the road as a result of the rail-bridge at km 0,2. Secondly, a large portion of the run-off draining towards the culvert at km 6,41 (across the Meulstroom River) actually drains towards a small culvert at km 6,37 which has inadequate capacity for this extra run-off. Therefore even flows should be directed in side drains towards the culvert across the Meulstroom River at km 6,41.</p>			



Figure 7: Flooding of the Van Wyks River under the railway bridge at km 0,2 (August 2013).

<p>5. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	YES	NO	Please explain
<p>The activity involves the upgrading of the MR191 and therefore the entire community and all persons using the road network within the area would therefore benefit from the proposed upgrade. The findings of the SIA indicate that the up-grading of the MR 191 is supported. The up-grading will improve road safety and access to the area. The project will also create employment and business opportunities during the construction phase. The potential negative impacts associated with the construction phase are linked to impact on access, specifically for local businesses located along the affected section of the MR 191. The impacts can however be effectively mitigated through careful planning and timing of construction related activities. The potential negative impacts are largely linked to the alternatives identified to address the challenges posed by the historic railway bridge and flooding of the Van Wyks River. These issues are confined to the northern section of the MR 191 and affect a relatively small number of landowners, specifically the Adam's, Mr Harman and Mr Kock. Based on the findings of the SIA the key social impacts associated with preferred alternative are linked to the expropriation of land required to develop the alternative. The directly affected landowners have indicated that they are willing to consider compensation for the loss of land and the associated impact on their quality of life.</p>			
<p>6. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix E.)</p>	YES	NO	Please explain
<p>N/A. The activity involves the upgrading of the existing MR191.</p>			
<p>7. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix E.)</p>	YES	NO	Please explain
<p>The activity involves the upgrading of the existing MR191. The provision of infrastructure to facilitate and sustain economic growth falls in line with the Local Municipalities policies. This is a provincial road and will be upgraded by the Provincial Government.</p>			
<p>8. Is this project part of a national programme to address an issue of national concern or importance?</p>	YES	NO	Please explain
<p>This project is not part of a national programme to address an issue of national concern or importance.</p>			

9. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
<p>The activity involves the upgrading of the existing MR191 road starting at km 0,0 at the intersection with Old Paarl Road (MR 189) near Paarl and continues past Simondium in a south easterly direction up to km 9,57 near the intersection with Main Road 172, in the direction of Franschoek. Location factors do favour this land use as the activity will take place along the same route as the existing MR191, however, a portion of the existing Mr191 between km 0.0 to ± km 0.5 will be diverted in order to avoid the complications surrounding the historical bridge. This will be undertaken through the means of expropriation.</p>			
<p>The railway line and the Van Wyks River posed numerous constraints for the upgrading of the MR191 along the existing alignment and included the continued risk of potential flooding along this road. The option of removing the road and culverts below the historical bridge to increase the capacity was investigated together with a new structure below the proposed road alignment. Due to the minimum clearance road level the maximum drainage structure height is limited to 1.0m. This together with the available space limited the new structure to an in situ concrete structure of 4 / 3.0m x 1.0m. The capacity of this structure with inlet control is 24m³/s, which will result in the new road being overtopped and the low point on the road being flooded for the duration of the flood.</p>			
<p>The Engineers furthermore looked at the option of canalizing this section of the Van Wyks River by means of a concrete canal from 100m upstream of the proposed road alignment to downstream of the existing historical bridge up to the low level crossing to the property owned by Mr & Mrs Adams. This was done to investigate the option of maintaining supercritical flow throughout the canal and thereby increasing the capacity of the structures. The computer programme HEC-RAS (Hydrological Engineering Center's (HEC) River Analysis Systems) was used to determine water flow and energy levels for this proposed canalized section. It was however found for both the QT and Q2T of 30m³/s and 40m³/s respectively that supercritical flow could not be maintained throughout the canal with hydraulic jumps occurring before the originally proposed structures and through the historical bridge section. The removal of the existing road and culverts and the new drainage structures below the originally proposed MR191 route alignment together with the canalized section did not resolve the potential flooding risk. This option would also involve the lowering of the existing 700mm steel bulk water pipeline crossing the canal and the road alignment which would require additional scour and air valves on the pipeline.</p>			
<p>In order for the existing alignment to comply with drainage requirements, an additional railway culvert with size 3/3m x 0,9m would have to be installed underneath the railway line to the south, plus an additional culvert of the same size underneath the road in order to convey flows to the existing river stream, as well as an additional 4/3m x 1,0m multi-barrel in situ culvert underneath the new road directly north of the new railway underpass. However, the Van Wyks River section downstream of the historical bridge has a very flat slope and a restricted cross section which in combination has a backwater effect which causes the low lying area (Remainder of farm 832/48 and 832/47) to the north east of the river to form a flood plain during high flows. The new MR191 road level low point below the railway line bridge is such that damming of water would be restricted to 1.2m, after which flooding of the road would occur. The backwater effect in the Van Wyks River poses a real threat of exceeding this level and flooding the road. Increasing the width of the culverts below MR191 and the railway line will not have a significant impact on the capacity due to this backwater effect by the river and will incur little benefit at a very large cost. Any increase in the flow downstream of the historical bridge will also increase the flood level in the downstream area, also due to the backwater effect in the river. Therefore, utilising the existing alignment is not considered a viable engineering alternative.</p>			

10. How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	YES	NO	Please explain
<p>The road traverses a landscape of considerable cultural historical and scenic significance. Land grants in the scenic corridor date from the late eighteenth century and the related built form reflects the rich layering of the landscape from this period. Many of the historical farm werfs are located on the terrace to the west of the Berg River and do not have a visual spatial relationship with the MR 191. Heritage resources which do have a visual spatial relationship with the MR 191 have been identified in the Drakenstein Heritage Survey. They include, inter alia, the old railway bridge (Figure 8 below) adjacent to the MR189, the farm werfs at Keunenbergh, Keunienburgh and Riverside, the Het Stigt school complex (PHS), the Simondium station, various railway cottages and farm cottages and the small commercial node at Simondium. Significant lateral views of the Klein Drakenstein and Simonsberg mountain have also been identified and mapped and have a significant clump of trees.</p>			
			
<p>Figure 8: Historic railway bridge located adjacent to the MR189.</p>			

A Heritage Practitioner has been appointed to ensure that the upgrading of the MR191 adheres to the National Heritage Resources Act (NHRA). In response to a Notification of Intent to Develop (NID) submitted to Heritage Western Cape (HWC), (reference 1109285B30), HWC stated that no further heritage studies were required. A submission was also made to the South African Heritage Agency (SAHRA) and a letter was received from the professional officer, Sonja Warwich-Stemmet stating that the SAHRA Built Environment Committee (BELCOM), dated 23 May 2013 supporting the recommendations of the heritage practitioner that the road widening would have a low impact (SAHRA reference 9/2/084/181).

Since then a letter was written to HWC (Andrew Hall and Calvin van Wijk) and SAHRA (Greg Ontong) dated 23 May 2013 with supportive documentation indicating the amendments to the road alignment and concluding that there would be no heritage impact. The recommendation was made that SAHRA Comment to HWC, in terms of the Memorandum of Agreement, that the realignment of the portion of the road would have no heritage impact, that no further heritage analysis is required and that the road widening may proceed. This submission was uploaded onto SAHRIS on the 30th May 2013. In the absence of any response to the contrary it can be assumed that the heritage authorities concur with the recommendations of the heritage consultant.

Please refer to **Appendix E2** for the comment from HWC and SAHRA.

Historically, the section of road to be upgraded passes through Swartland Alluvium Fynbos (mostly in the southern section), Boland Granite Fynbos and Swartland Shale Renosterveld (mostly in the northern section). Currently, very few remnants of these vegetation types persist as the route is largely transformed by agricultural activities (predominantly viticulture). Therefore, from an ecological perspective, the main concerns lie around freshwater issues.

The potential ecological impacts of road design, construction and operation on freshwater ecosystems have been well-documented. The proposed upgrade works largely within the existing but wider road footprint, thus there are few new operational impacts, in comparison with the existing road. The exception to this is the bridge over the Van Wyks River, which, for the preferred alternative (Alternative 3), requires the re-routing of the road and the construction of a significantly larger footprint, compared with the current scenario. This alternative will also lead to the loss of a seasonal wetland on Erf 832 (Figure 9).



Figure 9: Location of the bridge and road for Alternative 3, in relation to the seasonal wetland on Erf 832 and the Van Wyks River.

Seven streams and several wetland flats will be impacted by the upgrade of the MR191 between km 0.0 and 9.57. All potentially affected streams and wetlands were all found to be of low to moderate conservation importance. Many of the impacts expected to be associated with the road upgrade will occur at the construction phase. The most important of these include:

- The direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands;
- The loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, which may lead to erosion; and
- The loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication.

To minimise the negative impacts associated with the construction of the road, the design of the proposed upgrade should aim to minimise encroachment into streams and wetlands. It seems, however, likely that the wetland on Erf 832 will be entirely filled in for the construction of the section from approximately km 0.1 to 0.4 km. There is no obvious mitigation measure for this impact. Where borrow pits are required, these should be located at least 100m away from streams and wetlands. Work in the vicinity of streams and wetlands should preferably take place during the dry season. If this cannot be achieved, then runoff from the construction area should be directed away from streams and wetlands. Disruption of flow should be kept to a minimum during construction, but where necessary, temporary diversion measures should allow flushing of the streams to prevent build-up of material. All diversion measures must be removed from the streams and wetlands after construction is complete.

The preferred bridge design (Alternative 3) will probably lead to the loss of a wetland on Erf 832. This could be mitigated by rehabilitating the stretch of the Van Wyks River affected by the road upgrade. A method statement dealing specifically with the rehabilitation of the affected reaches of the Van Wyks River must be submitted as per the requirements of the EMP. The method statement must provide guidelines as to how to achieve sufficient ecological rehabilitation to balance the impacts of loss of wetland habitat.

Operational impacts associated with the road upgrade will be few, as the road already has an impact on the surrounding environment. However, there will be an increase in the quantity and frequency of stormwater runoff from the road, as a result of an increased surface area, which will be greatest for Alternative 3. Stormwater runoff should preferably be directed away from wetlands and rivers, but where it must be discharged into wetlands or rivers, it should preferably be spread out to flow as sheet flow wherever possible, thus avoiding the concentration of flows that could lead to erosion. Litter and sediment traps should be installed in places where littering and sedimentation is most likely to occur.

Bridge supports for the new bridge should be designed preferably to span the full width of the stream, rather than be placed in the stream bed. Where streams or wetlands are directly affected by the road upgrade, the project should be used as an opportunity to rid these ecosystems of invasive alien plants and, where feasible replanting of indigenous plant species. A construction and operational environmental management programme must be developed, and should aim to provide guidance for the minimisation of the negative impacts associated with the road upgrade, and should provide rehabilitation method statements for sensitive areas (streams and wetlands) impacted by the project.

Please refer to **Appendix G1 – Freshwater Impact Assessment**.

11. How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc)?	YES	NO	Please explain
<p>The activity involves the upgrading of the existing MR191. No odour is to be emitted as a result of the activity. The activity will not impact on the surrounding community's health or wellbeing and negligible impacts (if any) are expected in terms of noise, visual or sense of place impacts resulting from the construction phase and which would be mitigated through the implementation of the EMP (Appendix H). A Noise specialist was appointed to assess the impact of the proposed road alignment and bridge as described in the preferred alternative from the neighbouring residences. The noise specialist confirmed that the noise levels will not exceed 65dBA at any of the receptors and therefore in terms of the existing Noise Control Regulations (NCR) there would be no legal obligation to implement any noise mitigation procedures. However, the NCR are in the process of being revised to change the maximum noise level from 65dBA to 55dBA. Therefore mitigation measures have been provided for two of the receptors for which the noise will exceed 55dBA. A Noise Statement has been included as Appendix G3.</p>			
12. Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	YES	NO	Please explain
<p>The proposed activity will not result in unacceptable opportunity costs. According to NEMA the "best practicable environmental option" means the option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. It is our opinion, that the upgrading of the MR191, as proposed, will provide the most benefit and cause the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.</p> <p>However, the preferred alternative will require the expropriation of land belonging to Mr Adams, Denise Adams and Mr de Villiers and it would impact on the residents of Adamsvale. The loss of land can be offset by compensation at market related prices. Based on the findings of the SIA Mr Adams and his family have lived in the area for over 40 years. They also acquired ownership of the land despite the restrictions placed on land ownership by the Apartheid laws prior to 1994. The value that the Mr Adams and his wife attach to the property is therefore more than just a monetary value.</p> <p>The establishment of raised road in front of Mr Adams's house will have a significant impact on his current quality of life. The impacts associated with the raised road would include traffic noise impacts, visual impacts and safety impacts associated with pedestrians accessing his property off the road. Due to the raised nature of the road the noise impacts are likely to be more noticeable. It may be possible to mitigate the traffic noise and safety impacts by constructing noise barriers and fencing along the road. However, it will not be possible to mitigate the impact of the road in the current, quiet rural sense of place associated with the property.</p> <p>The dwellings in Adamsville are located within 60 metres of the new proposed road. The impacts on the residents living in these dwellings will be the same as those experienced by Mr Adams;</p> <p>The establishment of the preferred alternative will impact negatively on the value of the property owned by Mr Adams and his sister. While they will be compensated for the land that is expropriated, the construction of raised road will be impact on the value of the remaining sections of the land that are not directly affected by the proposal. This will be linked to traffic noise, safety and visual impacts associated with raised road on ones doorstep.</p>			

13. What will the cumulative impacts (positive and negative) of the proposed land use associated with the activity applied for, be?	YES	NO	Please explain
<p>Freshwater: The cumulative effects assessed in the Freshwater Impact Assessment are assumed to be additive, i.e. adding to other similar impacts. Thus, the description of the nature of the impact covers this impact, if caused by similar construction activities affecting the same freshwater ecosystems. In this case, such construction was assumed to be probable on the properties along the road route. Similarly for operational activities associated with roads, railway lines and other hardened surfaces affecting the same freshwater ecosystem, for instance there are numerous tracks and roads crossing the various streams identified along the route, and these have impacts on these systems similar to those identified for this particular activity.</p> <p>Social: The majority of the cumulative social impacts associated with the up-grade of the MR 191 will be positive. These are linked to improve road safety for motorists and improved access to the area for residents and visitors. The potential negative cumulative impacts will be largely confined to the northern Section and will depend on the Alternative selected, specifically Alternative 3. The cumulative impacts associated Alternative 3 are linked to potential security and safety issues for land currently owned by Mr Harman and Kock. These issues are associated with keeping the section of the MR 191 open to allow pedestrians to access the R 101. However, this area has been identified for industrial development. The potential security related impacts for individual property owners are likely to disappear when the properties are sold and developed for industrial use. For the owners of the land directly affected by Alternative 3 (Preferred Bridge Alternative), the cumulative impacts are linked to impact on sense of place and quality of life and impact on property values.</p>			

14. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
<p>According to NEMA the "best practicable environmental option" means the option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. It is our opinion, that the upgrading of the MR191, as proposed, will provide the most benefit and cause the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.</p>			

15. What will the benefits be to society in general and to the local communities?	Please explain		
<p>It is assumed that all users of the current road and the surrounding road network will benefit from the proposed upgrades to the MR191. This includes residents, landowners, businesses and tourists. The findings of the SIA indicate that the up-grading of the MR 191 is supported. The up-grading will improve road safety and access to the area. The project will also create employment and business opportunities during the construction phase. The potential negative impacts associated with the construction phase are linked to impact on access, specifically for local businesses located along the affected section of the MR 191. The impacts can however be effectively mitigated through careful planning and timing of construction related activities. The potential negative impacts are largely linked to the alternatives identified to address the challenges posed by the historic railway bridge and flooding of the Van Wyks River. These issues are confined to the northern section of the MR 191 and affect a relatively small number of landowners, specifically the Adam's, Mr Harman and Mr Kock.</p> <p>Based on the findings of the SIA the key social impacts associated with Alternative 3 (Preferred Bridge Alternative) are linked to the expropriation of land required to develop the alternative. The directly affected landowners have indicated that they are willing to consider compensation for the loss of land and the associated impact on their quality of life. The key recommendation is that the option of paying compensation for the entire affected properties, not just the sections affected by the road corridor, should be considered and discussed with the affected landowners. This is due to the negative impact that the establishment of a raised road along Alternative 3 (Preferred Bridge Alternative) will have on the future value of the affected properties.</p>			

16. Any other need and desirability considerations related to the proposed activity?	Please explain		
<p>There are no other need and desirability considerations related to the proposed activity.</p>			

(17) Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account:

The General Objectives of IEM have been taken into account in the following ways:

- The principles of integrated environmental management have been considered throughout the decision making process for all decisions that might have a significance on the environment.
- All significant impacts on the environment, including socio-economic and cultural heritage, have been identified and will be assessed throughout the Basic Assessment Process.
- Alternatives and mitigation measures have been addressed in order to minimise the negative impacts (where the impacts could not have been avoided), maximise the benefits, and promote compliance with the principles of environmental management.
- A public participation process will be undertaken as per the DEA&DP guidelines.
- A Freshwater and Social specialist study has been undertaken to ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them (**Appendix G**). All avoidance or mitigation measures identified by the specialist have been addressed and form part of the Environmental Management Plan attached as **Appendix H**.

