BASIC ASSESSMENT REPORT FOR THE PROPOSED REHABILITATION OF THE DISTILLERY ROAD BRIDGE, STELLENBOSCH

Prepared for: AECOM SA (Pty) Ltd on behalf of the Stellenbosch Municipality

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EXECUTIVE SUMMARY

1. INTRODUCTION

The Stellenbosch Municipality is proposing to rehabilitate the existing bridge on Distillery Road in Stellenbosch (the proposed project). The bridge crosses the Plankenbrug River and is located on the western edge of Stellenbosch, near the point where Adam Tas Road/R310 crosses the railway line (see Figure 1). Die Boord and Devon Park residential areas lay approximately 300 m south and 700 west of the bridge, respectively. The Distillery Road Bridge is approximately 20 m in length and consists of a single carriageway. It is the only access road into Bosman's Crossing, a small mixed development area within Stellenbosch comprising of various commercial developments and apartment complexes.

The Stellenbosch Municipality appointed AECOM SA (Pty) Ltd (AECOM) (under Contract B/SM 39/18) to investigate and undertake the necessary structural engineering services to address various issues associated with the bridge, such as the severely deteriorated bridge cantilevers; the lack of pedestrian/non-motorised traffic; the downgraded single lane; and the alignment of the road width to minimum required standards.

SLR Consulting (South Africa) (Pty) Ltd (SLR) has been appointed by AECOM as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment (BA) process for the proposed project. The BA process has been undertaken in terms of the relevant requirements of the Environmental Impact Assessment (EIA) Regulations, 2014 (Government Notice (GN) No. R982, as amended by GN No. 326) promulgated in terms of the National Environmental Management Act, 1998 (No. 107 of 1998), as amended (NEMA).

This Executive Summary provides a synopsis of the draft Basic Assessment Report (BAR) prepared for the proposed project. The draft BAR has been compiled to identify and assess the potential environmental impacts and risks of the proposed project and as a basis to inform Interested and Affected Parties (I&APs) of the proposed project and to obtain their comment.

2. OPPORTUNITY TO COMMENT

This draft version of the BAR has been distributed for a 30-day public review and comment period from 13 November to 14 December 2020 in order to provide I&APs the opportunity to comment on the proposed project. Copies of the report were made available on the SLR website (www.slrconsulting.com). Any comments should be forwarded to SLR at the address, telephone or e-mail address shown below. For comments to be included in the final BAR, comments should reach SLR **by no later than 14 December 2020.**

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After the conclusion of the comment period, all comments received will be collated into a Comments and Responses Report. The comments will be duly taken into account in updating the draft BAR into the final BAR, which will be submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for consideration and decision-making.

After DEA&DP has reached a decision, all registered I&APs will be notified of the outcome of the application and the reasons for the decision. A statutory appeal period in terms of the National Appeal Regulations, 2014 will follow the issuing of the decision.

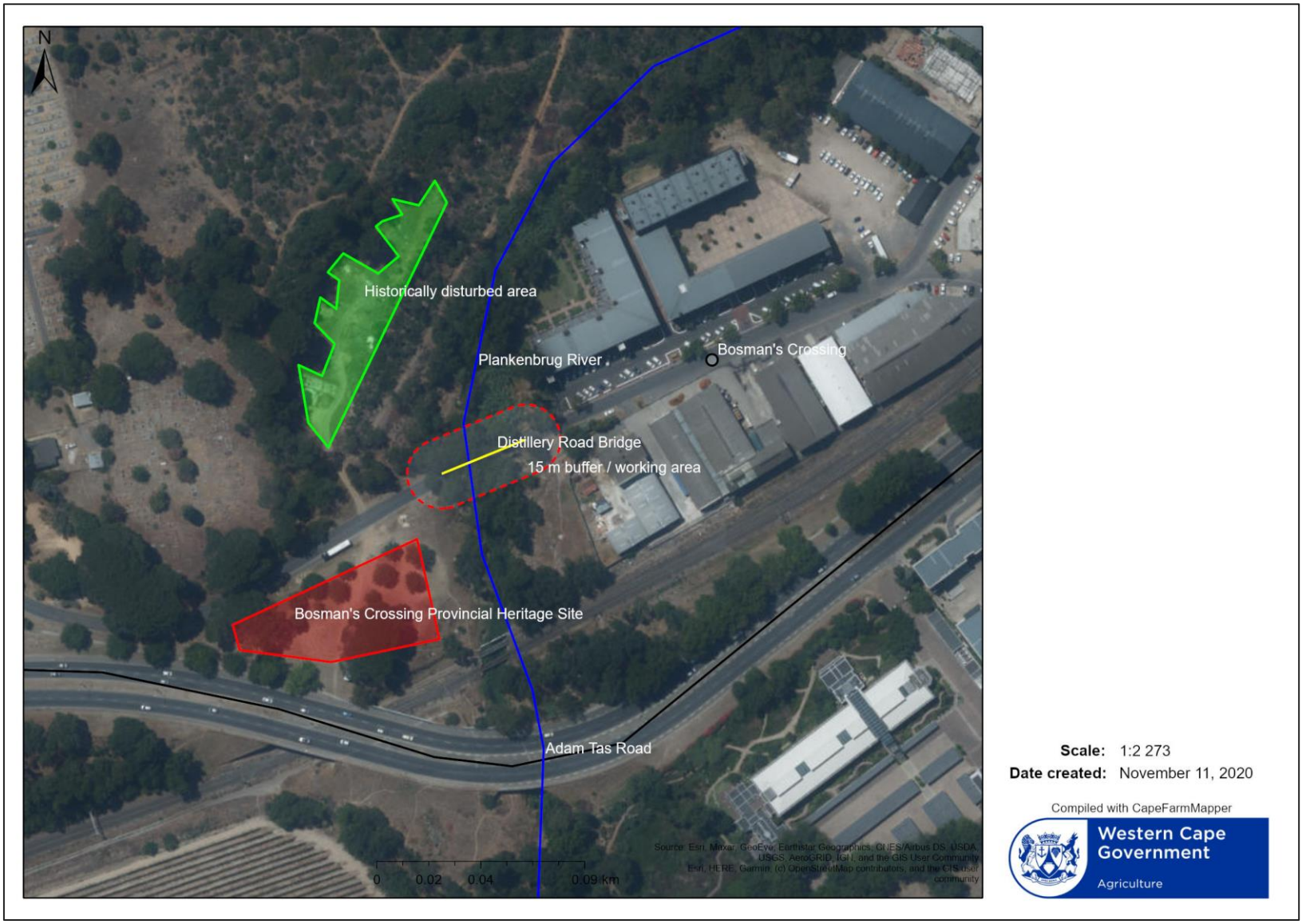

FIGURE 1: LOCALITY MAP (SOURCE: GOOGLE EARTH, 2020)

3. AUTHORISATION REQUIREMENTS

A BA is required in terms of the EIA Regulations, 2014 (as amended) as the proposed project would trigger the following listed activity:

Listing Notice 1 - GN No. R983 of 2014		Project Description
19	*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;…*	The proposed project would result in the depositing and/or excavating and removal of more than 10 m^3 of material from a watercourse (Plankenbrug River) related to the demolition of the damaged bridge structure and construction of a new bridge.