(18) Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account:

The principles of Environmental Management have been taken into account throughout the entire Basic Assessment Process. The following are some significant examples:

- The proposed development will be advertised to the public and all affected and interested parties will have an opportunity to comment and become involved in the process, in this way ensuring that all people's needs; rights and concerns will be addressed through this process. The PPP deals with the following principles, amongst others:
 - ✓ The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.
 - ✓ Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.
 - ✓ Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.

- The applicant has undertaken various specialist studies to assess the impact the proposed development will have on the environment and the social implications for the community in terms of the Freshwater Ecosystems and Social Impacts. The specialist studies identified impacts and recommended mitigation measures to minimize any negative impacts they might have. The Specialist Studies deal with the following principles, amongst others:
 - ✓ That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied:
 - ✓ The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.

- An environmental management plan has been drawn up which addresses waste management and is done according to the waste minimisation guidelines. The EMP deals with the following principles, amongst others:
 - ✓ that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
 - ✓ that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner;
 - ✓ that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
 - ✓ that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.
 - ✓ Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
 - ✓ Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

SECTION E: ALTERNATIVES

Please Note: Before completing this section, first consult this Department's *Guideline on Alternatives* (August 2010) available on the Department's website (<http://www.capegateway.gov.za/eadp>).

"Alternatives", in relation to a proposed activity, means different means of meeting the general purposes and requirements of the activity, which may include alternatives to –

- (a) the property on which, or location where, it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

The NEMA prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in NEMA and the National Environmental Management Principles set out in NEMA are taken into account; and
- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management is, *inter alia*, to "identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management" set out in NEMA.

1. In the sections below, please provide a description of any identified and considered alternatives and alternatives that were found to be feasible and reasonable.

Please note: Detailed written proof the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exist.

- (a) **Property and location/site alternatives** to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

[See below.](#)

SITE ALTERNATIVES INVESTIGATED AND CONSIDERED

The section of MR 191 under consideration to be upgraded starts at km 0,0 at the intersection with the Old Paarl Road (MR 189) and continues pass Simondium in a south-easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). A number of options for the realignment of the problematic section of MR191 at the existing historical railway bridge were investigated and are briefly discussed below. The various options have been indicated by the Engineers in Figure 10 below which highlights the location of the routes that were considered.

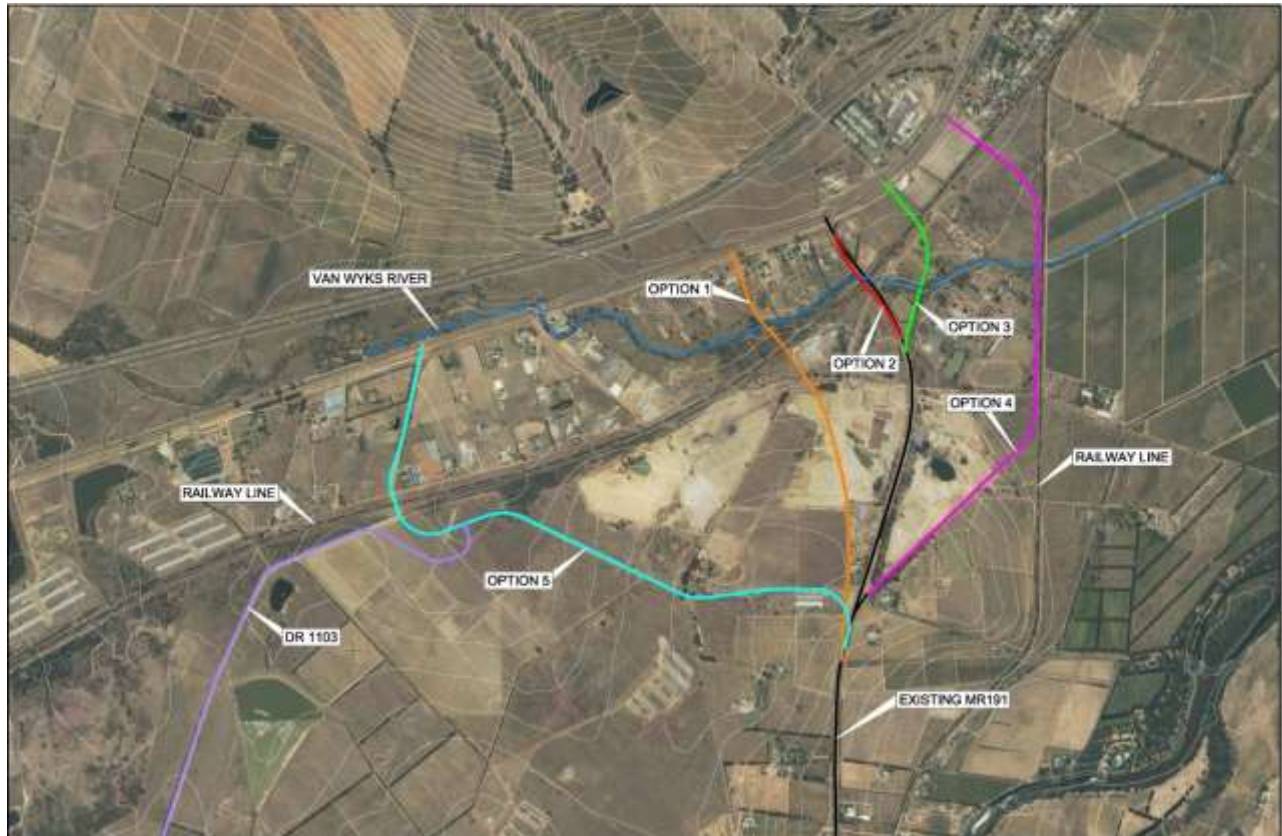


Figure 10: The various options considered for the realignment of the problematic section of MR191 at the existing historical railway bridge.

Option 1 (Orange):

The intended diversion of MR191 was registered in 1989. 13 years later in 2002 the intended diversion was withdrawn due to the subsequent approval of the expansion of the mining activities on farm 815/1 which compromised the diversion route. Therefore this option was not further investigated.

Option 4 (Pink):

This option approximately 500m to the east of the existing MR191 historical bridge was also investigated. It is situated opposite the DRE access and MR189 intersection and crosses over the existing strawberry farm of which approximately a third will be lost due to the road alignment. This alternative also involves the construction of a new two lane bridge over the railway line to acceptable geometric standards to accommodate both north and southbound traffic. This option also involves approximately 2 km of new road for which land will have to be expropriated and therefore more affected properties than with the preferred option. A complete new road will have to be constructed at a much higher cost than the upgrading of the existing road. This option involves the realignment of approximately 20% of the road section being upgraded. The last section of this road is also problematic where it will run between the existing brick quarry with very deep excavation on the one side and existing vineyards on the other side. The connection onto the existing MR191 alignment at the end of this option is also problematic where it will be substandard or alternatively expropriation and relocation will be required. Relocation of people living adjacent to the brick quarry will also be required. Therefore this option was not considered further.

Option 5 (Light Blue):

This is an option approximately 1500m to the west of the existing MR191 historical bridge. The alignment starts on the existing Divisional Road 1103. A new two lane bridge over the railway line to acceptable geometric standards to accommodate both north and southbound traffic will be needed. The design speed has to be reduced to 60km/h for the first section of the road to minimise the expropriation required which is not preferred due to the class of road to be designed. The realignment of a portion of DR1103 will be required to create a new intersection onto the new MR191 alignment at a straight section with adequate sight distance and where the road level and super elevation is more favourable for an intersection. This intersection will still involve substantial expropriation together with the expropriation for the approximately 1,6km of complete new road. The new road construction over the 1,6km of new road will also be more expensive than the upgrading of the existing MR191. The connection onto the existing MR191 alignment at the end of this option is also problematic where it will be substandard or substantial expropriation and relocation will be required. Therefore this option was not investigated further.

Option 2 (Red):

This option included the investigation of two Alternatives along this route. Alternative 1 involved the proposed construction of a new single lane bridge on the western side of the existing bridge to accommodate the northbound traffic. The existing bridge would remain to accommodate the southbound traffic. However the vertical clearance of 3,8 m on the existing bridge is substandard and would in future require that heavy vehicles be diverted to the northbound carriageway. The existing MR191 route low point on the road below the historical bridge is 119.5m. This current level provides a substandard vertical clearance of 3,80m with higher vehicles often connecting with the arch section of the bridge as could be observed from the damage on the bridge on site. The originally proposed bridge adjacent and to the west of the existing historical bridge would be required to comply to the minimum clearance standard of 5.2m due to the required capital expenditure and the risk involved with a substandard clearance. With a minimum bridge soffit level of 124.57m it will result in a maximum road centerline level of 119.37m at the road low point below the bridge. This is 0.13m below the existing road level which is frequently flooded. Alternative 1 was therefore not considered a viable option to pursue.

As a result of the flaws identified in Alternative 1, Alternative 2 developed and involved the construction of a new two lane bridge to acceptable geometric standards on the western side of the existing bridge to accommodate both north and southbound traffic. The existing bridge would remain to accommodate pedestrian traffic. The bridge for this option was planned to pass under the railway line and over the Van Wyks River. However, the railway line and the Van Wyks River were posing numerous constraints for this alternative including the continued risk of potential flooding along this road.

The option of removing the road and culverts below the historical bridge to increase the capacity was investigated together with a new structure below the proposed road alignment. Due to the minimum clearance road level the maximum drainage structure height is limited to 1.0m. This together with the available space limited the new structure to an in situ concrete structure of 4 / 3.0m x 1.0m. The capacity of this structure with inlet control is 24m³/s, which will result in the new road being overtopped and the low point on the road being flooded for the duration of the flood.

WorleyParsons looked at the option of canalizing this section of the Van Wyks River by means of a concrete canal from 100m upstream of the proposed road alignment to downstream of the existing historical bridge up to the low level crossing to the property owned by Mr & Mrs Adams. This was done to investigate the option of maintaining supercritical flow throughout the canal and thereby increasing the capacity of the structures. The computer programme HEC-RAS (Hydrological Engineering Center's (HEC) River Analysis Systems, developed by the US Army Corps of Engineers) was used to determine water flow and energy levels for this proposed canalized section. It was however found for both the QT and Q2T of 30m³/s and 40m³/s respectively that supercritical flow could not be maintained throughout the canal with hydraulic jumps occurring before the originally proposed structures and through the historical bridge section. The removal of the existing road and culverts and the new drainage structures below the originally proposed MR191 route alignment together with the canalized section did not resolve the potential flooding risk. This option would also involve the lowering of the existing 700mm steel bulk water pipeline crossing the canal and the road alignment which would require additional scour and air valves on the pipeline.

In order for Alternative 2 to comply with drainage requirements, an additional railway culvert with size 3/3m x 0,9m would have to be installed underneath the railway line to the south, plus an additional culvert of the same size underneath the road in order to convey flows to the existing river stream, as well as an additional 4/3m x 1,0m multi-barrel in situ culvert underneath the new road directly north of the new railway underpass.

However, the Van Wyks River section downstream of the historical bridge has a very flat slope and a restricted cross section which in combination has a backwater effect which causes the low lying area (Remainder of farm 832/48 and 832/47) to the north east of the river to form a flood plain during high flows. The new MR191 road level low point below the railway line bridge is such that damming of water would be restricted to 1.2m, after which flooding of the road would occur. The backwater effect in the Van Wyks River poses a real threat of exceeding this level and flooding the road. Increasing the width of the culverts below MR191 and the railway line will not have a significant impact on the capacity due to this backwater effect by the river and will incur little benefit at a very large cost. Any increase in the flow downstream of the historical bridge will also increase the flood level in the downstream area, also due to the backwater effect in the river. Therefore, these two alternatives (known as Alternative 1 & 2), cannot be assessed further as they are not viable Alternatives.

Furthermore, the question arose as to whether the bridge, as proposed at the preferred location (indicated as option 3), could cross the railway line along the existing route (indicated by option 2). However, the following was noted making this impossible:

- The toe line of the new road over rail will encroach ± 20 m into Mr. Harman's property with a fill height of $\pm 9,0$ m at the residential dwelling. Access to the bottom of this property would also have to be closed;
- Similar impacts would be experienced to the properties adjacent to the above property and therefore the Drakenstein substation would have to be relocated due to the fill line and no access could be provided;
- Access to OP 305 and to Adams Shop will have to be relocated;
- Due to the design of the bridge no access to the historical bridge will be possible, the historical bridge would barely be visible and specific design will be needed to ensure that it stays intact as requested by the Heritage Authorities.
- The river will be crossed with a wide prism which will have major impacts on the already difficult drainage scenario at this point.
- Economically this would not be feasible. The rail at the existing bridge is in a fill whereas at the new road-over-rail-bridge the railway line is on ground level therefore less fill material will be used for the preferred alternative (Option 3).

The initial layouts identified for Alternative 1 (Figure 11) and 2 (Figure 12) are included below.



Figure 11: Bridge Layout Alternative 1.



Figure 12: Bridge Layout Alternative 2.

Option 3 (Green) (Preferred Option):

This is the preferred site alternative and involves the construction of a new two lane bridge over the railway line to acceptable geometric standards on the eastern side of the existing bridge to accommodate both north and southbound traffic. The alignment will connect to the MR189 opposite the existing intersection with the Sandwyk Street (MR214) which crosses over the N1 and provide access to existing farms and the Courtrai suburb of Paarl. A new road over river bridge with 3 spans of of 8,1m, 10,6m and 8,1m respectively will be required to accommodate the design flood in the Van Wyks River. This bridge will completely span the river section with the abutments outside the river channel to limit the influence of the bridge on the restricted flow in the river. The bridge size was determined by the evaluation of and limiting of any increase in the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owners of the low lying area to the north east of the Van Wyks River for this recurrence interval flood.

The Bridge Alternative (located on the preferred site alternative), along with the No-Go alternative, will be taken forward and assessed in the remainder of this report.

(b) **Activity alternatives** to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No specific activity alternatives were considered. The activity is for the upgrading of the existing MR191.

(c) **Design or layout alternatives** to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist: **PREFERRED ALTERNATIVE**

The section of MR 191 under consideration to be upgraded starts at km 0,0 at the intersection with the Old Paarl Road (MR 189) and continues pass Simondium in a south-easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The road is to be upgraded to a Class 1 cross-section and a climbing lane is to be implemented from km 1,0 to km 1,4. Furthermore, the preferred alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards on the eastern side of the existing historic bridge to accommodate both North and south bound traffic. Please refer to **Appendix B1 & B12**.

Traffic Signals

Traffic signals are recommended for the proposed realigned MR 191 / MR 189 intersection as well as the upgraded MR 191 / MR 205 intersection. The traffic signals will provide for a higher level of and will also provide better pedestrian crossing opportunities than the current scenario. This is especially required at the MR 191 / MR 205 intersection where many of the observed pedestrians are primary school children.

Climbing Lane

Speed profiles were done in both directions to determine the position of possible climbing lanes. In accordance with the GD Manual the warrants for climbing lanes are triggered, i.e.

- a. a speed reduction for trucks exceeding 25 km/h and
- b. the Design Hour Volume of Vehicles exceeding the appropriate value.

The Engineers therefore recommend that a climbing lane on the left-hand side be constructed from km 1,0 to km 1,4.

Intersection and Access

There are numerous intersections and accesses on this section of MR 191 from km 0,0 to km 9,57. **Appendix B4** displays the Western cape Government standard intersection and farm access details.

Bus Stops

Currently there are nine bus stops along the road. A public transport study was conducted to evaluate the use of the existing bus stops and to identify other positions which are frequently being used as public transport stops. Sixteen positions were identified during the study and will be investigated as official bus stop positions during the detail design stage. The bus stops will be implemented according to the Western Cape Government rural bus stop standards as displayed in **Appendix B4**.

Fencing

The fencing over a portion of the road is in a sound state but in some places no fencing exists or the fencing is in a bad condition. It is recommended that new fencing be erected where required to match the existing fencing type.

Bridge Layout

In addition, the preferred bridge layout alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards ± 250 m east of the existing bridge and intersecting with the existing MR189 (R101) and Main Road 214 intersection, to accommodate both North and south bound traffic. The proposed bridge would pass over the existing railway line which would prevent the vertical clearance issues and ensure that the road is high enough and out of danger from potential flooding. This is considered the preferred option from a hydraulic and geometrical point of view with provision being made for a new road over river bridge with 3 spans of 8,1m, 10,6m and 8,1m respectively orthogonal to the Van Wyks River, to accommodate the design flood. The bridge size was determined by the evaluation of the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owner downstream of the historical bridge for this recurrence interval flood. In addition a new 2 / 3,0m x 1,8m in situ concrete culvert is proposed at km 0,316 to drain the low point against the proposed road fill. Please refer to **Appendix B8** for the Bridge Layout and Design.

Furthermore, no alterations to the existing historical bridge are proposed which will remain to accommodate traffic as a lower order road. While numerous aspects were considered in terms of the viability of the section of the MR 191 that would no longer be required, in terms of this proposal, the following was concluded and would be implemented should this alternative be authorised:

- Access will be allowed from the 'discarded' section of the MR 191 directly onto the proposed Service Road parallel to MR 189.
- Maintenance will be undertaken on a regular basis with regards to ensuring that the culverts under the historical bridge are cleared of any debris.
- A service road will be constructed (**Appendix B1**) along the southern side of the MR 189 in order for all accesses along this strip to feed into the new access point proposed along the MR 189 in order to improve the safety aspects of the road.
- The service road will have access to MR 191 & MR 189

Furthermore, this alternative will involve the expropriation of the portion of land required for the proposed bridge and road realignment. Three landowners will be affected namely: Portion 48 of the Remainder of Farm 832, Portion 36 of the Remainder of Farm 832, Portion 47 of the Remainder of Farm 832 and Portion 50 of the Remainder of Farm 832. It must be understood that the expropriation of land is a separate legal process that follows the standard procedures as set out in the Road Ordinance, 1976 (Ordinance No. 19 of 1976), the Expropriation Act, 1975 (Act No 63 of 1975) and the Constitution of SA, 1996 (Act No 108 of 1996). In terms of the Constitution the expropriation process must be "just and equitable" in every way. The expropriation process involves the appointment of an independent evaluator to determine the value of the land expropriated, as well as to assess whether the expropriation has any negative effect on the remainder of the affected properties. The landowner will therefore be compensated at 100% of the value of the land required for the road reserve, as well as in respect of any negative impact which the expropriation and associated activities (within the road reserve) will have on the remainder of the property. The owner will further also be compensated in respect of any actual financial losses suffered as a direct result of the expropriation, if such losses can be proven. This process is separate and independent of the EIA process.

The general arrangement drawings for the following bridges and culverts are included as **Appendix B11**:

- km 0,167 Proposed Road-over-rail Bridge new plans will be submitted
- km 0,204 Proposed Access Road Culvert
- km 0,316 Proposed 2 / 3.0m x 1.8m Box Culvert
- km 0,391 Proposed Van Wyks River Bridge
- km 2,602 Widening of existing 1 / 4.5m x 2.5m Box Culvert
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- km 4,729 Proposed 2 / 3.0m x 1.8m Box Culvert to replace existing culvert
- km 6,475 Proposed 1 / 2.1m x 2.1m Box Culvert to replace existing culvert
- km 6,529 Proposed 2 / 3.6m x 2.6m Box Culvert to replace existing culvert
- km 9,193 Widening of existing 1 / 2.3m x 2.7m Box Culvert

Please refer to **Appendix B** for the proposed upgrade specifications and Preferred Bridge Design.

(d) **Technology alternatives** (e.g. to reduce resource demand and resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No specific technology alternatives were considered. The activity is for the upgrading of the existing MR191.

(e) **Operational alternatives** to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No specific operational alternatives were considered. The activity is for the upgrading of the existing MR191.

(f) the option of not implementing the activity (**the No-Go Option**):

No-Go Alternative:

This alternative is the “no-development alternative” or “in-situ” approach. The no-go option will result in the existing status quo of the MR 191 being maintained. The existing bridge is to remain and only the road markings will be maintained.

WorleyParsons RSA (previously Kv3 Engineers) were appointed to undertake a investigation report in 2010, on behalf of the Department of Transport and Public Works, to investigate whether MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) “C”. It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS “D”. Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS “E” in approximately 18 years time. The remaining pavement life of the road was calculated and it was deduced that the pavement structure, at the time, would reach the end of its life by 2010 for section 1 (km 0,0 to km 6,04) and 2014 for section 2 (km 6,04 to km 9,57).

Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement.

In addition drainage studies concluded that firstly the bridge across the Van Wyks River at km 0,2, has inadequate capacity for the design run-off and secondly a large portion of the run-off draining towards the culvert at km 6,53 (across the Meulstroom River) actually drains towards a small culvert at km 6,48 which has inadequate capacity for this extra run-off. In addition, due to the substandard vertical clearance (3,8 m) of the Bridge the road would be unsafe for road users.

As a result of the above the no-go alternative is not considered a viable, practical alternative. It is inevitable that as the population growth increases roads need to be upgraded in accordance with the pressure of increased traffic experienced on these roads.

(g) **Other alternatives** to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

No further Alternatives were assessed.

(h) Please provide a **summary of the alternatives** investigated and the outcomes of such investigation:

Please note: If no feasible and reasonable alternatives exist, the description and proof of the investigation of alternatives, together with motivation of why no feasible or reasonable alternatives exist, must be provided.

PREFERRED ALTERNATIVE

The section of MR 191 under consideration to be upgraded starts at km 0,0 at the intersection with the Old Paarl Road (MR 189) and continues pass Simondium in a south-easterly direction up to km 9,57 near the intersection with Helshoogte Road (MR 172). The road is to be upgraded to a Class 1 cross-section and a climbing lane is to be implemented from km 1,0 to km 1,4. The following will be implemented:

Traffic Signals

Traffic signals are recommended for the proposed realigned MR 191 / MR 189 intersection as well as the upgraded MR 191 / MR 205 intersection. The traffic signals will provide for a higher level of service and will also provide better and safer pedestrian crossing opportunities than the current scenario. This is especially required at the MR 191 / MR 205 intersection where many of the observed pedestrians are primary school children.

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- b. the Design Hour Volume of Vehicles exceeding the appropriate value.

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There are numerous intersections and accesses on this section of MR 191 from km 0,0 to km 9,57. **Appendix B4** displays the Western cape Government standard intersection and farm access details.

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Fencing

The fencing over a portion of the road is in a sound state but in some places no fencing exists or the fencing is in a bad condition. It is recommended that new fencing be erected where required to match the existing fencing type.

Furthermore, the preferred alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards on the eastern side of the existing historic bridge to accommodate both North and south bound traffic. Please refer to **Appendix B1**.

Bridge Layout

The preferred bridge location alternative involves the construction of a new two lane road-over-rail bridge to acceptable geometric standards ± 250 m east of the existing bridge and intersecting with the existing MR189 (R101) and Main Road 214 intersection, to accommodate both North and south bound traffic. The proposed bridge would pass over the existing railway line which would prevent the vertical clearance issues and ensure that the road is high enough and out of danger from potential flooding. This is considered the preferred option from a hydraulic and geometrical point of view with provision being made for a new road over river bridge with 3 spans of 8,1m, 10,6m and 8,1m respectively orthogonal to the Van Wyks River, to accommodate the design flood. The bridge size was determined by the evaluation of the 1:50 year recurrence interval flood line. This was done to not adversely affect the existing property owner downstream of the historical bridge for this recurrence interval flood. In addition a new 2 / 3,0m x 1,8m in situ concrete culvert is proposed at km 0,316 to drain the low point against the proposed road fill. Please refer to **Appendix B8** for the Bridge Layout and Design.

Furthermore, no alterations to the existing historical bridge are proposed which will remain to accommodate traffic as a lower order road. While numerous aspects were considered in terms of the viability of the section of the MR 191 that would no longer be required, in terms of this proposal, the following was concluded and would be implemented should this alternative be authorised:

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- The service road will have access to MR 191 & MR 189

Furthermore, this alternative will involve the expropriation of the portion of land required for the proposed bridge and road realignment. The landowners that will be affected are: Portion 48 of the Remainder of Farm 832, Portion 36 of the Remainder of Farm 832, Portion 47 of the Remainder of Farm 832, Portion 50 of the Remainder of Farm 832, Portion 54 of the Remainder of Farm 832 and Portion 56 of the Remainder of Farm 832. It must be understood however that the expropriation of land is a separate legal process that follows the standard procedures as set out in the Road Ordinance, 1976 (Ordinance No. 19 of 1976), the Expropriation Act, 1975 (Act No 63 of 1975) and the Constitution of SA, 1996 (Act No 108 of 1996). The rights of each South African citizen are protected in our country's Constitution. In terms of the Constitution the expropriation process must be "just and equitable" in every way. The expropriation process involves the appointment of an independent evaluator to determine the value of the land expropriated as well as to assess whether the expropriation has any negative effect on the remainder of the affected properties. The landowner will therefore be compensated at 100% of the value of the land required for the road reserve as well as in respect of any negative impact which the expropriation and associated activities (within the road reserve) will have on the remainder of the property. The owner will further also be compensated in respect of any actual financial losses suffered as a direct result of the expropriation, if such losses can be proven. This process is separate and independent of the EIA process.

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Please refer to **Appendix B** for the proposed upgrade specifications and Preferred Bridge Design.

NO-GO ALTERNATIVE:

This alternative is the “no-development alternative” or “in-situ” approach. The no-go option will result in the existing status quo of the MR 191 being maintained. The existing bridge is to remain and only the road markings will be maintained.

WorleyParsons RSA (previously Kv3 Engineers) were appointed to undertake a investigation report in 2010, on behalf of the Department of Transport and Public Works, to investigate whether MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) “C”. It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS “D”. Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS “E” in approximately 18 years time. The remaining pavement life of the road was calculated and it was deduced that the pavement structure, at the time, would reach the end of its life by 2010 for section 1 (km 0,0 to km 6,04) and 2014 for section 2 (km 6,04 to km 9,57).

Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement.

In addition drainage studies concluded that firstly the bridge across the Van Wyks River at km 0,2, has inadequate capacity for the design run-off and secondly a large portion of the run-off draining towards the culvert at km 6,53 (across the Meulstroom River) actually drains towards a small culvert at km 6,48 which has inadequate capacity for this extra run-off. In addition, due to the substandard vertical clearance (3,8 m) of the Bridge the road would be unsafe for road users.

As a result of the above the no-go alternative is not considered a viable, practical alternative. It is inevitable that as the population growth increases roads need to be upgraded in accordance with the pressure of increased traffic experienced on these roads.

SECTION F: IMPACT ASSESSMENT, MANAGEMENT, MITIGATION AND MONITORING MEASURES

Please note: The information in this section must be duplicated for all the feasible and reasonable alternatives (where relevant).

1. PLEASE DESCRIBE THE MANNER IN WHICH THE DEVELOPMENT WILL IMPACT ON THE FOLLOWING ASPECTS:

(a) Geographical and physical aspects:

No impacts on any geographical or physical aspects are expected.

(b) Biological aspects:

Will the development have an impact on critical biodiversity areas (CBAs) or ecological support areas (CSAs)?	YES	NO
If yes, please describe:		
<p>The MR191 traverses through patches of CBAs and various ESAs. The crossing of ESAs is largely due to the location of streams within these ESAs. Please refer to Appendix D – Biodiversity Overlay Maps. Historically, the section of road to be upgraded passes through Swartland Alluvium Fynbos (mostly in the southern section), Boland Granite Fynbos and Swartland Shale Renosterveld (mostly in the northern section). Currently, very few remnants of these vegetation types persist as the route is largely transformed by agricultural activities (predominantly viticulture). Therefore, from an ecological perspective, the main concerns lie around freshwater issues.</p>		
Will the development have an impact on terrestrial vegetation, or aquatic ecosystems (wetlands, estuaries or the coastline)?	YES	NO
If yes, please describe:		
<p>The road traverses seven rivers, all of which are tributaries of the Berg River in catchment G10C. Many of the streams have been highly modified as a result of the construction of the MR191 and the railway line, the direct drainage of agricultural runoff from cultivated fields into the streams, channelisation (i.e. the process of shaping the bed and banks of a river into a straighter channel with concentrated flow and little riparian vegetation) and dumping of building rubble and litter. Water quality appears generally poor, based on visual observation of turbidity, odour, and the presence of benthic algae, a good indicator of nutrient enrichment (such as occurs from the discharge of nutrient-rich agricultural runoff).</p> <p>As it flows between the N1 and the MR189, the Van Wyks River, which will be most affected by the alignment of the MR191 as it approaches the MR189, can be classified as a “wetland transitional” or, using the more recent wetland classification system, as an unchannelled valley bottom wetland. These wetlands are typified by seasonal seeps, flats and depressions within a valley bottom. Due to the construction of numerous roads, residential, industrial and commercial buildings, and the railway line, and the cultivation of much of the surrounding catchment, the river is now less like a wetland (except for the reaches close to Simonsvlei, where the river and wetlands are protected), and more like a river channel.</p> <p>From the point at which the river/wetland flows under the MR189 and eastwards towards the new Zandwyk Industrial Park, the river is now constrained to flow along a channel, which is impacted by litter and dumping, and which has poor water quality due to the destruction of the floodplain wetlands that would have served to take up excess nutrients and sediments. The riparian zone of the river is now dominated by the common reed (<i>Phragmites australis</i>), the bulrush (<i>Typha capensis</i>), and the sedge <i>Cyperus textilis</i>. Alien trees such as acacias, syringe and gums are common around the river. Eastwards of the MR191 and the study site, the Van Wyks River flows as a narrow channel between vineyards, until it reaches the Berg River.</p>		

In many places along the road route, there are patches of wetland that lie between the road and the railway line. According to the Freshwater Specialist, it is difficult to determine whether these are natural wetlands, or whether they have been formed as a result of restricted drainage between the road and the railway line, on an underlying geology that is less permeable, such as clay. These are seasonal wetlands, dominated by *Pennisetum macrourum* and *Cliffortia* sp., typed as “flats” according to the National Wetland Classification System (SANBI, 2009). At the time of the field visit in August 2011, the Freshwater Specialist reported that there was clear standing water in these wetlands, with little or no benthic algae. A seasonal flat wetland is located on erf 832, which will be impacted by the re-alignment of the MR191 eastwards of its current position, and the construction of a bridge over the Van Wyks River and the railway line. The wetland is dominated by *Pennisetum macrourum*, and was moist but not inundated on the 11th July 2013, when this site was visited by the Freshwater Specialist. It is likely that this wetland used to be part of the seasonal valley bottom wetland that is the Van Wyks River, which would have had seasonal seeps, flats and depressions associated with it. According to the Freshwater Specialist, the characteristics of the wetland can be assessed by looking further upstream, opposite Simonsvlei, where the valley bottom and its wetlands are currently conserved and managed by the Simonsvlei Wetlands Trust.

The proposed upgrade works largely within the existing but wider road footprint, thus there are few new operational impacts, in comparison with the existing road. The exception to this is the bridge over the Van Wyks River, which, for Alternative 3, requires the re-routing of the road and the construction of a significantly larger footprint, compared with the current scenario. This alternative will also lead to the loss of a seasonal wetland on Erf 832.

Seven streams and several wetland flats will be impacted by the upgrade of the MR191 between km 0.0 and 9.57. All potentially affected streams and wetlands were all found to be of low to moderate conservation importance. Many of the impacts expected to be associated with the road upgrade will occur at the construction phase. The most important of these include:

- The direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands;
- The loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, which may lead to erosion; and
- The loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication.

Please refer to **Appendix G1 – Freshwater Impact Assessment**.

Will the development have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species?	YES	NO
If yes, please describe:		
Please describe the manner in which any other biological aspects will be impacted:		
No other impacts on other biological aspects are expected.		

(c) Socio-Economic aspects:

What is the expected capital value of the activity on completion?	R 200 Million
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the activity?	unknown
Will the activity contribute to service infrastructure?	YES NO
How many new employment opportunities will be created in the construction phase of the activity?	unknown
What is the expected value of the employment opportunities during the construction phase?	unknown
What percentage of this will accrue to previously disadvantaged individuals?	90%
How will this be ensured and monitored (please explain):	
The number of employment opportunities and the value thereof will be a contract requirement, according to the Western Cape government's targets and guidelines.	
How many permanent new employment opportunities will be created during the operational phase of the activity?	None
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A
How will this be ensured and monitored (please explain):	
N/A	
Any other information related to the manner in which the socio-economic aspects will be impacted:	
None.	