Registration of water uses in terms of the National Water Act, 1998 (No. 36 of 1998; NWA) is also required as the proposed project entails the construction of a bridge over the Plankenbrug River. This process is being undertaken in parallel to the BA process.

Section 38 of the National Heritage Resources Act, 1998 (No 25 of 1998; NHRA) required a Notice of Intent to Develop (NID) form to be submitted to Heritage Western Cape (HWC) for comment. In their consideration of the NID, submitted on 24 June 2020, HWC confirmed that no further heritage impact assessment is required to be undertaken. Separate Section 34 and Section 35 permit processes are, however, required as the bridge is older than 60 years and in order to address how potential impacts are to be avoided in the vicinity of Bosman's Crossing Provincial Heritage Site. These applications will be undertaken separately and in parallel to the BA process with HWC as the competent authority.

4. PROPOSED PROJECT

The motivation for the proposed project relates to the following issues:

- The concrete bridge structure is generally in a structurally poor condition with general evidence of cracking and spalling, mainly the concrete cantilevers of the bridge deck which are in a severely deteriorated state and the reinforcement is badly corroded, thereby compromising its structural integrity;
- All other elements of the bridge are also in a relatively poor condition and the substructure seems to consist of remnants of an earlier bridge structure;
- The bridge has been downgraded to a single lane (one direction at a time with a stop-go system) to minimise loading on the cantilevers, thereby impeding traffic flow on the road during peak hours;
- The current road width is 5.6 m, which is below the required minimum standard of 6 m; and
- No allowance is made for non-motorised and pedestrian access over the bridge which represents an additional safety hazard.

The proposed project entails the following:

- Phased demolition of the current bridge structure to allow traffic accommodation during the rehabilitation of the facility;
- Excavation within the riverbed and banks to construct foundations of new bridge supports, including piling;
- Construction of a new bridge super and substructure which is approximately 6 m wider and 7 m longer than the existing bridge; and
- Provision of a wider road surface and sidewalk for the bridge approaches to accommodate two lanes of vehicle and pedestrian / non-motorised traffic in accordance with the planning requirements for this urban area.

The proposed design entails the demolition of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure. The proposed design has been duly informed by the heritage significance of the structure and from input received from a

heritage practitioner and architect with previous experience in the restoration of bridges with historical value. The proposed bridge design and bridge cross-section are provided in Figures 2 and 3, respectively.

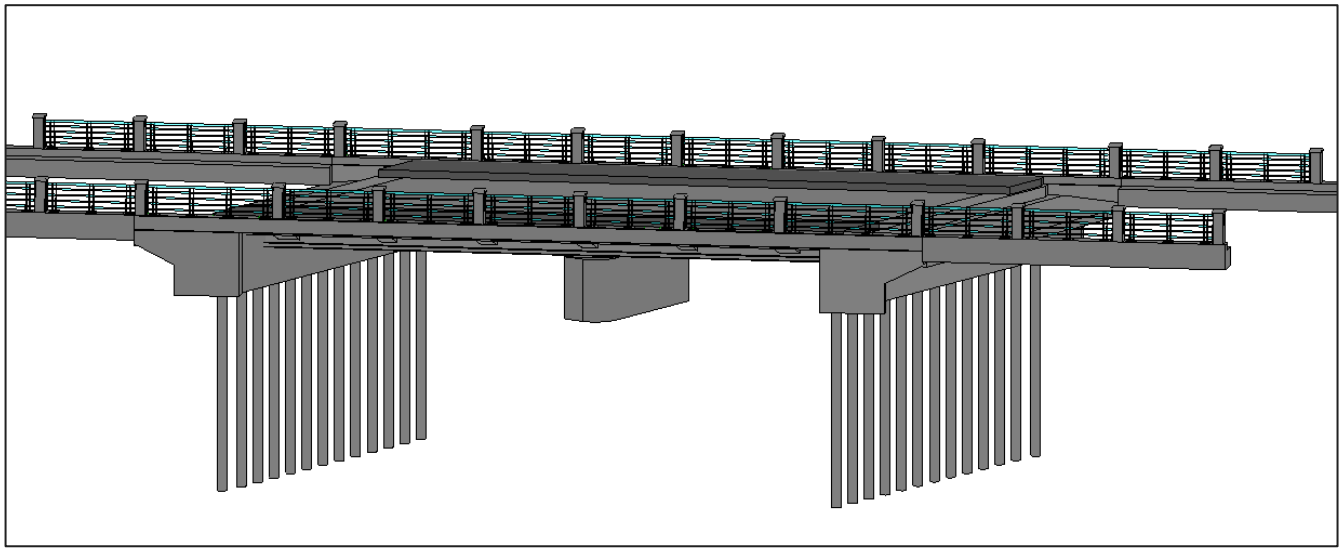

FIGURE 2: PROPOSED BRIDGE DESIGN (SINGLE 20 M DECK SPAN WITH PILED ABUTMENTS AND RETENTION OF EXISTING PIER (NON-FUNCTIONAL)).

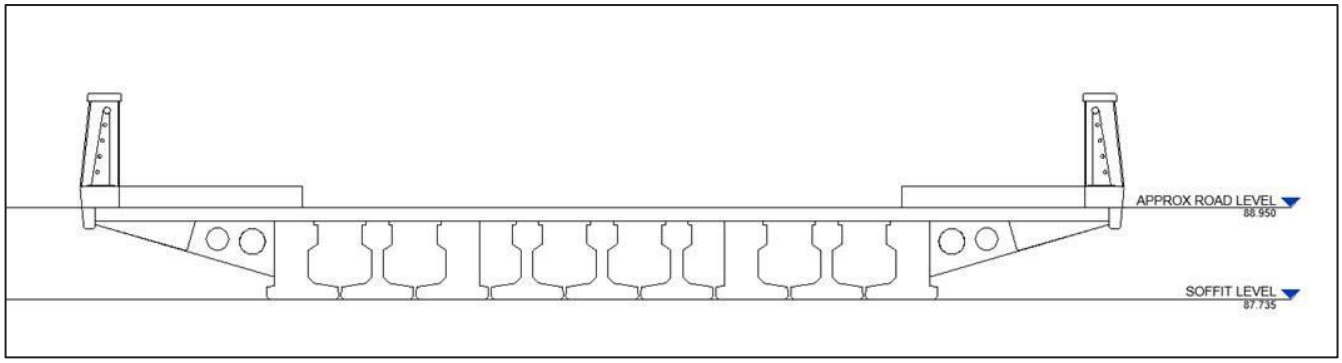

FIGURE 3: PROPOSED BRIDGE CROSS-SECTION.

5. AFFECTED ENVIRONMENT

The topography is relatively flat. The project site is located on an aquifer that is classified as a major aquifer of most vulnerability and high susceptibility. Overall water table level is subject to seasonal fluctuations. The average groundwater depth is estimated at approximately 7 m below ground level; however, a geotechnical investigation undertaken on 26 June 2020 recorded groundwater depth to be approximately 3 m below ground level. These levels were recorded just as the rainy, winter season commenced.