(d) Cultural and historic aspects:

<p>The road traverses a landscape of considerable cultural historical and scenic significance. Land grants in the scenic corridor date from the late eighteenth century and the related built form reflects the rich layering of the landscape from this period. Many of the historical farm werfs are located on the terrace to the west of the Berg River and do not have a visual spatial relationship with the MR 191. Heritage resources which do have a visual spatial relationship with the MR 191 have been identified in the Drakenstein Heritage Survey. They include, inter alia, the old railway bridge adjacent to the MR189, the farm werfs at Keunenberg, Keunienburgh and Riverside, the Het Stigt school complex (PHS), the Simondium station, various railway cottages and farm cottages and the small commercial node at Simondium. Significant lateral views of the Klein Drakenstein and Simonsberg mountain have also been identified and mapped and have a significant clump of trees. Refer to Appendix G4.</p> <p>A Heritage Practitioner has been appointed to ensure that the upgrading of the MR191 adheres to the National Heritage Resources Act (NHRA). In response to a Notification of Intent to Develop (NID) submitted to Heritage Western Cape (HWC), (reference 1109285B30), HWC stated that no further heritage studies were required. A submission was also made to the South African Heritage Agency (SAHRA) and a letter was received from the professional officer, Sonja Warwich-Stemmet stating that the SAHRA Built Environment Committee (BELCOM), dated 23 May 2013 supporting the recommendations of the heritage practitioner that the road widening would have a low impact (SAHRA reference 9/2/084/181).</p> <p>Since then a letter was written to HWC (Andrew Hall and Calvin van Wijk) and SAHRA (Greg Ontong) dated 23 May 2013 with supportive documentation indicating the amendments to the road alignment and concluding that there would be no heritage impact. The recommendation was made that SAHRA Comment to HWC, in terms of the Memorandum of Agreement, that the realignment of the portion of the road would have no heritage impact, that no further heritage analysis is required and that the road widening may proceed. This submission was uploaded onto SAHRIS on the 30th May 2013. In the absence of any response to the contrary it can be assumed that the heritage authorities concur with the recommendations of the heritage consultant.</p> <p>Please refer to Appendix E2 for the comment from HWC and SAHRA.</p>

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the activity produce waste (including rubble) during the construction phase?	YES	NO
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type? Limited building rubble will be produced through the proposed activities on site.	limited	
Spoil – material unsuitable for construction (Excess cut soil)	30 000m ³	
Spoil – material unsuitable for construction (Topsoil)	200m ³	

Will the activity produce waste during its operational phase?	YES	NO
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type? N/A	M ³	

Where and how will the waste be treated / disposed of (describe)? N/A		
If yes, indicate the types of waste (actual type of waste, e.g. oil, and whether hazardous or not) and estimated quantity per type per phase of the development? N/A		
Has the municipality or relevant authority confirmed that sufficient capacity exist for treating / disposing of the waste to be generated by this activity(ies)? If yes, provide written confirmation from Municipality or relevant authority	YES	NO
Will the activity produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	YES	NO
If yes, has this facility confirmed that sufficient capacity exist for treating / disposing of the waste to be generated by this activity(ies)? Provide written confirmation from the facility and provide the following particulars of the facility: N/A	YES	NO
Does the facility have an operating license? (If yes, please attach a copy of the license.)	YES	NO
Facility name and Contact Details: N/A		

Describe the measures that will be taken to reduce, reuse or recycle waste: The only waste that will be produced would be limited building rubble during the construction of the activity, therefore no measures have been taken to reduce, reuse or recycle waste. The disposal of spoil will be dealt with in the EMP.
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(b) Emissions into the atmosphere

Will the activity produce emissions that will be disposed of into the atmosphere?	YES	NO
If yes, does it require approval in terms of relevant legislation?	YES	NO
Describe the emissions in terms of type and concentration and how it will be treated/mitigated: N/A. Dust will be generated as the result of the construction activities, however, this is true for all construction related activities and will be dealt with through the EMP.		

3. WATER USE

Please indicate the source(s) of water for the activity by ticking the appropriate box(es)

Municipal	Water board	Groundwater	River, Stream, Dam or Lake	Other	The activity will not use water during the operational phase.
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If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	
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Please provide proof of assurance of water supply (eg. Letter of confirmation from municipality / water user associations, yield of borehole)		
Does the activity require a water use permit / license from DWAF? (Appendix J)	YES	NO
If yes, please submit the necessary application to Department of Water Affairs and attach proof thereof to this application. An application to Department of Water & Sanitation was made & a Water Use Authorisation has been issued. The activity falls within the ambit of a General Authorisation (GA).		

Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:

The activity does not use water during its operational phase and therefore no measures to reduce water demand or measures to reuse or recycle water have been taken.

4. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

The activity does not use power during the operational phase.

If power supply is not available, where will power be sourced from?

N/A

5. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The activity involves the upgrading of the MR191, therefore no energy efficiency measures have been taken into account.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The activity involves the upgrading of the MR191, therefore no alternative energy sources have been taken into account.

6. DESCRIPTION AND ASSESSMENT OF THE SIGNIFICANCE OF IMPACTS PRIOR TO AND AFTER MITIGATION

Please note: While sections are provided for impacts on certain aspects of the environment and certain impacts, the sections should also be copied and completed for all other impacts.

- (a) **Impacts that may result from the planning, design and construction phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the planning, design and construction phase.**

Potential impacts on geographical and physical aspects:	Proposed Upgrade	No-Go
	The construction phase is expected to pose little to no direct threat to geographical and physical aspects.	N/A

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, leading to erosion.	N/A
Extent and duration of impact:	Site, Medium term	
Probability of occurrence:	Definite	
Degree to which the impact can be reversed:	Fully reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low-Medium negative	
Degree to which the impact can be mitigated:	Fully mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ The design of the road must aim to minimise the footprint of the road construction, and sensitive ecosystems that are to be protected along the road route must be demarcated prior to any construction activities, so that these can be avoided. ▪ Construction near rivers and wetlands must preferably take place during the dry season, in order to minimise the impacts of bulldozing and blasting. ▪ Runoff from the construction area must preferably be directed away from streams and wetlands. Sediment settlement ponds must be used where runoff is particularly turbid. ▪ Where streams are affected by river crossings, consideration must be given at the design phase to remedial shaping of banks to their near-natural slope, geomorphological and bed characteristics. ▪ Banks must be re-vegetated after clean-up, to the satisfaction of the ECO. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands.	N/A
Extent and duration of impact:	Site, Long-term to Permanent	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Partly reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	

Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low-Medium negative	
Degree to which the impact can be mitigated:	Fully mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ If required, borrow pits must be located at least 100m away from wetlands or rivers, and any runoff from borrow pits must be directed away from wetlands or rivers, into settlement ponds. Only clean, clear runoff must be allowed to flow back into rivers and wetlands. ▪ Where borrow pits do impact on the natural environment: <ul style="list-style-type: none"> → Removal and bagging of plants useful for rehabilitation of banks must be considered. → Removal of alien species (e.g. acacias, kikuyu grass, Spanish reed) can be considered to be a positive impact of construction. → Removal of vegetation must be kept to a minimum, and temporarily cleared areas must be re-vegetated after clean-up. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Negligible	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication.	N/A
Extent and duration of impact:	Local, Medium-term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Fully reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low - Medium negative	
Degree to which the impact can be mitigated:	Fully mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ Disruption of flow must be kept to a minimum, but where necessary, temporary diversion measures must allow flushing of the streams to prevent build-up of material. Construction close to the streams must preferably take place in summer, so that winter rains will flush the systems after construction. ▪ The final design of temporary diversion measures must be ratified by a freshwater ecologist. ▪ No obstructions to flow shall remain in the rivers or wetlands after construction is completed. This must be checked by the ECO. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Dumping of building material and rubble – resulting in potential contamination of streams and wetlands.	N/A
Extent and duration of impact:	Site, Short-term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Fully reversible	

Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low - Medium negative	
Degree to which the impact can be mitigated:	Fully mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ All building materials must be stored away (at least 50m) from aquatic ecosystems and the areas banded appropriately such that there will be no runoff from these areas towards aquatic systems. All building materials must be removed after construction. ▪ If construction areas are to be pumped of water (e.g. after rains), this water must first be pumped into a settlement area, and not directly into a natural ecosystem. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Negligible	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Deterioration in wetland and riverine habitat through spillage of building materials and oil / fuel.	
Extent and duration of impact:	Local, Medium-term	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Fully reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low - Medium negative	N/A
Degree to which the impact can be mitigated:	Fully mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ Washing of vehicles and machinery must take place well away (50m) from aquatic ecosystems. All machinery must be regularly checked for leaks. ▪ No runoff shall enter the wetlands, streams or rivers. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Negligible	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Introduction and spread of invasive alien plants (IAPs) through disturbance of soils and use of poor top soil.	
Extent and duration of impact:	Local, Long-term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Partly reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Medium negative	
Significance rating of impact prior to mitigation	Medium – High negative	N/A
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ All fill material must be checked for grass runners, seeds and seedlings of IAPs. ▪ Areas where fill material has been placed, or where 	

	rehabilitation has occurred after clean-up, must be regularly checked for IAPs.	
Cumulative impact post mitigation:	Low – Medium negative	
Significance rating of impact after mitigation	Low – Medium negative	

Potential impact on biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Increased disturbance of fauna and flora from noise and light.	N/A
Extent and duration of impact:	Local, Short-term	
Probability of occurrence:	Definite	
Degree to which the impact can be reversed:	Fully reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	Lighting used during the construction phase must be directed away from sensitive wetlands and rivers.	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low – Negligible Negative	

Potential impacts on socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Creation of employment and business opportunities.	N/A
Extent and duration of impact:	Local-Regional, Short Term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	N/A	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Medium Positive	
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> ▪ Where reasonable and practical the proponent must appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area. ▪ Where feasible, efforts must be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria; ▪ Where feasible, training and skills development programmes for locals must be initiated prior to the initiation of the construction phase; ▪ The recruitment selection process must seek to promote gender equality and the employment of women wherever possible. ▪ The proponent must liaise with the DLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction 	

	<p>contractors. These companies must be notified of the tender process and invited to bid for project-related work;</p> <ul style="list-style-type: none"> Where possible, the proponent must assist local BBBEE companies to complete and submit the required tender forms and associated information. 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Medium Positive	

Potential impacts on socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Presence of construction workers and potential impacts on family structures and social networks.	
Extent and duration of impact:	Local, Short Term	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Irreversible	
Degree to which the impact may cause irreplaceable loss of resources:	Yes (HIV/AIDS)	
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Low Negative	
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> Where possible, the proponent must make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories; The proponent must consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF must be established before the construction phase commences, and must include key stakeholders, including representatives from local communities, councilors, farmers and the contractor(s). The MF must also be briefed on the potential risks to the local community associated with construction workers; The proponent and the contractor(s) must, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code must identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code must be dismissed. All dismissals must comply with the South African labour legislation; The proponent and appointed contractor must meet with the principals from the local schools in the area and inform them of the project. The principals must be informed of the potential risk posed by construction workers to school children, specifically girls. A mechanism must be established that enables school children to report incidents involving contractors to the school principals, who in turn can report the incidents to the Environmental Control Officer and the Project Engineer; The proponent and the contractor must implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. The programme must also inform construction workers that incidents involving school children will not be tolerated; Construction workers found guilty of harassing school children must be dismissed. All dismissals must be in accordance with South African Labour Law regulations; The proponent and the contractor must implement an HIV/AIDS awareness programme for the local schools. This must be planned and implemented in consultation with the 	N/A

	<p>local school principals. The aim of the programme must be to inform local school children of the potential risks posed by construction workers;</p> <ul style="list-style-type: none"> ▪ The contractor must provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site; ▪ It is recommended that no construction workers, with the exception of security personnel, must be permitted to stay over-night on the site. 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Low Negative	

Potential impacts on socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Impact on irrigation infrastructure.	
Extent and duration of impact:	Local, Short Term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	
Cumulative impact prior to mitigation:	Medium	
Significance rating of impact prior to mitigation	High Negative	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	<p>The proponent has met with representatives from the SAPIB to discuss this issue. The mitigation measures discussed include:</p> <ul style="list-style-type: none"> ▪ The location of the pipeline must be demarcated at the outset of the construction phase and the necessary measures must be taken to ensure that the construction related activities do not impact on or damage the pipeline; ▪ In the event of the pipeline being damaged, the contractor must be required to fix the pipeline and restore flow within 1 day of the damage occurring; ▪ In order to reduce the potential risks to the farms that rely on the pipeline, construction work along the section of the road (km 1.6) where the pipeline is located must be planned to take place during the winter months (May-September) when the impacts associated with damage to the pipeline would be lower; ▪ Due to the age of and nature of the pipeline (asbestos), the option of replacing the section of the pipeline where it crosses the road reserve were also discussed. A decision on this matter must be taken in consultation with the SAPIB before the commencement of the construction phase. 	N/A
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Low Negative	

Potential impacts on socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Impact on heavy vehicles and construction activities - potential noise, dust and safety impacts.	
Extent and duration of impact:	Local, Short Term	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	

Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Medium Negative	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ The movement of heavy vehicles associated with the construction phase must, where possible, be timed to avoid times of the day when scholars walk to and from schools, namely before 07h30 in the morning and after 16h00 in the afternoons; ▪ The movement of heavy vehicles associated with the construction phase must be timed to avoid long weekends and weekends when tourists are more likely to use the road; ▪ Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; ▪ All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits; ▪ Construction related activities must limited to the period 08h00 to 17h00. This will reduce the potential noise impacts and disturbances to the local residents in the area; ▪ No construction related activities must take place on Saturday, Sunday and public holidays; ▪ Dust suppression measures must be implemented on the exposed embankment surfaces, such as netting and regular wetting; ▪ Embankments must be successfully re-vegetated before the completion of the construction phase; ▪ All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Low Negative	

Potential impacts on socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Impact on access and movement.	
Extent and duration of impact:	Local, Short Term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	
Cumulative impact prior to mitigation:	Medium	
Significance rating of impact prior to mitigation	High Negative	
Degree to which the impact can be mitigated:	Low	N/A
Proposed mitigation:	<ul style="list-style-type: none"> ▪ For half width construction, a stop/go system shall be used during day time, and during night time hours a traffic signal system must be implemented; ▪ The travelling public has the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on public roads; ▪ Considering the safety and convenience of travelling public of utmost importance. Every effort will be made to ensure that all temporary road signs, cones, flagmen and speed controls are maintained and effective, and that courtesy is extended to the public at all times; 	

	<ul style="list-style-type: none"> ▪ Construction work, including the erection and removal of traffic control facilities, shall only be executed between sunrise and sunset on Monday to Saturday, inclusive; ▪ Accommodation of traffic on the existing traffic lanes will be required throughout the construction contract period. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Engineer. During the year end break the road sections must be open full width; ▪ It must be noted that Sundays are specified as “Special non-working days” in the contract data. In terms of Clause 5.8.1 of the General Conditions of Contract (GCC) 2010, the Engineer’s permission has to be obtained for work to be carried out on special non-working days, for which permission shall be applied for at least two weeks prior to the day; ▪ Also note additional mitigation measures (Section H) 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Low Negative	

Potential impacts on cultural-historical aspects:	Proposed Upgrade	No-Go
Nature of impact:	The construction phase is expected to pose little to no direct threat to cultural-historical aspects.	N/A

Potential noise impacts:	Proposed Upgrade	No-Go
Nature of impact:	Noise impact from machinery	N/A
Extent and duration of impact:	Local, Duration of construction phase	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Medium	
Degree to which the impact may cause irreplaceable loss of resources:	Negligible	
Cumulative impact prior to mitigation:	Low-negative	
Significance rating of impact prior to mitigation	Low-Medium negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	<p>Noise mitigation measures are dealt with in the EMP. The following measures will be implemented amongst others:</p> <ul style="list-style-type: none"> ▪ The Contractor shall endeavor to keep noise generating activities to a minimum. ▪ Noises that could cause a major disturbance, for instance blasting and crushing activities, must only be carried out during daylight hours. ▪ Compliance with the appropriate legislation with respect to noise shall be mandatory. ▪ Must noise generating activities such as drilling have to occur at night the people in the vicinity of the drilling shall be warned about the noise well in advance and the activities kept to a minimum. 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Low Negative	

Potential visual impacts:	Proposed Upgrade	No-Go
Nature of impact:	Unightly views due to construction site.	N/A
Extent and duration of impact:	Local, during duration of construction	

Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	
Cumulative impact prior to mitigation:	Low-Negative	
Significance rating of impact prior to mitigation	Low- Medium Negative	
Degree to which the impact can be mitigated:	Probable	
Proposed mitigation:	Where required, disturbed areas are to be rehabilitated after construction.	
Cumulative impact post mitigation:	Low-Negative	
Significance rating of impact after mitigation	Low-Negative	

(b) **Impacts that may result from the operational phase** (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.

Potential impacts on the geographical and physical aspects:	Proposed Upgrade	No-Go
Nature of impact:	The operational phase is expected to pose little to no direct threat to geographical and physical aspects.	