The project area is located within the Southwestern Coast Belt Ecoregion, Berg Water Management Area and the G22H quaternary catchment. The Plankenbrug River and its tributaries drain the area from Simonsberg to the ridge near the Devonvale Golf Estate. It also drains the residential areas of Cloetesville, Kayamandi and much of Stellenbosch town, before flowing under the Distillery and Adam Tas Road bridges, to join the Eerste River. The catchment is dominated by a mixture of agriculture (predominantly vineyards) and urban land uses.

The Western Cape Biodiversity Spatial Plan (WCBSP) indicates the Plankenbrug River and riparian zone as a Critical Biodiversity Area (CBA) 1 watercourse. It also indicates two CBA 1 wetland areas on the west of the Plankenbrug River within the project area approximately 50 m upstream, and immediately downstream of the bridge. Two further wetlands are

indicated within 500 m of the bridge – one immediately downstream of the Adam Tas Bridge and the other approximately 130 m upstream of the confluence with the Plankenbrug River. A CBA 1 terrestrial habitat and an Ecological Support Area (ESA) 2 are indicated to the west and east of the river, respectively. The vegetation type in the surrounding area is mapped as Swartland Granite Renosterveld, which is rated as Critically Endangered. However, no vegetation that corresponds to the Critically Endangered terrestrial vegetation type was noted on site and given the degree of past disturbance, infilling and compaction, the indigenous terrestrial vegetation is deemed to be entirely lost, to the extent of the seed bank as well.

The Plankenbrug River lacks true instream vegetation. Hydrophytic vegetation within and immediately adjacent to the flowing stream channel was dominated by alien invasive species such as *Commelina bengalensis*, *Arundo donax,* and *Persicaria lapathifolia,* but with tolerant indigenous species such as *Cyperus dives, Cyperus textilis*, and *Isolepis prolifera* present in places. Downstream of the bridge, *Acacia saligna* and *Ricinus communis* are also present.

Upstream of the bridge on the west bank, the riparian zone includes a mixture of alien and indigenous trees. The understorey in this area is dominated by the alien invasive *Tropaeolum majus* and *Pennisetum clandestinum*, with a single patch of indigenous *Chasmanthus aethiopica* noted. The canopy was dominated by the indigenous *Olea europaea ssp. africana* and the alien *Populus candescens*, with occasional *Eucalyptus cameldensus* towards the terrestrial extreme of the riparian zone. The top of the east bank upstream and both banks downstream of the bridge is levelled and compacted with sparse terrestrial pioneer vegetation dominated by *Cynodon dactylon* and *Pennisetum clandestinum* grasses. Occasional *Quercus palustris* are also present scattered within the disturbed terrestrial area downstream of the bridge on the west bank.

Two indigenous fish species, namely the *Galaxius zebratus* and *Sandelia capensis* are known to inhabit the Eertse River catchment. Both species may therefore be present within the project area, but given their hardy nature, neither are expected to be impacted significantly by the proposed project. Several alien invasive fish species are known to inhabit the catchment such as the *Onchorynchus mykiss*, *Pseudocrenilabrus philander*, *Cyprinus carpio* and *Clarius capensis*. The alien invasive freshwater shrimp *Caridina africana* has also recently established itself in the Eerste River catchment.

Archaeological resources in the form of Early Stone Age implements were discovered adjacent to the Distillery Road Bridge during previous surveys. The artefacts are dated to the earlier part of the Middle Pleistocene, between 700 00 and 300 000 years ago. A large sandstone boulder marks the location of Bosman's Crossing Provincial Heritage Site which was declared a National Monument in 1962 as the location of where the Early Stone Age implements were found. This Site has substantial significance for the origins of archaeological research in South Africa as well as knowledge about the Early Stone Age.

The bridge is also known as Bosman's Crossing and up until the 1960s, was the main entrance into Stellenbosch from Cape Town. The bridge, as far as can be ascertained, is also known as the "Steenenbrug". It is believed to be the first public works project undertaken in the area in 1691.

Additionally, the Distillery Road Bridge is located within the 'Papegaaiberg Landscape Unit' which is considered to be a significant cultural area. The suburb at the foot of Papegaaiberg is called Onder Papegaaiberg and most of the open space is marked with large stone pines which also incorporate the Onder Papegaaiberg cemetery on the foot slopes.

The closest residential suburbs to the proposed project are Die Boord and Devon Park which lay approximately 300 m south and 700 m west of the bridge, respectively.

6. ENVIRONMENTAL IMPACT STATEMENT

The majority of the impacts are expected to be of **INSIGNIFICANT** to **LOW** significance after mitigation. Socio-economic benefits related to potential temporary employment opportunities are rated as of ***VERY LOW (POSITIVE)*** significance during the construction phase. Long term socio-economic benefits related to improved road safety, traffic alleviation and provision of non-motorised facilities/pedestrian walkway are rated as of ***HIGH (POSITIVE)*** significance post-construction. Traffic impacts during the construction phase are deemed to be of a **LOW** significance after mitigation.

Construction activities would result in a localised increase in dust, noise levels and visual impacts which may be a nuisance to local residents. Given the short duration and extent of the construction phase, this impact is deemed to be of **VERY LOW** significance after mitigation. Surface and groundwater impacts during the construction phase are deemed of **VERY LOW** significance pre and post mitigation, respectively.

Given the largely modified state of the Plankenbrug River and the dominance of alien invasive species within the project area, impacts related to aquatic ecosystems are deemed to be of Very Low (habitat loss) to Low (biota loss) significance before mitigation and of **VERY LOW** significance after mitigation. Impacts related to sedimentation/erosion in the riparian zone and temporary flow diversion is deemed to be **INSIGNIFICANT** to **VERY LOW** significance**.**

During the maintenance phase, aquatic ecosystems may be impacted negatively through the spread of alien vegetation and disturbance/damage to aquatic species. With the implementation of the recommended mitigation measures, the residual impacts are deemed to be of **VERY LOW** significance**.**

The No-Go alternative would not be beneficial to society in any way and would mean that the bridge would continue to deteriorate, thereby compromising road user safety and access. Additionally, the short-term employment benefits would not be realised. The No-Go alternative is rated as having a **HIGH** negative significance.

A summary of the significance of the positive and negative impacts/risks identified for the proposed project is provided below:

TABLE 1: CONSTRUCTION-RELATED IMPACTS/RISKS.

Impact/Risk	Significance without mitigation	Significance with mitigation
Nuisance aspects (air quality, noise and visual)	Low	**VERY LOW**
Socio-Economic aspects (employment opportunities, etc.)	*Very Low (positive)*	***VERY LOW (POSITIVE)***
Traffic disruption	Low	**LOW**
Surface and Groundwater contamination	Very Low	**VERY LOW**
Deterioration of Freshwater Ecosystems and riparian vegetation	Very Low to Low	**VERY LOW**
Compaction of sediment/erosion in riparian zone	Very Low	**VERY LOW**
Flow diversion	Very Low	**INSIGNIFICANT**

TABLE 2: MAINTENANCE-RELATED IMPACTS/RISKS.