Potential impact biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Direct loss of riverine or wetland habitat and flora and fauna.	N/A
Extent and duration of impact:	Local, Permanent	
Probability of occurrence:	Definite	
Degree to which the impact can be reversed:	Irreversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low Negative	
Significance rating of impact prior to mitigation	Low – Medium negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ The design of the road must aim to minimise the footprint of the road construction. ▪ Removal of alien species (e.g. acacias, kikuyu grass, Spanish reed) from river reaches affected by river crossings, can be considered to be a positive impact of construction. ▪ Removal of vegetation must be kept to a minimum. ▪ Bridge supports must be designed preferably to span the full width of the stream or wetland, rather than be placed in the stream bed or in the wetland. ▪ The preferred bridge design (Alternative 3) will probably lead to the loss of a wetland on Erf 832. This could be mitigated by rehabilitating the stretch of the Van Wyks River affected by the road upgrade. A method statement dealing specifically with the rehabilitation of the affected reaches of the Van Wyks River must be submitted as per the requirements of the EMP. The method statement must provide guidelines as to how to achieve sufficient ecological rehabilitation to balance the impacts of loss of wetland habitat. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impact biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Increased constriction of flow under road bridges.	N/A
Extent and duration of impact:	Local and Permanent	
Probability of occurrence:	Improbable	
Degree to which the impact can be reversed:	Fully reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Low negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	Bridge design must minimise the extent to which riverine flow is constricted under road bridges. Placement of bridges on piles is preferable to culverts and pipes, which tend to concentrate flow and cause erosion downstream.	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Negligible	

Potential impact biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Increased volumes and frequency of stormwater runoff from the road surface.	N/A
Extent and duration of impact:	Regional and Permanent	
Probability of occurrence:	Definite	
Degree to which the impact can be reversed:	Partly reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Medium - Low negative	
Significance rating of impact prior to mitigation	Medium Negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ Stormwater runoff must preferably be directed away from wetlands and rivers. ▪ If stormwater runoff is discharged into wetlands or rivers, it must preferably be spread out to flow as sheet flow wherever possible, thus avoiding the concentration of flows that could lead to erosion. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impact biological aspects:	Proposed Upgrade	No-Go
Nature of impact:	Increased pollution from runoff from road surfaces that may be polluted with hydrocarbons (fuel) and oils, fine sediments and litter.	N/A
Extent and duration of impact:	Regional and Permanent	
Probability of occurrence:	Definite	
Degree to which the impact can be reversed:	Partly reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Medium - Low negative	

Significance rating of impact prior to mitigation	Medium Negative	
Degree to which the impact can be mitigated:	Partly mitigated	
Proposed mitigation:	<ul style="list-style-type: none"> ▪ Stormwater runoff must preferably be directed away from wetlands and rivers. ▪ Litter traps must be constructed in areas where littering is most likely (pedestrian crossings, bus stops etc). ▪ Sediment traps must be constructed in areas where sedimentation is most likely. 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impacts on the socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Improved road infrastructure, road safety and access.	N/A
Extent and duration of impact:	Regional and Long Term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	N/A	
Degree to which the impact may cause irreplaceable loss of resources:	N/A	
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Medium Positive	
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> ▪ The issues regarding pedestrian safety and the MR191/ Klapmuts-Simondium Road intersection must be considered in the up-grade; ▪ The option of installing street lights along the section of the MR 191 though Simondium must be investigated. This would improve road safety for pedestrians and motorists; ▪ A landscaping plan must be implemented to enhance the existing scenic quality of the road. In this regard CNdV have been appointed to prepare a landscaping plan for the project. 	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Medium Positive	

Potential impacts on the socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Extension of pedestrian and cycle path	N/A
Extent and duration of impact:	Local and Long Term - Permanent	
Probability of occurrence:	Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Replaceable	
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Medium Negative	
Degree to which the impact can be mitigated:		
Proposed mitigation:	The extension of the pedestrian path to the MR191/ Klapmuts-Simondium Road intersection must be investigated. The pathway must also be designed to accommodate bicycles.	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	Medium Positive	

Potential impacts on the socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Loss of land, impact on sense of place, traffic noise, safety and security and environmental justice (affected landowners).	
Extent and duration of impact:	Local and Permanent	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Partly replaceable	
Cumulative impact prior to mitigation:	Medium negative	
Significance rating of impact prior to mitigation	High negative	
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> ▪ A meeting must be held with the property owners affected by Alternative 3 to inform them that Alternative 3 is the only viable technical option; ▪ The affected landowners must also be informed of the process associated with the expropriation process. In this regard expropriation is a separate legal process that follows the standard procedures as set out in the Road Ordinance Act (Act no. 19 of 1976). The rights of each South African citizen are protected in our country's Constitution as everyone has "the right to administrative action that is lawful, reasonable and fair" which has to apply to the process of expropriation. The expropriation process involves an independent evaluator who is appointed to assess the value of the property required for expropriation. The evaluator will assess the property as a whole and determine the value of the property. The landowner will be compensated for 100% of the value of the land required for the road reserve. Furthermore, the evaluator will assess the impact of the expropriation and activities associated with the road on the remainder of the property. Must the evaluator find that the remainder of the property is negatively affected the landowner will also be compensated accordingly, depending on the level of impact as determined by the evaluator. ▪ Based on the findings of the SIA the option of paying compensation of the entire property, not just the section affected by the road corridor, must be discussed. This is due to the negative impact that the establishment of a raised road along Alternative 3 will have on the future value of the affected properties. This information must also be conveyed to the affected property owners. ▪ Noise barriers must be established along the section of Alternative 3 (new diverted road portion). The design of the noise barriers must be informed by the recommendations contained in the report prepared by the noise specialist (Jongens Keet Associates 2 August 2013); ▪ The embankment must be landscaped to screen the road. The landscape plan prepared by CNdV must be implemented; ▪ The road must be fenced off to prevent pedestrians from accessing the properties located adjacent to the road; ▪ The design of the Alternative 3 must ensure that the current access for the dwellings located in Adamsvale to the MR 191 must be maintained. This access also enables residents of Adamsvale to access Mr Adams's shop. The road engineers have indicated that an underpass will be constructed which will enable vehicular and pedestrian access; ▪ In the event of Alternative 3 being developed, the Provincial Roads Department must establish security fencing along the boundary of the section of the existing MR 191 between the railway bridge and the R 101 that abuts onto the property 	N/A

	<ul style="list-style-type: none"> owned by Mr Harman and Kock; The location of the service road adjacent to the R101 must be illustrated in the BAR for comment. 	
Cumulative impact post mitigation:	Medium negative	
Significance rating of impact after mitigation	Medium negative	

Potential impacts on the socio-economic aspects:	Proposed Upgrade	No-Go
Nature of impact:	Loss of land, impact on sense of place, traffic noise and safety and security (adjacent landowners).	N/A
Extent and duration of impact:	Local and Medium Term	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Irreplaceable	
Cumulative impact prior to mitigation:	Low negative	
Significance rating of impact prior to mitigation	Medium negative	
Degree to which the impact can be mitigated:		
Proposed mitigation:	<ul style="list-style-type: none"> See mitigation measures above 	
Cumulative impact post mitigation:	Low negative	
Significance rating of impact after mitigation	Low negative	

Potential impacts on the cultural-historical aspects:	Proposed Upgrade	No-Go
Nature of impact:	No cultural-historical impacts are expected during the operational phase for this activity.	

Potential noise impacts:	Proposed Upgrade	No-Go
Nature of impact:	<p>A Noise specialist was appointed to assess the impact of the proposed road realignment and bridge as described in the preferred alternative from the neighbouring residences. The noise specialist confirmed that the noise levels will not exceed 65dBA at any of the receptors and therefore in terms of the existing Noise Control Regulations (NCR) there would be no legal obligation to implement any noise mitigation procedures. However, the NCR are in the process of being revised to change the maximum noise level from 65dBA to 55dBA. Therefore mitigation measures have been provided for receptors B & D below for which the noise will exceed 55dBA.</p> <ul style="list-style-type: none"> Receptor B = School of Skills: 2m high wall at property boundary Receptor D = Mr and Mrs Adams: 1m high wall along road ramp & Bridge <p>No further noise impacts are expected during the operational phase for this activity.</p>	

Potential visual impacts:	Proposed Upgrade	No-Go
Nature of impact:	Visual Impact of the new proposed Bridge over the Van Wyks River and the Railway Line.	N/A
Extent and duration of impact:	Site specific and Permanent	
Probability of occurrence:	Highly Probable	
Degree to which the impact can be reversed:	Irreversible	
Degree to which the impact may cause irreplaceable loss of resources:	Irreplaceable	
Cumulative impact prior to mitigation:	High negative	
Significance rating of impact prior to mitigation	High negative	
Degree to which the impact can be mitigated:	Low	
Proposed mitigation:	The Master Landscaping Plan in Appendix B2 is to be implemented.	

Cumulative impact post mitigation:	Medium-High negative	
Significance rating of impact after mitigation	Medium-High negative	

- (c) **Impacts that may result from the decommissioning and closure phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase.**

NO DECOMMISSIONING OR CLOSURE IS REQUIRED.

- **Any other impacts: N/A**

7. SPECIALIST INPUTS/STUDIES AND RECOMMENDATIONS

Please note: Specialist inputs/studies must be attached to this report as **Appendix G**. Also take into account the Department's Guidelines on the Involvement of Specialists in EIA Processes available on the Department's website (<http://www.capegateway.gov.za/eadp>).

Specialist inputs/studies and recommendations:

Please note that Alternative 3 referred to in the Specialist Studies is the Preferred Alternative assessed in this Report. Alternative 1 & 2 referred to are no longer considered viable Alternatives as explained under Section E (a).

FRESHWATER IMPACT ASSESSMENT (APPENDIX G1):

Kate Snaddon from the Freshwater Consulting Group was appointed to undertake a Freshwater Ecosystems Impact Assessment of the proposed site. All freshwater ecosystems were found to be of low to moderate ecological or conservation importance.

CONSTRUCTION PHASE:

Impact #1: Loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, leading to erosion. This will be necessary to prepare the building sites for construction. Alternative 3 will result in the deterioration or complete loss (most likely) of the wetland on Erf 832. All three alternative bridge designs will have some impact on the Van Wyks River, and a number of smaller streams and wetlands along the road route.

Mitigation:

- The design of the road must aim to minimise the footprint of the road construction, and sensitive ecosystems that are to be protected along the road route must be demarcated prior to any construction activities, so that these can be avoided.
- Construction near rivers and wetlands must preferably take place during the dry season, in order to minimise the impacts of bulldozing and blasting.
- Runoff from the construction area must preferably be directed away from streams and wetlands. Sediment settlement ponds must be used where runoff is particularly turbid.
- Where streams are affected by river crossings, consideration must be given at the design phase to remedial shaping of banks to their near-natural slope, geomorphological and bed characteristics.
- Banks must be re-vegetated after clean-up, to the satisfaction of the ECO.

Impact #2: Direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands.

Mitigation:

- If required, borrow pits must be located at least 100m away from wetlands or rivers, and any runoff from borrow pits must be directed away from wetlands or rivers, into settlement ponds. Only clean, clear runoff must be allowed to flow back into rivers and wetlands.
- Where borrow pits do impact on the natural environment:
 - * Removal and bagging of plants useful for rehabilitation of banks must be considered.
 - * Removal of alien species (e.g. acacias, kikuyu grass, and Spanish reed) can be considered to be a positive impact of construction.
 - * Removal of vegetation must be kept to a minimum, and temporarily cleared areas must be re-

vegetated after clean-up.

Impact #3: Loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication. This can occur as a result of dumping of earth, rubble, etc in river channels or wetlands, and also from diversion of flow in rivers or wetlands during construction.

Mitigation:

- Disruption of flow must be kept to a minimum, but where necessary, temporary diversion measures must allow flushing of the streams to prevent build-up of material. Construction close to the streams must preferably take place in summer, so that winter rains will flush the systems after construction.
- The final design of temporary diversion measures must be ratified by a freshwater ecologist.
- No obstructions to flow shall remain in the rivers or wetlands after construction is completed. This must be checked by the ECO.

Impact #4: Dumping of building material and rubble – resulting in potential contamination of streams and wetlands as a result of accidental runoff, or in infilling and general degradation and disturbance to wetlands and river floodplains.

Mitigation:

- All building materials must be stored away (at least 50m) from aquatic ecosystems and the areas banded appropriately such that there will be no runoff from these areas towards aquatic systems. All building materials must be removed after construction.
- If construction areas are to be pumped of water (e.g. after rains), this water must first be pumped into a settlement area, and not directly into a natural ecosystem.

Impact #5: Deterioration in wetland and riverine habitat through spillage of building materials and oil / fuel

Mitigation:

- Washing of vehicles and machinery must take place well away (50m) from aquatic ecosystems. All machinery must be regularly checked for leaks.
- No runoff shall enter the wetlands, streams or rivers.

Impact #6: Introduction and spread of invasive alien plants (IAPs) through disturbance of soils and use of poor top soil.

Mitigation:

- All fill material must be checked for grass runners, seeds and seedlings of IAPs.
- Areas where fill material has been placed, or where rehabilitation has occurred after clean-up, must be regularly checked for IAPs.

Impact #7: Increased disturbance of fauna and flora from noise and light.

Mitigation:

- Lighting used during the construction phase must be directed away from sensitive wetlands and rivers.

OPERATIONAL PHASE:

Impact #1: Direct loss of riverine or wetland habitat and flora and fauna as a result of the construction of the road through sensitive rivers or wetlands. Alternative 3 will result in the deterioration or complete loss (most likely) of the wetland on Erf 832. All three alternative bridge designs will have some impact on the Van Wyks River, and a number of smaller streams and wetlands along the road route.

Mitigation:

- The design of the road must aim to minimise the footprint of the road construction.
- Removal of alien species (e.g. acacias, kikuyu grass, and Spanish reed) from river reaches affected by river crossings can be considered to be a positive impact of construction.
- Removal of vegetation must be kept to a minimum.
- Bridge supports must be designed preferably to span the full width of the stream or wetland, rather than be placed in the stream bed or in the wetland.

- The preferred bridge design (Alternative 3) will probably lead to the loss of a wetland on Erf 832. This could be mitigated by rehabilitating the stretch of the Van Wyks River affected by the road upgrade. A method statement dealing specifically with the rehabilitation of the affected reaches of the Van Wyks River must be submitted as per the requirements of the EMP. The method statement must provide guidelines as to how to achieve sufficient ecological rehabilitation to balance the impacts of loss of wetland habitat.

Impact #2: Increased constriction of flow under road bridges.

Mitigation:

- Bridge design must minimise the extent to which riverine flow is constricted under road bridges. Placement of bridges on piles is preferable to culverts and pipes, which tend to concentrate flow and cause erosion downstream.

Impact #3: Increased volumes and frequency of stormwater runoff from the road surface.

Alternative 3 will lead to significantly more new road surface, and thus more runoff.

Mitigation:

- Stormwater runoff must preferably be directed away from wetlands and rivers.
- If stormwater runoff is discharged into wetlands or rivers, it must preferably be spread out to flow as sheet flow wherever possible, thus avoiding the concentration of flows that could lead to erosion.

Impact #4: Increased pollution of rivers and wetlands from runoff from road surfaces that may be polluted with hydrocarbons (fuel) and oils, fine sediments and litter. Alternative 3 will lead to significantly more new road surface, and thus more runoff.

Mitigation:

- Stormwater runoff must preferably be directed away from wetlands and rivers.
- Litter traps must be constructed in areas where littering is most likely (pedestrian crossings, bus stops etc).
- Sediment traps must be constructed in areas where sedimentation is most likely.

SOCIAL IMPACT ASSESSMENT (APPENDIX G2):

Tony Barbour was appointed to undertake a Social Impact Assessment of the proposed upgrade.

CONSTRUCTION PHASE:

Impact #1: Creation of employment and business opportunities

The employment opportunities associated with each of the three alternatives will be similar. The findings of the assessment therefore apply to each of the alternatives.

Based on the information provided by the project engineers the construction phase is expected to extend over a period of 18-24 months and create approximately 500 employment opportunities during peak construction. It is anticipated that approximately 60% (300) of the employment opportunities will be available to low skilled workers (construction labourers, security staff etc.), 35% (175) for semi-skilled workers (drivers, equipment operators etc.) and 5% (25) for skilled personnel (engineers, land surveyors, project managers etc.).

The total wage bill for the construction phase is estimated to be in the region of R 80 million (2014 rand value). This is based on the assumption that the average monthly salary for low skilled, semi-skilled and skilled workers will be in the region of R 5 000, R 8 000 and R 30 000 respectively for a period of 18 months. Of the total wage bill 84 % (R 67 million) will be earned by low and semi-skilled workers. The majority of the low and semi-skilled workers are likely to be Historically Disadvantaged Individuals (HDIs). A percentage of the wage bill will be spent in the local and regional economy and will benefit local businesses in the area. The councilor for Ward 1 indicated that a number of local residents from the area (Simondium, Meerlust and Lanquedoc) were employed on the recent upgrade of the R310. The list of workers who worked on the R310 must be obtained from the contractor.

Local businesses in the area that supply material and equipment associated with the up-grading and construction of roads will also benefit from the project. Local restaurants and shops located along the MR 191 will also benefit from the project. These benefits will be linked to spending by construction workers during the construction phase.

No-go: There is no impact, as the current status quo will be maintained. The potential employment and economic benefits associated with the proposed up-grade would, however, be forgone.

Mitigation:

In order to enhance local employment and business opportunities associated with the construction phase the following measures must be implemented:

- Where reasonable and practical the proponent must appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts must be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;
- Where feasible, training and skills development programmes for locals must be initiated prior to the initiation of the construction phase;
- The recruitment selection process must seek to promote gender equality and the employment of women wherever possible.
- The proponent must liaise with the DLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies must be notified of the tender process and invited to bid for project-related work;
- Where possible, the proponent must assist local BBBEE companies to complete and submit the required tender forms and associated information.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

Impact #2: Impact of construction workers on local communities

The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use;
- An increase in crime levels;
- The loss of girlfriends and/or wives to construction workers;
- An increase in teenage and unwanted pregnancies;
- An increase in prostitution;
- An increase in sexually transmitted diseases (STDs), including HIV.