Impact/Risk	Significance without mitigation	Significance with mitigation
Deterioration of Freshwater Ecosystems (ongoing maintenance activities)	Low	**LOW**
Socio-Economic (improved safety, access and facilities)	*High (positive)*	***HIGH (POSITIVE)***

TABLE 3: IMPACTS ASSOCIATED WITH THE NO-GO OPTION.

Impact/Risk	Significance without mitigation	Significance with mitigation
No-Go Alternative	High	**HIGH**

7. RECOMMENDATIONS

Table 4 below includes a list of the recommended mitigation / enhancement measures to reduce / optimise the identified impacts / risks:

TABLE 4: RECOMMENDED MITIGATION ENHANCEMENT MEASURES.

Impact / Risk	Mitigation / enhancement measure
Nuisance aspects (air quality, noise and visual) – construction phase	• The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In addition, the provisions of SANS 10103 regarding the generation of noise shall apply to all areas within audible distance of residents. • The Contractor shall endeavour to keep noise-generating activities to a minimum, particularly during night-time work. • Implement a procedure for recording and managing external grievances/complaints. Actions shall be identified as required. • No high noise-generating activity outside of normal hours, regardless of its proximity to residences, shall take place without application to the Resident Engineer (RE) for approval. The application must include proposed noise containment measures. High noise-generating activities include pile driving, grinding, road material loading/unloading, hammering, excavating, etc. • The Contractor shall restrict all operations that result in high noise disturbance to local communities to daylight working hours on weekdays or as otherwise agreed with the RE and local authority. • Ensure vehicles and equipment are adequately maintained and in good working order. • The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme (with due consideration to conserving water) to maintain a safe working environment, minimise nuisance for surrounding residents and businesses and prevent damage to natural vegetation. • Provide appropriate measures for visual screening (e.g. at construction yards, batching plants, laydown areas, etc.).
Socio-Economic - construction phase	• As far as possible, employ local Broad-Based Black Economic Empowerment (B-BBEE) services and providers and local labour from the local community. • Ensure that, where required, appropriate training of personnel is provided.
Traffic disruption - construction phase	• The Contractor shall appoint suitably trained traffic safety officers who shall be responsible for ensuring that construction activities do not obstruct traffic and that adequate traffic accommodation measures are put in place. • The Contractor shall also ensure that adequate pedestrian traffic accommodation, signage and safety measures (as appropriate) are put in place on site. • All construction vehicles shall comply with speed limits. • Movement of heavy vehicles shall be limited to daylight hours, as far as possible.
Surface and Groundwater contamination - construction phase	• As far as possible, no stockpiling of materials shall be undertaken within 30 m of the Plankenbrug River, unless within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge. • The construction camp shall not be established within 30 m of the Plankenbrug River, unless within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge. • The Contractor shall prepare and implement a Method Statement for the containment, handling, storage and disposal of hazardous substances. • The Contractor shall prepare and implement a Method Statement detailing the procedure for dealing with accidental leaks and spills and shall ensure that its employees are aware of the procedures to be followed. • All fuel, oil and other hazardous substances shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers/storage facilities. • Suitable warning signs indicating the nature of the stored materials shall be displayed at the storage facility. • Drip trays or similar forms of secondary containment shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g. excavators, hauling trucks, etc.). • Where reasonably practical, plant and vehicles shall only be refuelled in a demarcated refuelling/servicing area using suitable equipment (e.g. pumps, funnels, etc. • The surface under the refuelling area shall be protected against pollution (e.g. the use of drip trays, concrete sump, etc.). • The Contractor shall ensure that a suitable hydrocarbon spill clean-up kits are readily available at refuelling areas. • All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or moved to a suitable contained area. • When servicing equipment, drip trays shall be used during the collection of waste oil and other hazardous substances (e.g. coolants, fuel, grease, etc.).

Impact / Risk	Mitigation / enhancement measure
	• Cement and concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces. • Unused (full) cement bags shall be stored undercover and away from surface runoff. • Used (empty) cement bags shall be collected and stored in weatherproof containers. • All excess concrete shall be removed from site on completion of concrete works and disposed of. • Washing of the excess cement/concrete into the ground shall not be allowed.
Deterioration of Freshwater Ecosystems - construction phase	• Revegetate disturbed portions of the riparian zone within the construction footprint. This will increase the quality and availability of riparian habitat overall. Use the following locally indigenous plants species for revegetation: o *Cyperus textilis* (marginal) o *Pteridium aquilinum* (marginal) o *Cliffortia strobilifera* (marginal) o *Olea europaea ssp. africana* (riparian) • Stockpile materials only within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge. • Determine the minimum construction area required within the riparian zone and stream channel for vehicular access. Demarcate this area with danger tape or a similar material and do not allow vehicular access to the stream channel or riparian zone outside of this demarcated area. • Where possible, work from the downstream side of the bridge using either or both banks for access as this area has been recently disturbed and is least sensitive. • If it is essential to access the area upstream of the bridge with vehicles, do so via the east bank and avoid entering the riparian area on the west bank with vehicles as far as possible. • If it is essential to access the west bank of the river avoid removing indigenous trees within the riparian area (only applicable to the west bank upstream of the bridge). • Avoid stream flow diversion, if possible, by undertaking work in the stream channel during summer, or return flow as soon as possible to the affected area to minimise the duration of the stream flow diversion. • The Contractor shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction site as a result of their activities. • The use of herbicides and pesticides is prohibited unless approved by the RE. • Ensure that, where required, appropriate training in the removal of alien vegetation is provided. • Where dewatering of excavations is required, no water is to be pumped directly into the river. Implement a sediment pond/sump system in order to prevent sedimentation of the river from dewatering activities.
Compaction of sediment/erosion in riparian zone – construction phase	• Demarcate project area with danger tape or a similar material and do not allow vehicular access to the stream channel or riparian zone outside of this demarcated area. • Revegetate disturbed portions of the riparian zone within the construction footprint as per the above-mentioned recommendations in this regard. • As far as possible, undertake work within the stream channel and banks during the summer months (November to March) to minimise the risk of erosion of the disturbed and compacted sediments during a rain event. • Compacted ground shall be rehabilitated by ripping to a minimum depth of 600 mm. Topsoil of at least 20 cm should be placed on top of the ripped soil.
Flow diversion – construction phase	• If possible, undertake work within the stream channel during mid to late summer (November to March) to ensure that minimal flows are present at the time. • Only divert flow if operationally necessary. Divert flow over as short a length of river as possible, but no more than 25 m. • Return flow to the original channel as soon as possible after completion.
Deterioration of Freshwater Ecosystems – maintenance phase	• Minimise the spatial extent of disturbance. • Minimise the frequency of (or requirement for) maintenance activities. • Do not impede the movement of aquatic and riparian biota. • Minimise alterations to flow- and sediment-capacity. • Rehabilitate and re-vegetate disturbed areas as soon as possible. • Clear alien invasive plant species. • Restrict maintenance activities to the dry season where possible. • Prevent erosion and rehabilitate eroded areas. • Use existing access routes as far as possible.

Impact / Risk	Mitigation / enhancement measure
	• Store and handle all hazardous materials and waste in a suitable manner, and at least 30 m outside of the Plankenbrug River. • Remove excess spoil material and solid waste and ensure it is disposed of at approved waste disposal sites. • Ensure maintenance activities do not lead to channelisation or canalisation of the watercourses. • Remove cleared woody material from the areas adjacent to the watercourse and wetlands to prevent it being washed into the watercourse. • Maintenance activities are to be undertaken in line with the Stellenbosch River Management Plan Update (June 2011)

Additionally, it is recommended that an Environmental Control Officer (ECO) be employed to oversee and monitor compliance with the EMPr for the duration of the construction phase of the project (see Section 3 of the EMPr for further details in this regard).

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ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AECOM	AECOM SA (Pty) Ltd
BA	Basic Assessment
BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs and Development Planning
DHSWS	Department of Human Settlements, Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
GDP	Gross Domestic Product
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
MFT	Managed File Transfer
N/A	Not Applicable
NEMA	National Environmental Management Act (NEMA), 1998 (No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act, 1998 (No. 36 of 1998)
PP Plan	Public Participation Plan
PSDF	Provincial Spatial Development Framework
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SLR	SLR Consulting (South Africa) (Pty) Ltd
StatsSA	Statistics South Africa
WCBSP	Western Cape Biodiversity Spatial Plan

Western Cape Government
Environmental Affairs and Development Planning

FORM NO. BAR10/2019

BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

NOVEMBER 2020

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

GENERAL PROJECT DESCRIPTION

This must Include an overview of the project including the Farm name/Portion/Erf number

Project Location

The Stellenbosch Municipality is proposing to rehabilitate the existing bridge on Distillery Road in Stellenbosch. The bridge is located on Unalienated State Land 7/0 and 5162. The bridge crosses the Plankenbrug River and is located on the western edge of Stellenbosch, near the point where Adam Tas Road / R310 crosses the railway line. Die Boord and Devon Park residential areas lay approximately 300 m south and 700 m west of the bridge, respectively. Distillery Road Bridge is approximately 20 m in length and consists of a single carriageway. It is the only access road into the small mixed development area (Bosman's Crossing) within Stellenbosch comprising of various commercial developments and apartment complexes.

Project Description

The Stellenbosch Municipality appointed AECOM SA (Pty) Ltd (AECOM) (under Contract B/SM 39/18) to investigate and undertake the necessary structural engineering services. The motivation for the proposed project relates to the following issues:

- The concrete bridge structure is generally in a structurally poor condition with general evidence of cracking and spalling, mainly the concrete cantilevers of the bridge deck which are in a severely deteriorated state and the reinforcement is badly corroded, thereby compromising its structural integrity;
- All other elements of the bridge are also in a relatively poor condition and the substructure seems to consist of remnants of an earlier bridge structure;
- The bridge has been downgraded to a single lane (one direction at a time with a stop-go system) to minimise loading on the cantilevers, thereby impeding traffic flow on the road during peak hours;
- The current road width is 5.6 m, which is below the required minimum standard of 6 m; and
- No allowance is made for non-motorised and pedestrian access over the bridge which represents an additional safety hazard.

The proposed project entails the following:

- Phased demolition of the current bridge structure to allow traffic accommodation during the rehabilitation of the facility;
- Excavation within the riverbed and banks to construct foundations of new bridge supports, including piling;
- Construction of a new bridge super and substructure which is approximately 6 m wider and 7 m longer than the existing bridge; and
- Provision of a wider road surface and sidewalk for the bridge approaches to accommodate two lanes of vehicle and pedestrian / non-motorised traffic in accordance with the planning requirements for this urban area.

Consideration of Alternatives

Following the successful diagnosis of damage to the bridge, various structural alternatives were proposed by the project engineer. These included:

1. Do nothing;
2. Downgrade the functionality of the structure;
3. Reduce further deterioration;
4. Strengthen or repair and protect;
5. Reconstruct; or
6. Demolish.

Due to the advanced state of corrosion-related damage to the bridge, it was concluded that no benefit could be derived from the first three alternatives provided above. The remaining viable technical solutions include the replacement of the superstructure and substructure and the reconstruction of the deck and sub-structure. Based on conceptual evaluations of the advantages and disadvantages of the various structural solutions, the preferred technical solution entails the demolition of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure. The proposed design has also been duly informed by the heritage significance of the structure and from input received from a heritage practitioner and architect with previous experience in the restoration of bridges with historical value. reconstruction of the bridge deck and sub-structure.

The proposed project does not entail a “like for like” replacement and thus cannot be undertaken under a Maintenance Management Plan process. As such, SLR Consulting (South Africa) (Pty) Ltd (SLR) has been appointed by AECOM to undertake the Environmental Authorisation (EA) application process under the National Environmental Management Act, 1998 (No. 107 of 1998; NEMA).

IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”), Environmental Impact Assessment (“EIA”) Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.
2. The Environmental Impact Assessment (“EIA”) Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 19998 (Act No. 107 of 1998) (“NEMA”) hereinafter referred to as the “NEMA EIA Regulations”.
3. The required information must be typed within the spaces provided in this Basic Assessment Report (“BAR”). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.
4. All applicable sections of this BAR must be completed.
5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner (“EAP”) must declare such non-disclosure and provide the reasons for believing that the information is protected.
6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department’s website at http://www.westerncape.gov.za/eadp to check for the latest version of this BAR.
7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning (“DEA&DP”) is the Competent Authority.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.

9. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.
10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.
11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.
12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.
13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link https://screening.environment.gov.za/screeningtool to generate the Screening Tool Report. The screening tool report must be attached to this BAR.
14. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('NEM:AQA"), the submission of the Report must also be made as follows, for- Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office. Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE: REGION 1 and REGION 2 **(Region 1: City of Cape Town, West Coast District)** **(Region 2: Cape Winelands District & Overberg District)**	**GEORGE OFFICE: REGION 3** **(Central Karoo District & Garden Route District)**
BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1 or 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1 and 2) at: Tel: (021) 483-5829 Fax (021) 483-4372	BAR must be sent to the following details: Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel: (044) 805-8600 Fax (044) 805 8650

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals 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: • 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; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided.

	• The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each 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): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside 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 to this BAR as **Appendix C**. The aerial photograph(s) 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.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ **(**tick) or a **x** (cross) to indicate whether the Appendix is attached to the BAR. The following checklist of attachments must be completed.