The potential risk posed by construction workers to local communities is usually linked to large construction projects located in small towns or rural areas. Given the location of the MR 191 in a semi-rural area the presence of construction workers does pose a potential risk to local farm workers, including local school girls who walk to school and are therefore exposed to construction workers on a daily basis. The employment of members from the local community to fill the low and semi-skilled job categories will reduce the risk and mitigate the potential impacts on the local communities. These workers will be from the local community and form part of the local family and social network and, as such, the potential risk will be reduced.

However, the opportunities for local communities are likely to be limited given that the contractors appointed will use their own workers, the majority of whom are unlikely to be from the local area. The contractor appointed will therefore need to be made aware of the potential risks posed by workers to the local community. The mitigation measures listed below must be implemented to reduce the potential risks.

While the risks associated with construction workers at a community level with mitigation will be low, at an individual and family level they may be significant, especially in the case of contracting a sexually transmitted disease or an unplanned pregnancy. However, given the nature of construction projects it is not possible to totally avoid these potential impacts at an individual or family level.

No-go: There is no impact as the current status quo would be maintained. The potential positive impacts on the local economy associated with the additional spending by construction workers in the local economy will also be lost.

Mitigation:

The potential risks associated with construction workers can be mitigated. The detailed mitigation measures must be outlined in the Environmental Management Plan (EMP) for the Construction Phase. Aspects that must be covered include:

- Where possible, the proponent must make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;
- The proponent must consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF must be established before the construction phase commences, and must include key stakeholders, including representatives from local communities, councilors, farmers and the contractor(s). The MF must also be briefed on the potential risks to the local community associated with construction workers;
- The proponent and the contractor(s) must, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code must identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code must be dismissed. All dismissals must comply with the South African labour legislation;
- The proponent and appointed contractor must meet with the principals from the local schools in the area and inform them of the project. The principals must be informed of the potential risk posed by construction workers to school children, specifically girls. A mechanism must be established that enables school children to report incidents involving contractors to the school principals, who in turn can report the incidents to the Environmental Control Officer and the Project Engineer;
- The proponent and the contractor must implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. The programme must also inform construction workers that incidents involving school children will not be tolerated;
- Construction workers found guilty of harassing school children must be dismissed. All dismissals must be in accordance with South African Labour Law regulations;
- The proponent and the contractor must implement an HIV/AIDS awareness programme for the local schools. This must be planned and implemented in consultation with the local school principals. The aim of the programme must be to inform local school children of the potential risks posed by construction workers;
- The contractor must provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site;
- It is recommended that no construction workers, with the exception of security personnel, must be permitted to stay over-night on the site.

Impact #3: Impact on irrigation infrastructure

A large (450 mmØ) bulk water pipeline belonging to the Suider Agter-Paarl Irrigation Board (SAPIB) passes underneath the road in the vicinity of km 1.6. The line is the main source of water for a number of large, well-established agricultural estates located south of Paarlberg (north of the N1). These include Fairview, Zandwyk,

Landskroon and Ruitersvlei Estates, which together account for ~76% of use.

The concern raised by representatives from the SAPIB was that the pipeline, which is old, could be damaged during the construction phase and that this would in turn impact on the supply of water to the affected properties.

The pipeline is the key source of water for these properties, especially during the hot, dry summer months. The critical period in terms of irrigation water is November to March. Any damage to the line during this period would have a significant negative impact on the farms that rely on the water from this pipeline. For example Landskroon has 200 ha under vines and employs 60 permanent employees. The jobs and the operations on Landskroon would be impacted if the supply of water was disrupted due to damage to the pipeline. Any impact on farming operations would also impact on the income generated by the operations. The same applies to the other farms that are dependent on the pipeline. Given the number of farms that are dependent upon the pipeline the impact would be significant.

No-go: There is no impact as it maintains the current status quo.

Mitigation:

The proponent has met with representatives from the SAPIB to discuss this issue. The mitigation measures discussed include:

- The location of the pipeline must be demarcated at the outset of the construction phase and the necessary measures must be taken to ensure that the construction related activities do not impact on or damage the pipeline;
- In the event of the pipeline being damaged, the contractor must be required to fix the pipeline and restore flow within 1 day of the damage occurring;
- In order to reduce the potential risks to the farms that rely on the pipeline, construction work along the section of the road (km 1.6) where the pipeline is located must be planned to take place during the winter months (May-September) when the impacts associated with damage to the pipeline would be lower;
- Due to the age of and nature of the pipeline (asbestos), the option of replacing the section of the pipeline where it crosses the road reserve were also discussed. A decision on this matter must be taken in consultation with the SAPIB before the commencement of the construction phase.

Impact #4: Impacts associated with construction vehicles

The movement of heavy construction vehicles during the construction phase has the potential to create noise, dust, and safety impacts for other road users and local communities in the area, specifically school children that walk to school. The movement of construction vehicles can also result in delays and impact on access.

For the majority of the residents that live in the vicinity of the MR 191 the impacts are likely to be limited, even in the absence of mitigation measures. However, for the residents of Adamsvale and the Adams's, the noise, dust and safety impact associated with the construction of Alternative 3 in the Northern Section are likely to be significant due to the proximity of Alternative 3 to the residences in the vicinity of the proposed road and also due to the work required to establish Alternative 3. Alternative 3 involves the construction of a new road, including a large embankment, while the remainder of the project involves up-grading and existing road area.

No-go: There is no impact as it maintains the current status quo.

Mitigation:

The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The movement of heavy vehicles associated with the construction phase must, where possible, be timed to avoid times of the day when scholars walk to and from schools, namely before 07h30 in the morning and after 16h00 in the afternoons;
- The movement of heavy vehicles associated with the construction phase must be timed to avoid long weekends and weekends when tourists are more likely to use the road;

- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers;
- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits;
- Construction related activities must be limited to the period 08h00 to 17h00. This will reduce the potential noise impacts and disturbances to the local residents in the area;
- No construction related activities must take place on Saturday, Sunday and public holidays;
- Dust suppression measures must be implemented on the exposed embankment surfaces, such as netting and regular wetting;
- Embankments must be successfully re-vegetated before the completion of the construction phase;
- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

Impact #5: Impact on access and movement

The impact on access associated with the construction phase will affect two key groups, namely the residents and property owners in the area and visitors and tourists. The impacts on both groups will be linked to delays and disruptions during the construction phase, which will last ~ 2 years. The impacts on access associated with the construction phase were discussed at a meeting held on 27 August 2014 at the offices of Dough Jeffery Consulting. The issue was also raised during one-on-one meetings with stakeholders which were conducted as part of the SIA study.

Ensuring continued access to properties during construction phase was raised by the majority of stakeholders interviewed, including the Berg River Resort, Paarl Nursery, Wilderer's Distillery, and Satchwell Appliance Components. All of the stakeholders interviewed indicated that they are willing to put up with some level of disruption for 18-24 months in order for the road to be up-graded. However, access must be provided and delays need to be reasonable.

For residents and property owners, delays and disruptions will impact on their ability to get from their homes to places of work, schools, etc. and back. This issue was raised as a key concern by the representatives from the Winelands Estate. For tourists and visitors the delays and disruptions will impact on their visit to the area. The impact on tourists and visitors also has the potential to impact on local business in the area that rely on tourism and visitors, such as wedding venues, restaurants and riding centers.

In terms of tourist related operations, a number of well-established and renowned wine and fruit estates (e.g. Plaisir de Merle, Vrede en Lust, Bien Donne and Jenita Farm) are located along the Southern Section of the MR 191. The estates have established tourism facilities, including wine tasting, restaurants, accommodation and function venues. Plaisir de Merle, Jenita and Bien Donne take primary access off the MR191.

The peak tourism period is from September to May, peaking from December to February. However, with well-established local attractions such as Rupert & Rothschild and Babylonstoren, the area is becoming increasingly busy over weekends throughout the year. The majority of visitors over December are from Gauteng, while international visitors dominate over January and February. Weddings are concentrated over the December period. In general, tourist road use is concentrated over Saturdays and Sundays.

Two established nurseries are also located along the Middle Section of the MR 191. Both rely on access from the MR191. The Winelands Tree Nursery only sells wholesale. The other, the Paarl Nursery, currently employs 26 permanent workers, the bulk of whom live on the property. The current owner has bought the nursery after having lost his previous nursery as a result of the upgrading of the N2 (Somerset West). The owner is therefore acutely aware of the potential impact that the up-grading of the MR 191 can have on existing business operations.

The concerns related to the impacts associated with disruptions were also linked to delays and disruptions that

occurred during the up-grading of the R 301 (Wemmershoek Road). Local residents in the area indicated that these delays had been unacceptable and they did not want the same situation occurring when the MR 191 was up-graded. At the same time the local residents also indicated that the up-grading of the R 310 through Priel had been well managed, specifically the stop-go stations. The recommended that the lessons from the stop-go approach implemented during this project must be implemented during the construction phase for the MR 191. If managed properly the impact on access and delays can be mitigated to an acceptable level.

No-go: There is no impact as it maintains the current status quo.

Mitigation:

Measures proposed by the developer to accommodate traffic during the construction phase include:

- For half width construction, a stop/go system shall be used during day time, and during night time hours a traffic signal system must be implemented;
- The travelling public has the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on public roads;
- Considering the safety and convenience of travelling public of utmost importance. Every effort will be made to ensure that all temporary road signs, cones, flagmen and speed controls are maintained and effective, and that courtesy is extended to the public at all times;
- Construction work, including the erection and removal of traffic control facilities, shall only be executed between sunrise and sunset on Monday to Saturday, inclusive;
- Accommodation of traffic on the existing traffic lanes will be required throughout the construction contract period. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Engineer. During the year end break the road sections must be open full width;
- It must be noted that Sundays are specified as “Special non-working days” in the contract data. In terms of Clause 5.8.1 of the General Conditions of Contract (GCC) 2010, the Engineer’s permission has to be obtained for work to be carried out on special non-working days, for which permission shall be applied for at least two weeks prior to the day (DJEC, 2013);

Additional recommended mitigation measures:

- The need to establish a Monitoring Forum (MF) to monitor the construction phase and address potential problems must be discussed with representatives from local communities and business in the area. The MF must be established before the commencement of the construction phase;
- Information on the timing of the construction phase, location of stop-go’s, duration of delays, potential road closures etc., must be communicated to the residents and businesses in the area prior to the commencement of the construction phase. The information must be communicated via e-mail, flyers (refer to an example used in **Appendix B6**), signage at key points along the route and access to the MR 191 etc. The need for a public meeting/s must also be considered;
- Information on the timing of the construction phase, location of stop-go’s, duration of delays, potential road closures etc., must also be sent to all key businesses and tourist operations located along the MR 191 and also business that may potentially be affected by the MR 191, such as businesses in Franschoek. In the case of Franschoek the information must be sent to the local tourism association who in turn can distribute it to local business in the town. This information can then be placed on local business web-sites etc. informing visitors to the area of potential delays and alternative route options etc.;
- Given the importance of the tourism sector to the area the construction related activities must, where possible, be planned and implemented to minimise the potential disruptions and delays during the months of December and January;
- Measures must be put in place to ensure that access to schools in the morning period (between 07h00 and 07h45) is not impacted by the construction related activities. These measures must be discussed with representatives from the local community before being finalised;
- By-passes must where possible be used as opposed to stop-go’s;

- The maximum stop-go period must be 10 minutes;
- The design and implementation of the construction phase must be designed to maximise the use of potential detours (such as Babylonstoren Road) to minimise disruptions and delays;
- The movement of heavy vehicles associated with the construction phase must, where possible, be timed to avoid times of the day when scholars walk to and from schools, namely before 07h30 in the morning and after 16h00 in the afternoons;
- The movement of heavy vehicles associated with the construction phase must be timed to avoid long weekends and weekends when tourists are more likely to use the road. Recommended that construction work cease at midday (12h00) on Saturdays and, as recommended above, no construction work must take place on Sundays or Public Holidays.

OPERATIONAL PHASE:

Impact #1: Improved road infrastructure, road safety and access to the area.

Based on the findings of the SIA there was widespread support for the up-grading of the MR 191. The benefits associated with the up-grade include improves road infrastructure, road safety and access to the area for both local residents and visitors. As indicated above, the MR 191 is an important access road to Franschoek. There are also a number of established wine estates and tourist venues located along the section of the MR 191 that is earmarked for up-grading. The up-grading will improve the experience of road users and improve safety along the road. This will benefit both local residents and visitors to the area.

However, concerns were raised regarding provision for vehicle and pedestrian safety measures, specifically at the MR191/ Klapmuts-Simondium Road intersection. This issue was raised by the Ward 1 Councilor (van der Westhuizen), the owners of Vrede en Lust (Etienne Buys), the Simondium Primary headmaster (William Keet) and others. The key stakeholders interviewed indicated that current intersection with the MR191 must be up-graded as part of the project in order to improve general traffic safety in the area. Concerns were also raised regarding children crossing MR191 near the MR191/ Klapmuts-Simondium Road. The owners of Vrede en Lust indicated that option of a pedestrian bridge must be investigated.

A number of I&APs (Paarl Nursery, Wilderer, Simondium Primary, Simondium Agrimark) also indicated that street lighting along selected portions of the road would be welcome, as this would improve pedestrian safety as well as increase visibility of entrances.

No-go: There is no impact as it maintains the current status quo. However, the potential benefits associated with the road up-grade would be lost. This would represent a negative impact.

Mitigation:

The following mitigation measures are recommended:

- The issues regarding pedestrian safety and the MR191/ Klapmuts-Simondium Road intersection must be considered in the up-grade;
- The option of installing street lights along the section of the MR 191 though Simondium must be investigated. This would improve road safety for pedestrians and motorists;
- A landscaping plan must be implemented to enhance the existing scenic quality of the road. In this regard CNdV have been appointed to prepare a landscaping plan for the project.

Impact #2: Opportunity to extend the pedestrian path in Simondium.

As indicated above, the establishment of the pedestrian path between Simondium and the intersection with the R 310 (MR172) has resulted in a significant reduction in pedestrian related accidents along that section of the MR 191. If feasible, the up-grade of the MR 191 must include an extension of the pedestrian path to the MR191/ Klapmuts-Simondium Road intersection. The pathway must also be designed to accommodate bicycles. This would assist to address pedestrian safety issues, specifically for children, travelling between Simondium and the area to the west.

No-go: There is no impact as it maintains the current status quo.

Mitigation:

The extension of the pedestrian path to the MR191/ Klapmuts-Simondium Road intersection must be investigated. The pathway must also be designed to accommodate bicycles.

Impact #3: Direct social impacts on landowners and adjacent landowners

Alternative 1 and 2:

- Traffic related noise impacts: Mr Harman indicated that there is already an existing road so this was not regarded as a major issue;
- Loss of land: There will be some land take. However, this loss can be addressed through compensation at market related prices. Compared to Alternative 3, the loss of land is minimal;
- Enhanced value of property: Mr. Harman indicated that the area has been identified for light industrial development. Alternative 1 and 2 would result in corner plots for both Mr. Harman and Mr. Kock, which according to Mr. Harman, have higher market value;
- Safety and security: Mr. Harman indicated that the maintenance of an existing, operational road along his northern boundary would be preferable to a closed, open space that has the potential to attract vagrants. The proposal as part of Alternative 3 to keep the road open to enable pedestrians to access the R 101 would increase the security risk to his property. Alternative 3 involves maintaining public access along the existing road that passes under the railway bridge. Mr. Harman is of the opinion that this will create potential safety and security problems for him and Mr. Kock.

In summary, Mr Harman was of the opinion that Alternative 1 and 2 posed the least impact on the environment. Based on the findings of the SIA the potential social impacts associated with Alternative 1 and 2 are limited.

Alternative 3 requires the expropriation of land belonging to Mr Adams, his sister, Denise Adams, and Mr Jaco de Villiers. The land that will be affected is located to the north east of the MR 191 and east of the railway line. The current sense of place can be described as rural. Alternative 3 will also impact on the residents of Adamsvale. The social impacts associated with Alternative 3 include:

- Loss of land: Land belonging to Mr Adams and his sister will have to be expropriated in order to construct Alternative 3. The loss of land can be offset by compensation at market related prices. Based on the findings of the SIA Mr Adams and his family have lived in the area for over 40 years. They also acquired ownership of the land despite the restrictions placed on land ownership by the Apartheid laws prior to 1994. The value that the Mr Adams and his wife attach to the property is therefore more than just a monetary value;
- Impact on the current quiet, rural sense of place (Photograph 4.1): The establishment of raised road ~ 70 m in front of Mr Adams's house will have a significant impact on his current quality of life. The impacts associated with the raised road would include traffic noise impacts, visual impacts and safety impacts associated with pedestrians accessing his property off the road. Due to the raised nature of the road the noise impacts are likely to be more noticeable. The traffic noise impacts are likely to be exacerbated by the acceleration and braking associated with heavy vehicles along the section of Alternative 3 that cross the railway line. It may be possible to mitigate the traffic noise and safety impacts by constructing noise barriers and fencing along the road. However, it will not be possible to mitigate the impact of the road in the current, quiet rural sense of place associated with the property;
- Impact on Adamsvale: The dwellings in Adamsville are located within 60 meters of the Alternative 3. The impacts on the residents living in these dwellings will be similar to those experienced by Mr Adams;
- Impact on property values: The establishment of Alternative 3 will impact negatively on the value of the property owned by Mr Adams and his sister. While they will be compensated for the land that is expropriated, the construction of raised road will be impact on the value of the remaining sections of the land that are not directly affected by Alternative 3. This will be linked to traffic noise, safety and visual impacts associated with raised road on ones doorstep;
- Environmental justice / discrimination: The social impacts associated with Alternative 3 raises potential environmental justice / discrimination issues. Environmental justice / discrimination refers' to a situation where historically disadvantaged and or minority groups are exposed to environmental impacts.