APPENDIX			**✓ (Tick) or x (cross)**
Appendix A	**Maps**		
	Appendix A1:	**Locality Map**	✓
	Appendix A2:	**Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by DEA&DP**	Not Applicable
	Appendix A3:	**Map with the GPS co-ordinates for linear activities**	Not Applicable
Appendix B	**Appendix B1:**	**A map which superimposes the proposed development on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas**	✓
	Appendix B2:	**Site layout**	Not Applicable
	Appendix B3:	**Site alternatives**	Not Applicable
Appendix C	**Site Photographs**		✓
Appendix D	**Biodiversity overlay map**		✓
Appendix E	**Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.**		
	Appendix E1:	**Final comment/ROD from HWC**	✓
	Appendix E2:	**Proof of land use rights**	To be provided in FBAR
	Appendix E3:	**Comment from CapeNature**	To be provided in FBAR
	Appendix E4:	**Final Comment from the DHSWS**	To be provided in FBAR
	Appendix E5:	**Comment from the DEA: Oceans and Coast**	Not Applicable
	Appendix E6:	**Comment from the DAFF**	Not Applicable
	Appendix E7:	**Comment from WCG: Transport and Public Works**	To be provided in FBAR

APPENDIX			✓ (Tick) or x (cross)
	Appendix E8:	**Comment from WCG: DoA**	Not Applicable
	Appendix E9:	**Comment from WCG: DHS**	Not Applicable
	Appendix E10:	**Comment from WCG: DoH**	Not Applicable
	Appendix E11:	**Comment from DEA&DP: Pollution Management**	To be provided in FBAR
	Appendix E12:	**Comment from DEA&DP: Waste Management**	To be provided in FBAR
	Appendix E13:	**Comment from DEA&DP: Biodiversity**	To be provided in FBAR
	Appendix E14:	**Comment from DEA&DP: Air Quality**	Not Applicable
	Appendix E15:	**Comment from DEA&DP: Coastal Management**	Not Applicable
	Appendix E16:	**Comment from the local authority**	To be provided in FBAR
	Appendix E17:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	Not Applicable
	Appendix E18:	**Comment from the District Municipality**	To be provided in FBAR
	Appendix E19	**Copy of an exemption notice**	Not Applicable
	Appendix E20:	**Pre-approval for the reclamation of land**	Not Applicable
	Appendix E21:	**Proof of agreement/TOR of the specialist studies conducted.**	Not Applicable
	Appendix E22:	**Proof of public participation agreement for linear activities**	Not Applicable
Appendix F	**Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.**		
	Appendix F1:	**PP Plan and DEA&DP acceptance**	✓
	Appendix F2:	**I&P database**	✓
	Appendix F3:	**Site notices**	✓
	Appendix F4:	**Newspaper advertisement Text**	✓
	Appendix F5:	**Notification letter**	✓
Appendix G	**Specialist Reports**		
	Appendix G1:	**Freshwater Specialist Assessment**	✓
	Appendix G2:	**HWC NID and Heritage Screener**	✓
Appendix H	**EMPr**		✓
Appendix I	**Screening tool report**		✓
Appendix J	**The impact and risk assessment for each alternative**		Not Applicable
Appendix K	**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**		Included in Section E

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE: REGION 1 (City of Cape Town, West Coast District	**CAPE TOWN OFFICE: REGION 2 (Cape Winelands District & Overberg District)**	GEORGE OFFICE: REGION 3 (Central Karoo District & Garden Route District)
Name of Applicant/Proponent:	Stellenbosch Municipality		
Name of contact person for Applicant / Proponent):	Jacobus Gideon Louw		
Company / Trading name / State Department / Organ of State:	N/A		
Company Registration Number:	N/A		
Postal address:	2nd Floor, Ecclesia Building		
	71 Plein Street, Stellenbosch	**Postal code:**	7600
Telephone:	021 808 8213	**Cell:**	N/A
E-mail:	deon.louw@stellenbosch.gov.za	**Fax:**	N/A
Company of EAP:	SLR Consulting (South Africa) (Pty) Ltd		
EAP name:	Fuad Fredericks / Eloise Costandius / Rizqah Baker		
Postal address:	PO Box 10145		
	Caledon Square	**Postal code:**	7905
Telephone:	021 461 1118	**Cell:**	083 412 9340
E-mail:	ffredericks@slrconsulting.com / ecostandius@slrconsulting.com / rbaker@slrconsulting.com	**Fax:**	021 461 1120
Qualifications:	F. Fredericks – M.Sc. (Botany), HDE E. Costandius – M.Sc. (Ecological Assessment) R. Baker – B.A. Hons. (Environmental and Geographical Studies)		
EAPASA registration no:	In progress		
Name of landowner: **Name of contact person for landowner:** **Postal address:** **Telephone:** **E-mail:**	Same as applicant.		
Name of Person in control of the land: **Name of contact person for person in control of the land:** **Postal address:** **Telephone:** **E-mail:**	Same as applicant.		

Municipality in whose area of jurisdiction the proposed activity will fall:	Stellenbosch Local Municipality		
Contact person:	The Municipal Manager – Geraldine Mettler		
Postal address:	PO Box 17		
	Stellenbosch	**Postal code:**	7600
Telephone	021 808 8111	**Cell:**	N/A
E-mail:	geraldine.mettler@stellenbosch.gov.za	**Fax:**	N/A

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INCLUDED IN THE APPLICATION FORM

1.	**Is the proposed development (please tick):**	**New**		**Expansion**	✓
2.	**Is the proposed site(s) a brownfield of greenfield site? Please explain.**				
The project site is considered to be a brownfield site, as the proposed project entails the rehabilitation of an existing bridge.					
3.	**For Linear activities or developments**				
3.1.	**Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:**				
Unalienated state land 7/0 and 5162.					
3.2.	**Development footprint of the proposed development for all alternatives.**	All alternatives will have a total development area of approximately 1 350 m^2, which comprises the 160 m^2 footprint of the existing bridge and 240 m^2 allowed for the widening of the new bridge structure, as well as approach roadway tie ins.			
3.3.	**Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.**				

The Stellenbosch Municipality is proposing to rehabilitate the existing bridge on Distillery Road in Stellenbosch. The bridge crosses the Plankenbrug River and is located on the western edge of Stellenbosch, near the point where Adam Tas Road / R310 crosses the railway line. Die Boord and Devon Park residential areas lay approximately 300 m south and 700 m west of the bridge, respectively. Distillery Road Bridge is approximately 20 m in length and consists of a single carriageway. It is the only access road into the small mixed development area (Bosman's Crossing) within Stellenbosch comprising of various commercial developments and apartment complexes.

Project Description

The motivation for the proposed project relates to the following issues:

- The concrete bridge structure is generally in a structurally poor condition with general evidence of cracking and spalling, mainly the concrete cantilevers of the bridge deck which are in a severely deteriorated state and the reinforcement is badly corroded, thereby compromising its structural integrity;
- All other elements of the bridge are also in a relatively poor condition and the substructure seems to consist of remnants of an earlier bridge structure;
- The bridge has been downgraded to a single lane (one direction at a time with a stop-go system) to minimise loading on the cantilevers, thereby impeding traffic flow on the road during peak hours;
- The current road width is 5.6 m, which is below the required minimum standard of 6 m; and
- No allowance is made for non-motorised and pedestrian access over the bridge which represents an additional safety hazard.

The proposed project entails the following:

- Phased demolition of the current bridge structure to allow traffic accommodation during the rehabilitation of the facility;
- Excavation within the riverbed and banks to construct foundations of new bridge supports, including piling;
- Construction of a new bridge super and substructure which is approximately 6 m wider and 7 m longer than the existing bridge; and
- Provision of a wider road surface and sidewalk for the bridge approaches to accommodate two lanes of vehicle and pedestrian / non-motorised traffic in accordance with the planning requirements for this urban area.

The proposed design entails the demolition of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure. The proposed design has also been duly informed by the heritage significance of the structure and from input received from a heritage practitioner and architect with previous experience in the restoration of bridges with historical value. The existing and proposed bridge designs are provided in Figures 1 and 2, respectively. The proposed bridge cross-section is provided in Figure 3.

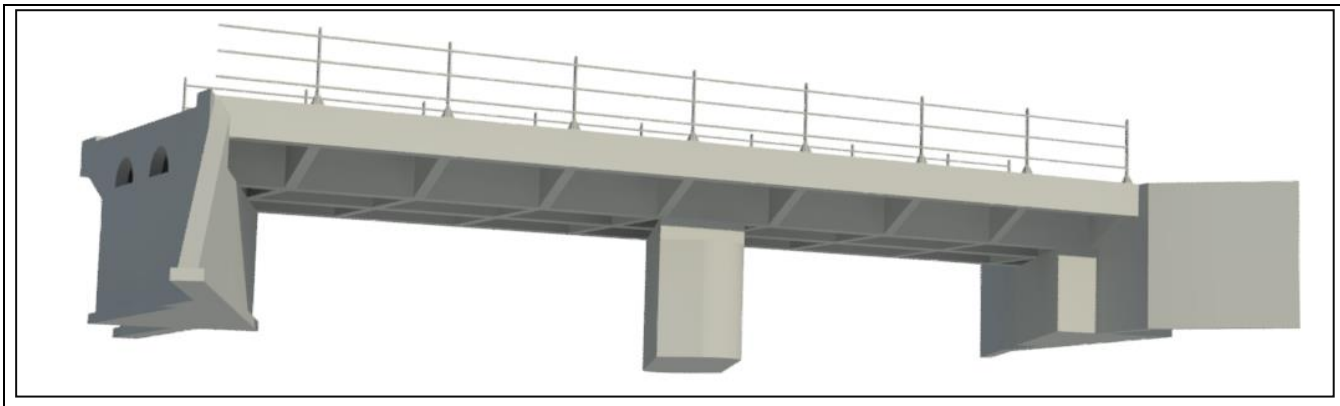


FIGURE 1: EXISTING BRIDGE DESIGN.

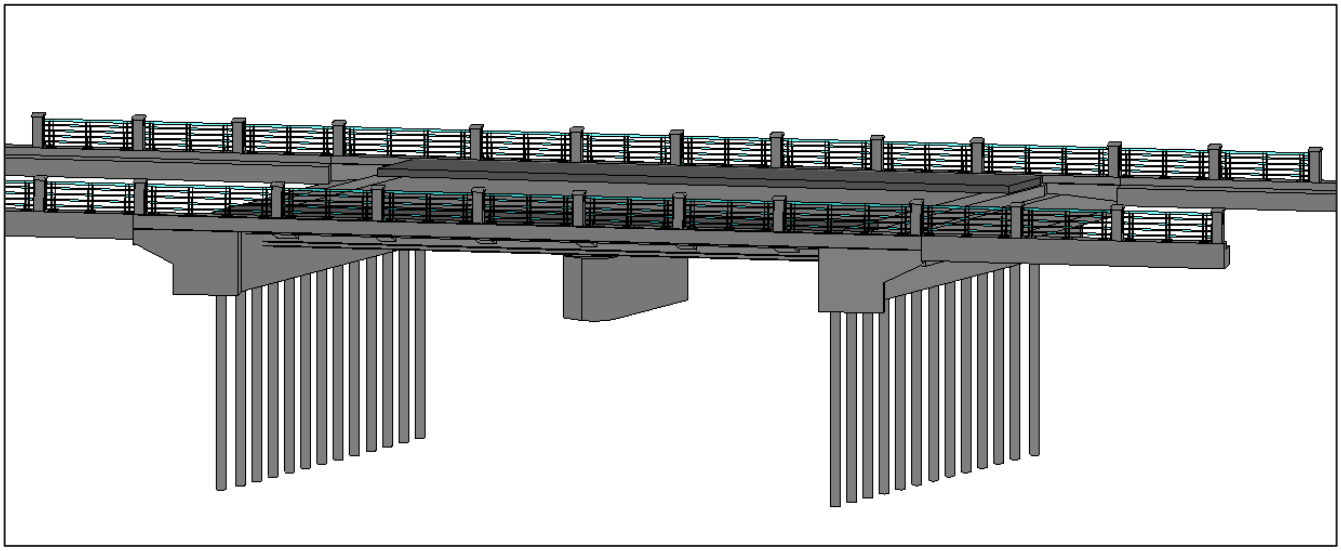


FIGURE 2: PROPOSED BRIDGE DESIGN.

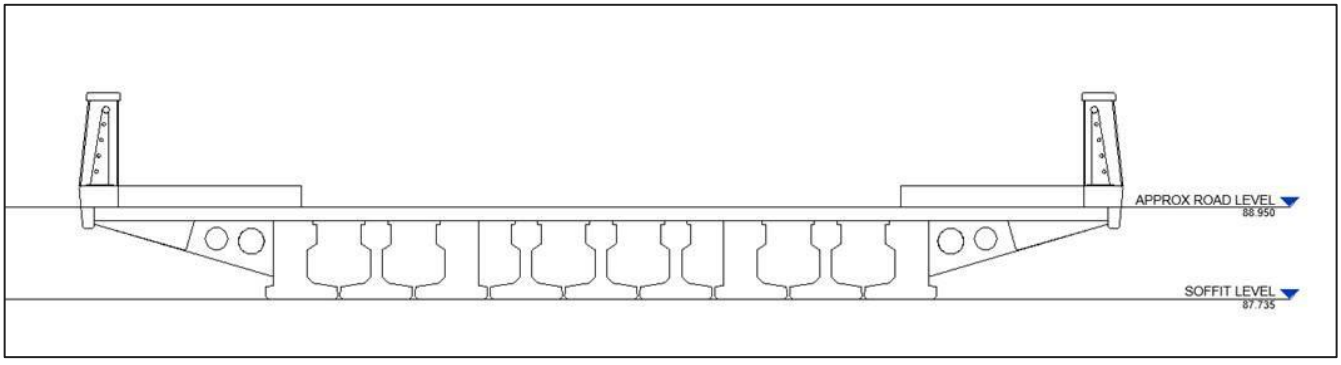


FIGURE 3: PROPOSED BRIDGE CROSS-SECTION.