However, as indicated above, based on the findings of the report prepared by WorelyParsons (October 2014) Alternative 3 is the only technically viable option. The directly affected landowners have also indicated that they are willing to consider fair compensation for the loss of land.

No-go: There is no impact as it maintains the current status quo. However, the benefits associated with the road up-grade would be forgone.

Mitigation:

The potential negative impacts associated with Alternative 3 on the affected property owners can be mitigated. However, successful mitigation would be dependent upon acceptance of compensation by the affected landowners. In terms of compensation the following recommendations are made:

- A meeting must be held with the property owners affected by Alternative 3 to inform them that Alternative 3 is the only viable technical option;
- The affected landowners must also be informed of the process associated with the expropriation process. In this regard expropriation is a separate legal process that follows the standard procedures as set out in the Road Ordinance Act (Act no. 19 of 1976). The rights of each South African citizen are protected in our country's Constitution as everyone has "the right to administrative action that is lawful, reasonable and fair" which has to apply to the process of expropriation. The expropriation process involves an independent evaluator who is appointed to assess the value of the property required for expropriation. The evaluator will assess the property as a whole and determine the value of the property. The landowner will be compensated for 100% of the value of the land required for the road reserve. Furthermore, the evaluator will assess the impact of the expropriation and activities associated with the road on the remainder of the property. Must the evaluator find that the remainder of the property is negatively affected the landowner will also be compensated accordingly, depending on the level of impact as determined by the evaluator.
- Based on the findings of the SIA the option of paying compensation of the entire property, not just the section affected by the road corridor, must be discussed. This is due to the negative impact that the establishment of a raised road along Alternative 3 will have on the future value of the affected properties. This information must also be conveyed to the affected property owners.
- Noise barriers must be established along the section of Alternative 3 (new diverted road portion). The design of the noise barriers must be informed by the recommendations contained in the report prepared by the noise specialist (Jongens Keet Associates 2 August 2013);
- The embankment must be landscaped to screen the road. The landscape plan prepared by CNdV must be implemented;
- The road must be fenced off to prevent pedestrians from accessing the properties located adjacent to the road;
- The design of the Alternative 3 must ensure that the current access for the dwellings located in Adamsvale to the MR 191 must be maintained. This access also enables residents of Adamsvale to access Mr Adams's shop. The road engineers have indicated that an underpass will be constructed which will enable vehicular and pedestrian access;
- In the event of Alternative 3 being developed, the Provincial Roads Department must establish security fencing along the boundary of the section of the existing MR 191 between the railway bridge and the R 101 that abuts onto the property owned by Mr Harman and Kock;
- The location of the service road adjacent to the R101 must be illustrated in the Draft BAR for comment. THE SECTION OF THE SERVICE ROAD AFFECTED BY THE ACTIVITY IS ILLUSTRATED IN THE PLAN – SEE APPENDIX B.

8. IMPACT SUMMARY

Please provide a summary of all the above impacts.

Construction Phase (after mitigation):

FRESHWATER:

- *Loss or deterioration of wetland and riverine habitat through bulldozing of river banks / wetlands, leading to erosion - **LOW Negative***
- *Direct loss of riverine or wetland habitat and flora and fauna as a result of the location of borrow pits in sensitive rivers or wetlands - **NEGLIGIBLE***
- *Loss of connectivity and deterioration of habitat through disruption of flow regime leading to nutrient / sediment build-up and eutrophication – **LOW Negative***
- *Dumping of building material and rubble – resulting in potential contamination of streams and wetlands - **NEGLIGIBLE***
- *Deterioration in wetland and riverine habitat through spillage of building materials and oil / fuel - **NEGLIGIBLE***
- *Introduction and spread of invasive alien plants (IAPs) through disturbance of soils and use of poor top soil – **LOW to MEDIUM Negative***
- *Increased disturbance of fauna and flora from noise and light – **LOW to NEGLIGIBLE***

SOCIAL:

- *Creation of employment and business opportunities – **MEDIUM positive***
- *Presence of construction workers and potential impacts on family structures and social networks – **LOW negative***
- *Impact on irrigation infrastructure – **LOW negative***
- *Impact on access and movement – **LOW negative***
- *Impact on heavy vehicles and construction activities - potential noise, dust and safety impacts – **LOW negative***

Operation Phase (after mitigation):

FRESHWATER:

- *Direct loss of riverine or wetland habitat and flora and fauna - **LOW negative***
- *Increased constriction of flow under road bridges – **NEGLIGIBLE***
- *Increased volumes and frequency of stormwater runoff from the road surface – **LOW negative***
- *Increased pollution from runoff from road surfaces that may be polluted with hydrocarbons (fuel) and oils, fine sediments and litter – **LOW negative***

SOCIAL:

- *Improved road infrastructure, road safety and access - **MEDIUM positive***
- *Extension of pedestrian and cycle path – **MEDIUM positive***
- *Loss of land, impact on sense of place, traffic noise, safety and security and environmental justice (affected landowners) - **MEDIUM negative***
- *Loss of land, impact on sense of place, traffic noise and safety and security (adjacent landowners) – **LOW negative***

9. OTHER MANAGEMENT, MITIGATION AND MONITORING MEASURES

(a) Over and above the mitigation measures described in Section 6 above, please indicate any additional management, mitigation and monitoring measures.

An Environmental Management Programme (**Appendix H**) has been drawn up for the construction and operational phase of the development. This document must form part of all tender documentation.

(b) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

Under South African environmental legislation, the Applicant / Employer is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Provincial Government Western Cape: Department of Transport and Public Works as the Applicant / Employer therefore has overall and total environmental responsibility to ensure that the implementation of the construction phase of this EMP complies with the relevant legislation and the conditions of the environmental authorisation. The developer will be responsible for the development and implementation of the conditions of the Environmental Authorisation in terms of the design of the development and construction thereof. The developer will thus be responsible for the implementation of this EMP. The applicant has shown commitment to implement management, mitigation and monitoring measures as specified in the recommendations from specialists and the EMP. The EMP stipulates that an ECO is appointed to ensure that management, monitoring and mitigation measures are implemented and that the Competent Authority is kept informed of the process.

Please refer to **Appendix H – EMP**.

Please note: A draft **ENVIRONMENTAL MANAGEMENT PROGRAMME** must be attached this report as **Appendix H**.

SECTION G: ASSESSMENT METHODOLOGIES AND CRITERIA, GAPS IN KNOWLEDGE, UNDERLYING ASSUMPTIONS AND UNCERTAINTIES

(a) Please describe adequacy of the assessment methods used.

A brief was given to the consultants by the proponent to undertake this study. The scope of the study has been determined with reference to the requirements of the relevant legislation, namely the NEMA EIA Regulations, 2014. The main responsibilities of the environmental consultant would include but not be limited to, the following, as stipulated in the EIA Regulations:

- Submission of the required Application Form to the relevant authority, in order to register the proposed project, and obtain the applicable reference number;
- Consultation with the relevant authorities and stakeholders, through the BAR process, to ensure that identification of relevant issues or concerns are undertaken. Ensure the assessment of and response to the issues that are raised;
- Compilation of the required Basic Assessment Report (THIS DOCUMENT), describing the proposed activity, the affected environment, the potential environmental impacts, all applicable legislation and applicable guidelines, the detail of the public participation process followed, and the findings of the specialist studies and recommendations and/or mitigations measures to be implemented during construction and operation (BAR);
- Submission of the above-mentioned documents to the public for comment and to the authority (DEA&DP) for a decision.

One of the fundamental aims of a Basic Assessment Process is to ensure that the demands of sustainable development are met on a project level, within the context of the greater area. The most common definition of sustainable development is development that meets the needs of the present while not compromising the needs of future generations.

The assessment, for the proposed upgrading of the MR191, looks at the impacts of the proposals on the environment and assesses the significance of these, as well as proposes mitigation measures, as required, to reduce anticipated impacts to acceptable levels. This is to ensure that the development makes “equitable and sustainable use of environmental and natural resources for the benefit of present and future generations”.

(b) Please describe the assessment criteria used.

The criteria is based on the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act No. 73 of 1989. These criteria include:

Nature of the impact:

This is an appraisal of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description must include what is to be affected and how.

Extent of the impact:

Extent defines the physical extent or spatial scale of the impact. The impact could:

- Site specific: limited to the site.
- Local: limited to the site and the immediate surrounding area (1-10km)
- Regional: covers an area that includes an entire geographic region or extends beyond one region to another.
- National Scale: Across national boundaries and may have national implications.

Duration of the impact:

The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long term (16-30 years) or permanent.

Intensity

The specialist should establish whether the impact is destructive or benign and should be qualified as low,

medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.

Probability of occurrence:

The specialist should describe the probability of the impact actually occurring and should be described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

Reversibility:

This refers to the degree to which an impact can be reversed.

- Fully reversible: Where the impact can be completely reversed.
- Partly reversible: Where the impact can be partially reversed.
- Irreversible: Where the impact is permanent.

Irreplaceable loss of resources:

Describes the degree to which resources will be irreplaceably lost due to the proposed activity.

- Fully replaceable: Resources can be fully replaced.
- Partly replaceable: Resources can be partially replaced.
- Irreplaceable: Resources cannot be replaced.

Degree to which an impact can be mitigated:

This indicates the degree to which an impact can be reduced. The impact can either be fully or partly mitigated or not mitigated at all.

Cumulative effect:

An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development.

The above mentioned criteria were used by the Freshwater and Social Specialists.

(c) Please describe the gaps in knowledge.

No gaps in knowledge have been identified at this stage.

(d) Please describe the underlying assumptions.

The following assumptions are made:

- The information on which the report is based (i.e. specialist studies and project information) is correct.
- The construction and management of this proposed development will be in line with the recommendations in this report, which will be enforced by the implementation of detailed Environmental Management Programme. Much of the long-term success lies in the effective implementation of the measures prescribed in the Environmental Management Programme.
- The EIA process which is being undertaken for the proposed upgrade of a portion of Main Road 191 between Paarl and Franschoek is limited to the specific components of the upgrade as specified by the appointed engineers (WorleyParsons) and the Department of Transport and Public Works.

Social Specialist:

- It is assumed that the need for the proposed road upgrade has been informed by the required traffic and technical information.
- Based on the report prepared by WorleyParsons (October, 2014) Alternative 1 and 2 do not appear to be viable options due to the risk posed by flooding.
- Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, should the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported. However, it is acknowledged that project involves the up-grading of an existing road, and as such, fit with planning and policy requirements is unlikely to play a key role in terms informing the assessment

process.

- Demographic data was mainly obtained from Census 2011. Information presented is from the Census 2011 Municipal Fact Sheet publication, and is at local municipal level. Ward level data was not reviewed.

Freshwater Specialist:

- Due to the time constraints of the first phase of the project (the baseline assessment in 2011), there was no opportunity to collect and analyse primary data from the affected freshwater ecosystems. During the update of the 2011 baseline report, it was decided that all ecosystems should be assessed to the same level of detail. Such data would serve to improve the understanding of the condition, ecological importance and sensitivity of the freshwater ecosystems. However, in the absence of such data, the precautionary principle has been adopted, and a low confidence conservative assessment was undertaken, which may overestimate the importance and sensitivity of the affected ecosystems, especially of the biota supported by the ecosystems. The author feels that this is acceptable, as this approach leans in favour of the protection of the natural environment. Furthermore, this approach is felt to be adequate for the assessment of the impacts associated with road and bridge construction.

Wetlands and riparian areas (surrounding rivers) encountered along the road route were not formally or accurately delineated using DWA's (2005) wetland delineation manual, as such a time-consuming approach was not considered necessary for this assessment.

(e) Please describe the uncertainties.

The uncertainties come into play when mitigation measures are proposed and must be implemented. The management and implementation of these mitigation measures must be monitored and managed correctly to ensure that all positive impacts identified are brought to fruition.

SECTION H: RECOMMENDATION OF THE EAP

In my view (EAP), the information contained in this application form and the documentation attached hereto is sufficient to make a decision in respect of the activity applied for.	YES	NO
If "NO", list the aspects that should be further assessed through additional specialist input/assessment or whether this application must be subjected to a Scoping & EIR process before a decision can be made:		
N/A		
If "YES", please indicate below whether in your opinion the activity should or should not be authorised:		
Activity should be authorised:	YES	NO
Please provide reasons for your opinion		
<p>The 'best practicable environmental option' means the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. The preferred site development plan has evolved logically, taking into account the site's constraints and opportunities, the specialist's findings, the project team's findings and input from the public participation process. It is our opinion, that the Preferred Alternative, along with the recommendations listed below, is considered the 'best practicable environmental option'.</p> <p>The findings of the SIA indicate that the up-grading of the MR 191 is supported. The up-grading will improve road safety and access to the area as well as create employment and business opportunities during the construction phase. The potential negative impacts associated with the construction phase are linked to impact on access, specifically for local businesses located along the affected section of the MR 191. The impacts can however be effectively mitigated through careful planning and timing of construction related activities. The potential negative impacts are largely linked to the alternatives identified to address the challenges posed by the historic railway bridge and flooding of the Van Wyks River. These issues are confined to the northern section of the MR 191 and affect a relatively small number of landowners. The key social impacts are linked to the expropriation of land however the directly affected landowners have indicated that they are willing to consider compensation for the loss of land and the associated impact on their quality of life.</p> <p>Seven streams and several wetland flats will be impacted by the upgrade of the MR191 between km 0.0 and 9.57. All potentially affected streams and wetlands were all found to be of low to moderate conservation importance.</p> <p>WorleyParsons RSA undertook a investigation report in 2010, on behalf of the Department of Transport and Public Works, to investigate whether MR 191 between km 0,0 to km 9,57 should be upgraded. At the time a traffic analyses was conducted which indicated that the existing road operates at a Level-of-Service (LOS) "C". It was found that these operating conditions will slowly get worse as traffic volumes increase for the next 8 years. After this the level-of-service will drop to LOS "D". Based on the Peak Analysis Hour and based on four percent annual growth, the level-of-service will drop to LOS "E" in approximately 18 years time. The remaining pavement life of the road was calculated and it was deduced that the pavement structure, at the time, would reach the end of its life by 2010 for section 1 (km 0,0 to km 6,04) and 2014 for section 2 (km 6,04 to km 9,57).</p> <p>Additional traffic impact assessments have been executed during 2016 and 2017 taking current and proposed developments into account to determine the expected traffic movement along MR 191 and other main roads in the vicinity of the project. These studies dictated the type of intersections required specifically for the intersections of MR 191 with MR 189 and MR 205. The studies indicated that signalised intersections would be the best option to effectively cope with the expected traffic volumes and to ensure safer and better pedestrian movement.</p> <p>Furthermore, flooding issues and substandard vertical clearance (3.8 m) experienced at the existing historical bridge makes the existing situation unsafe for road users. It is inevitable that as the population growth increases, roads need to be upgraded in accordance with the pressure of increased traffic experienced on these roads.</p>		

It is recommended that the Preferred Alternative be adopted with the implementation of the mitigation measures and recommendations listed below.

If you are of the opinion that the activity should be authorised, then please provide **any conditions, including mitigation measures** that should in your view be considered for inclusion in an authorisation.

FRESHWATER:

Construction Phase:

- The design of the road must aim to minimise the footprint of the road construction, and sensitive ecosystems that are to be protected along the road route must be demarcated prior to any construction activities, so that these can be avoided.
- Construction near rivers and wetlands must preferably take place during the dry season, in order to minimise the impacts of bulldozing and blasting.
- Runoff from the construction area must preferably be directed away from streams and wetlands. Sediment settlement ponds must be used where runoff is particularly turbid.
- Where streams are affected by river crossings, consideration must be given at the design phase to remedial shaping of banks to their near-natural slope, geomorphological and bed characteristics.
- Banks must be re-vegetated after clean-up, to the satisfaction of the ECO.
- If required, borrow pits must be located at least 100m away from wetlands or rivers, and any runoff from borrow pits must be directed away from wetlands or rivers, into settlement ponds. Only clean, clear runoff must be allowed to flow back into rivers and wetlands.
- Where borrow pits do impact on the natural environment:
 - Removal and bagging of plants useful for rehabilitation of banks must be considered.
 - Removal of alien species (e.g. acacias, kikuyu grass, and Spanish reed) can be considered to be a positive impact of construction.
 - Removal of vegetation must be kept to a minimum, and temporarily cleared areas must be re-vegetated after clean-up.
- Disruption of flow must be kept to a minimum, but where necessary, temporary diversion measures must allow flushing of the streams to prevent build-up of material. Construction close to the streams must preferably take place in summer, so that winter rains will flush the systems after construction.
- The final design of temporary diversion measures must be ratified by a freshwater ecologist.
- No obstructions to flow shall remain in the rivers or wetlands after construction is completed. This must be checked by the ECO.
- All building materials must be stored away (at least 50m) from aquatic ecosystems and the areas bunded appropriately such that there will be no runoff from these areas towards aquatic systems. All building materials must be removed after construction.
- If construction areas are to be pumped of water (e.g. after rains), this water must first be pumped into a settlement area, and not directly into a natural ecosystem.
- Washing of vehicles and machinery must take place well away (50m) from aquatic ecosystems. All machinery must be regularly checked for leaks.
- No runoff shall enter the wetlands, streams or rivers.
- All fill material must be checked for grass runners, seeds and seedlings of IAPs.
- Areas where fill material has been placed, or where rehabilitation has occurred after clean-up, must be regularly checked for IAPs.
- Lighting used during the construction phase must be directed away from sensitive wetlands and rivers.