3.4.	**Indicate how access to the proposed routes will be obtained for all alternatives.**			
The existing access road from Adam Tas Road/R310 via Oude Libertas and Distillery roads would be followed to the bridge site.				
3.5.	**SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives**			
Unalienated State Land 7/0 – C06700000000000000007 Unalienated State Land 5162 – C06700000000516200000				
3.6.	**Co-ordinates**			
	Starting point co-ordinates for all alternatives			
	Latitude (S)	33°	56‘	28.1“
	Longitude (E)	18°	50‘	42.702“
	Middle point co-ordinates for all alternatives			
	Latitude (S)	34°	56‘	28.338“
	Longitude (E)	18°	50‘	42.097“

	End point co-ordinates for all alternatives			
	Latitude (S)	33°	56‘	28.532“
	Longitude (E)	18°	50‘	41.702“
Note: For Linear activities or developments longer than 500 m, a map indicating the co-ordinates for every 100 m along the route must be attached to this BAR as Appendix A3. As the proposed project relates to the rehabilitation of an existing road bridge, no site alternatives are being considered.				
4.	**Other developments**			
N/A				

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

1. Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has exemption been applied for in terms of the NEMA and the NEMA EIA Regulations? If yes, include a copy of the exemption notice in Appendix E18.	YES	**NO ✓**

2. Is the following legislation applicable to the proposed activity or development?

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA"). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19.	YES	**NO ✓**
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA"). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1.	**YES ✓**	NO
The National Water Act, 1998 (Act No. 36 of 1998) ("NWA"). If yes, attach a copy of the comment from the DHSWS as Appendix E3.	**YES ✓**	NO
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM: AQA"). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	**NO ✓**
The National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM: WA")	YES	**NO ✓**
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 ("NEMBA").	YES	**NO ✓**
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("NEMPAA").	YES	**NO ✓**
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES	**NO ✓**

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.
• **Spatial Planning and Land Use Management Act (Act 16 of 2013) -** Provides the overarching framework for spatial planning and land use management. • **Occupational Health and Safety Act (Act 85 of 1993), as amended -** Sets out the framework for the health and safety of persons at work, the health and safety of persons in connection with the activities of persons at work, and the requirements for the advisory council for occupational health and safety.

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.
N/A

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.
• **Impact significance, Integrated Environmental Management, Information Series 5 (2002) -** This guideline was consulted to inform the assessment of significance of impacts of the proposed project. • **Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7 (2004) -** This guideline was consulted to inform the consideration of potential cumulative effects of the proposed project. • **Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11 (2004)** and **Guideline on Alternatives (2013) -** These guidelines were consulted to inform the consideration of alternatives. • **Environmental Impact Reporting, Integrated Environmental Management, Information Series 15 (2004) -** This guideline was consulted to inform the approach to impact reporting. • **Environmental Management Plans, Integrated Environmental Management, Information Series 12 (2004)** and **Guideline for Environmental Management Plans (2005) -** These guidelines were consulted to ensure that the Environmental Management Programme (EMPr) has been adequately compiled. • **Guideline for the review of specialist input in the EIA process (2005) –** This guideline was consulted to inform the review of specialist input. • **Guideline on need and desirability (2013) and (2017) -** These guidelines informed the consideration of the need and desirability aspects of the proposed project. • **Public Participation guideline in terms of NEMA (2017) -** The purpose of these guidelines is to ensure that an adequate public participation process was undertaken during the BA process. • **COVID-19 Directions published in terms of the Disaster Management Act, 2002 (March 2020)** – These Directions informed the form and levels of public participation possible within the restrictions related to the National State of Disaster.

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form	
General requirements for undertaking an initial site sensitivity verification where no specific assessment protocol has been identified	The National Screening Tool identified the need to undertake various specialist assessments. A motivation for not undertaking the specialist studies deemed necessary are provided below: Agricultural Impact Assessment – An agricultural impact assessment is not deemed necessary as the proposed project is not expected to impact on any agricultural land or activities. Landscape/Visual Impact Assessment – A landscape/visual impact assessment is not deemed necessary as the proposed project entails the rehabilitation of an existing bridge. Palaeontology Impact Assessment – A Notice of Intent to Develop (NID) has been submitted to Heritage Western Cape (HWC). The NID included information on palaeontology. A palaeontology assessment has not been deemed necessary by HWC (see Appendix E). Terrestrial Biodiversity Impact Assessment – A terrestrial biodiversity assessment is not deemed necessary as no terrestrial biodiversity is present on or in close proximity to the bridge and is thus not expected to be impacted on by the proposed project. Biodiversity at the bridge crossing relate to freshwater ecosystems. Noise Impact Assessment – A noise impact assessment is not deemed necessary as the proposed project entails the temporary rehabilitation works to an existing bridge outside a residential area. Traffic Impact Assessment – A traffic assessment was undertaken by the engineering team to inform the preliminary design of the project, with no further standalone assessment deemed necessary. Due to current safety concerns, access across the bridge is already managed through a one-way system. Geotechnical Assessment – A geotechnical assessment was undertaken by the engineering team to inform the design of the structures of the proposed bridge. No additional input is deemed necessary. Socioeconomic Assessment – A socioeconomic assessment is not deemed necessary due to the short duration and limited extent/footprint of the proposed project. Ambient Air Quality Impact Assessment - An ambient air quality impact assessment is not deemed necessary as the proposed project will produce minimal dust and vehicle emissions that will be released into the atmosphere. Furthermore, these nuisance-related impacts would be managed through effective implementation of the EMPr requirements in this regard. Plant species Assessment – A separate terrestrial plant species assessment is not deemed necessary as the proposed project footprint falls within a river corridor with all assessment of riparian plants being undertaken as part of the freshwater ecology impact assessment. The proposed project would require the clearance of less than 300 m^2 of indigenous vegetation along the river course. Animal Species Assessment – Refer to response above. Furthermore, as minimal undisturbed habitat remains within and surrounding the narrow river corridor, no significant impacts on animals are expected and a separate assessment is not deemed necessary.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
19	*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;…*	The proposed project would result in the depositing and/or excavating and removal of more than 10 m^3 of material from a watercourse for the improvement of the bridge (Plankenbrug River).
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3**	**Describe the portion of the proposed development to which the applicable listed activity relates.**
N/A		

Note:

- The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted.
- Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.

List the applicable waste management listed activities in terms of the NEM:WA

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Category A	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A.		

List the applicable listed activities in terms of the NEM:AQA

Activity No(s):	Provide the relevant Listed Activity(ies)	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A.		

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	**Provide a description of the preferred alternative.**
See Section B4.4 above.	
2.	**Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.**
The proposed bridge rehabilitation project is proposed along an existing municipal road.	
3.	**Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.**
N/A	
4.	**Explain how the proposed development will be in line with the following?**
4.1	**The Provincial Spatial Development Framework (PSDF).**

The Western Cape PSDF (2014) sets out a number of objectives and related policies in order to achieve its aim of environmental preservation, social justice and economic efficiency. The objectives of relevance to the proposed project are highlighted below:

- Policy E3: Revitalise and strengthen urban space-economies as the engine of growth; and
- Policy S3: Promote compact, mixed-use and integrated settlements.

The structural condition of the Distillery Road Bridge is such that it poses a safety concern for road users. As a result, it is currently only open to one-way traffic (one way in, one way out), in order to minimise traffic loading on the cantilevers of the bridge deck. The proposed project aims at addressing the structural safety concerns of the structure while at the same time improving the facility to comply with the urban planning requirement, make provision for non-motorised transport, alleviate traffic congestion during peak hours, and improve road safety and accessibility to a mixed-use development district within the Stellenbosch area. The proposed project would also provide opportunities for economic growth in the form of job creation, leading to the strengthening of the urban space-economy while at the same time take due cognizance of the heritage significance of this facility.

4.2	**The Integrated Development Plan (IDP) of the local municipality.**

The Stellenbosch Municipality's IDP (2017-2022) indicates that as the population of Stellenbosch continues to grow, there is increased pressure on bulk infrastructure and that aging infrastructure in particular presents a