Operational Phase:

- The design of the road must aim to minimise the footprint of the road construction.
- Removal of alien species (e.g. acacias, kikuyu grass, and Spanish reed) from river reaches affected by river crossings can be considered to be a positive impact of construction.
- Removal of vegetation must be kept to a minimum.
- Bridge supports must be designed preferably to span the full width of the stream or wetland, rather than be placed in the stream bed or in the wetland.

- The preferred bridge design (Alternative 3) will probably lead to the loss of a wetland on Erf 832. This could be mitigated by rehabilitating the stretch of the Van Wyks River affected by the road upgrade. A method statement dealing specifically with the rehabilitation of the affected reaches of the Van Wyks River must be submitted as per the requirements of the EMP. The method statement must provide guidelines as to how to achieve sufficient ecological rehabilitation to balance the impacts of loss of wetland habitat.
- Bridge design must minimise the extent to which riverine flow is constricted under road bridges. Placement of bridges on piles is preferable to culverts and pipes, which tend to concentrate flow and cause erosion downstream.
- Stormwater runoff must preferably be directed away from wetlands and rivers.
- If stormwater runoff is discharged into wetlands or rivers, it must preferably be spread out to flow as sheet flow wherever possible, thus avoiding the concentration of flows that could lead to erosion.
- Litter traps must be constructed in areas where littering is most likely (pedestrian crossings, bus stops etc).
- Sediment traps must be constructed in areas where sedimentation is most likely.

SOCIAL:

Construction Phase:

In order to enhance local employment and business opportunities associated with the construction phase the following measures must be implemented:

- Where reasonable and practical the proponent must appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts must be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria;
- Where feasible, training and skills development programmes for locals must be initiated prior to the initiation of the construction phase;
- The recruitment selection process must seek to promote gender equality and the employment of women wherever possible.
- The proponent must liaise with the DLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies must be notified of the tender process and invited to bid for project-related work;
- Where possible, the proponent must assist local BBBEE companies to complete and submit the required tender forms and associated information.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

The potential risks associated with construction workers can be mitigated and must be outlined in the Environmental Management Plan (EMP) for the Construction Phase. Aspects that must be covered include:

- Where possible, the proponent must make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories;
- The proponent must consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF must be established before the construction phase commences, and must include key stakeholders, including representatives from local communities, councillors, farmers and the contractor(s). The MF must also be briefed on the potential risks to the local community associated with construction workers;
- The proponent and the contractor(s) must, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code must identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code must be dismissed. All

dismissals must comply with the South African labour legislation;

- The proponent and appointed contractor must meet with the principals from the local schools in the area and inform them of the project. The principals must be informed of the potential risk posed by construction workers to school children, specifically girls. A mechanism must be established that enables school children to report incidents involving contractors to the school principals, who in turn can report the incidents to the Environmental Control Officer and the Project Engineer;
- The proponent and the contractor must implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. The programme must also inform construction workers that incidents involving school children will not be tolerated;
- Construction workers found guilty of harassing school children must be dismissed. All dismissals must be in accordance with South African Labour Law regulations;
- The proponent and the contractor must implement an HIV/AIDS awareness programme for the local schools. This must be planned and implemented in consultation with the local school principals. The aim of the programme must be to inform local school children of the potential risks posed by construction workers;
- The contractor must provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site;
- It is recommended that no construction workers, with the exception of security personnel, must be permitted to stay over-night on the site.

The proponent has met with representatives from the SAPIB to discuss this issue. The mitigation measures discussed include:

- The location of the pipeline must be demarcated at the outset of the construction phase and the necessary measures must be taken to ensure that the construction related activities do not impact on or damage the pipeline;
- In the event of the pipeline being damaged, the contractor must be required to fix the pipeline and restore flow within 1 day of the damage occurring;
- In order to reduce the potential risks to the farms that rely on the pipeline, construction work along the section of the road (km 1.6) where the pipeline is located must be planned to take place during the winter months (May-September) when the impacts associated with damage to the pipeline would be lower;
- Due to the age of and nature of the pipeline (asbestos), the option of replacing the section of the pipeline where it crosses the road reserve were also discussed. A decision on this matter must be taken in consultation with the SAPIB before the commencement of the construction phase.

The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- The movement of heavy vehicles associated with the construction phase must, where possible, be timed to avoid times of the day when scholars walk to and from schools, namely before 07h30 in the morning and after 16h00 in the afternoons;
- The movement of heavy vehicles associated with the construction phase must be timed to avoid long weekends and weekends when tourists are more likely to use the road;
- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers;
- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits;
- Construction related activities must limited to the period 08h00 to 17h00. This will reduce the potential noise impacts and disturbances to the local residents in the area;
- No construction related activities must take place on Saturday, Sunday and public holidays;
- Dust suppression measures must be implemented on the exposed embankment surfaces, such as

netting and regular wetting;

- Embankments must be successfully re-vegetated before the completion of the construction phase;
- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

Measures proposed by the developer to accommodate traffic during the construction phase include:

- For half width construction, a stop/go system shall be used during day time, and during night time hours a traffic signal system must be implemented;
- The travelling public has the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on public roads;
- Considering the safety and convenience of travelling public of utmost importance. Every effort will be made to ensure that all temporary road signs, cones, flagmen and speed controls are maintained and effective, and that courtesy is extended to the public at all times;
- Construction work, including the erection and removal of traffic control facilities, shall only be executed between sunrise and sunset on Monday to Saturday, inclusive;
- Accommodation of traffic on the existing traffic lanes will be required throughout the construction contract period. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Engineer. During the year end break the road sections must be open full width;
- It must be noted that Sundays are specified as "Special non-working days" in the contract data. In terms of Clause 5.8.1 of the General Conditions of Contract (GCC) 2010, the Engineer's permission has to be obtained for work to be carried out on special non-working days, for which permission shall be applied for at least two weeks prior to the day (DJEC, 2013);

Additional recommended mitigation measures:

- The need to establish a Monitoring Forum (MF) to monitor the construction phase and address potential problems must be discussed with representatives from local communities and business in the area. The MF must be established before the commencement of the construction phase;
- Information on the timing of the construction phase, location of stop-go's, duration of delays, potential road closures etc., must be communicated to the residents and businesses in the area prior to the commencement of the construction phase. The information must be communicated via e-mail, flyers, signage at key points along the route and access to the MR 191 etc. The need for a public meeting/s must also be considered;
- Information on the timing of the construction phase, location of stop-go's, duration of delays, potential road closures etc., must also be sent to all key businesses and tourist operations located along the MR 191 and also business that may potentially be affected by the MR 191, such as businesses in Franschoek. In the case of Franschoek the information must be sent to the local tourism association who in turn can distribute it to local business in the town. This information can then be placed on local business web-sites etc. informing visitors to the area of potential delays and alternative route options etc.;
- Given the importance of the tourism sector to the area the construction related activities must, where possible, be planned and implemented to minimise the potential disruptions and delays during the months of December and January;
- Measures must be put in place to ensure that access to schools in the morning period (between 07h00 and 07h45) is not impacted by the construction related activities. These measures must be discussed with representatives from the local community before being finalised;
- By-passes must where possible be used as opposed to stop-go's;
- The maximum stop-go period must be 10 minutes;
- The design and implementation of the construction phase must be designed to maximise the use of potential detours (such as Babylonstoren Road) to minimise disruptions and delays;
- The movement of heavy vehicles associated with the construction phase must, where possible, be

timed to avoid times of the day when scholars walk to and from schools, namely before 07h30 in the morning and after 16h00 in the afternoons;

- The movement of heavy vehicles associated with the construction phase must be timed to avoid long weekends and weekends when tourists are more likely to use the road. Recommended that construction work cease at midday (12h00) on Saturdays and, as recommended above, no construction work must take place on Sundays or Public Holidays.

Operational Phase:

The following mitigation measures are recommended:

- The issues regarding pedestrian safety at the MR191/ Klapmuts-Simondium Road (MR205) intersection must be considered in the up-grade;
- The option of installing street lights along the section of the MR 191 though Simondium must be investigated. This would improve road safety for pedestrians and motorists;
- A landscaping plan must be implemented to enhance the existing scenic quality of the road. In this regard CNdV have been appointed to prepare a landscaping plan for the project.
- The extension of the pedestrian path to the MR191/ Klapmuts-Simondium Road intersection must be investigated. The pathway must also be designed to accommodate bicycles.

The potential negative impacts associated with Alternative 3 on the affected property owners can be mitigated. However, successful mitigation would be dependent upon acceptance of compensation by the affected landowners. In terms of compensation the following recommendations are made:

- A meeting must be held with the property owners affected by Alternative 3 to inform them that Alternative 3 is the only viable technical option;
- The affected landowners must also be informed of the process associated with the expropriation process. In this regard expropriation is a separate legal process that follows the standard procedures as set out in the Road Ordinance Act (Act no. 19 of 1976). The rights of each South African citizen are protected in our country's Constitution as everyone has "the right to administrative action that is lawful, reasonable and fair" which has to apply to the process of expropriation. The expropriation process involves an independent evaluator who is appointed to assess the value of the property required for expropriation. The evaluator will assess the property as a whole and determine the value of the property. The landowner will be compensated for 100% of the value of the land required for the road reserve. Furthermore, the evaluator will assess the impact of the expropriation and activities associated with the road on the remainder of the property. Must the evaluator find that the remainder of the property is negatively affected the landowner will also be compensated accordingly, depending on the level of impact as determined by the evaluator.
- Based on the findings of the SIA the option of paying compensation of the entire property, not just the section affected by the road corridor, must be discussed. This is due to the negative impact that the establishment of a raised road along Alternative 3 will have on the future value of the affected properties. This information must also be conveyed to the affected property owners.
- Noise barriers must be established along the section of Alternative 3 (new diverted road portion). The design of the noise barriers must be informed by the recommendations contained in the report prepared by the noise specialist (Jongens Keet Associates 2 August 2013);
- The embankment must be landscaped to screen the road. The landscape plan prepared by CNdV must be implemented;
- The road must be fenced off to prevent pedestrians from accessing the properties located adjacent to the road;
- The design of the Alternative 3 must ensure that the current access for the dwellings located in Adamsvale to the MR 191 must be maintained. This access also enables residents of Adamsvale to access Mr Adams's shop. The road engineers have indicated that an underpass will be constructed which will enable vehicular and pedestrian access;
- In the event of Alternative 3 being developed, the Provincial Roads Department must establish security fencing along the boundary of the section of the existing MR 191 between the railway bridge and the R 101 that abuts onto the property owned by Mr Harman and Kock;

- The location of the service road adjacent to the R101 must be illustrated in the BAR for comment. THE SECTION OF THE SERVICE ROAD AFFECTED BY THE ACTIVITY IS ILLUSTRATED IN THE PLAN – SEE APPENDIX B.

HERITAGE

- Acknowledge that the route traverses areas of particular cultural historical significance and ensure that road engineering interventions and landscaping treatments respond accordingly in terms of threshold conditions and surface and edge treatments.
- Retain identified sites of heritage significance i.e. the need to bypass the historical railway bridge (circa.1860).
- Retain significant tree belts, e.g. the row of mature gums at Simondium.
- Celebrate significant landscape features such as river crossings with appropriate signage and edge treatments.
- Ensure that significant, dramatic mountain and valley view corridors are retained and enhanced by appropriate tree planting, for instance the view southwards across the Berg River valley from the rise to the south of the brickworks.
- Ensure that the visual spatial relationships with the identified heritage resources within the scenic corridor are enhanced.
- Ensure that kerb and channel treatments are kept to a minimum, and that as low a profile as possible is used to allow the road to integrate with the surrounding landscape to as great an extent as possible.
- Ensure that visual clutter is kept to a minimum and that elements such as street lighting standards are neutral in character and design conception.
- Implement an appropriate maintenance programme for the proposed tree planting.

NOISE

- Receptor B = School of Skills: 2m high wall at property boundary
- Receptor D = Mr and Mrs Adams: 1m high wall along road ramp & Bridge

OTHER

- The Environmental Management Programme (EMP) must be adhered to at all times. Refer to the EMP included as Appendix H, which also includes all the relevant mitigation measures highlighted above.

Duration and Validity:

Environmental authorisations are usually granted for a period of three years from the date of issue. Should a longer period be required, the applicant/EAP is requested to provide a detailed motivation on what the period of validity should be.

A validity period of 5 years should be considered sufficient.

The planned construction start date for this project is August 2018. The estimated contract duration will be approximately 36 months. The completion date will therefore be August 2021.

SECTION I: APPENDICES

The following appendices must be attached to this report:

Appendix		Tick the box if Appendix is attached
Appendix A:	Locality map	✓
Appendix B:	Site plan(s)	✓
Appendix C:	Photographs	✓
Appendix D:	Biodiversity overlay map	✓
Appendix E:	Permit(s) / license(s) from any other organ of state including service letters from the municipality	✓
Appendix F:	Public participation information	✓
Appendix G:	Specialist Reports	✓
Appendix H :	Environmental Management Programme	✓
Appendix I:	EAP CV	✓
Appendix J:	General Authorisation	✓

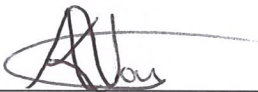
DECLARATIONS

THE APPLICANT

I, Azmi Khalil November, in my personal capacity or duly authorised (please circle the applicable option) by thereto hereby declare that I:

- regard the information contained in this report to be true and correct, and
- am fully aware of my responsibilities in terms of the National Environmental Management Act of 1998 ("NEMA") (Act No. 107 of 1998), the Environmental Impact Assessment Regulations ("EIA Regulations") in terms of NEMA (Government Notice No. R. 543 refers), and the relevant specific environmental management Act, and that failure to comply with these requirements may constitute an offence in terms of the environmental legislation;
- appointed the environmental assessment practitioner as indicated above, which meet all the requirements in terms of regulation 17 of GN No. R. 543, to act as the independent environmental assessment practitioner for this application;
- have provided the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the environmental legislation including but not limited to –
 - costs incurred in connection with the appointment of the environmental assessment practitioner or any person contracted by the environmental assessment practitioner;
 - costs incurred in respect of the undertaking of any process required in terms of the regulations;
 - costs in respect of any fee prescribed by the Minister or MEC in respect of the regulations;
 - costs in respect of specialist reviews, if the competent authority decides to recover costs; and
 - the provision of security to ensure compliance with the applicable management and mitigation measures;
- am responsible for complying with the conditions that might be attached to any decision(s) issued by the competent authority;
- have the ability to implement the applicable management, mitigation and monitoring measures;
- hereby indemnify, the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of, inter alia, the content of any report, any procedure or any action for which the applicant or environmental assessment practitioner is responsible; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Please Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.



Signature of the applicant:

Western Cape Government - Department of Transport & Public Works

Name of company:

27/07/2017

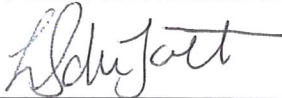
Date:

THE INDEPENDENT ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

I ...**LINDSAY SPEIRS**..., as the appointed independent environmental practitioner ("EAP") hereby declare that I:

- act/ed as the independent EAP in this application;
- regard the information contained in this report to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the application was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- have ensured that the comments of all interested and affected parties were considered, recorded and submitted to the competent authority in respect of the application;
- have kept a register of all interested and affected parties that participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference must be attached.



Signature of the environmental assessment practitioner:

DOUG JEFFERY ENVIRONMENTAL CONSULTANTS

Name of company:

26/7/2017

Date:

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I Adrian W.D. Jongens....., as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference must be attached.



Signature of the specialist:

Jongens Keet Associates

Name of company:

23 July 2017

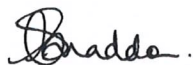
Date:

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I~~Kate Snaddon~~....., as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference must be attached.



Signature of the specialist:

Freshwater Consulting cc

Name of company:

21st July 2017

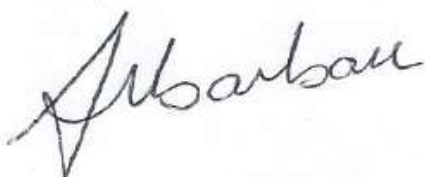
Date:

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I, Tony Barbour, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

Note: The terms of reference must be attached.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company:

24 July 2017

Date: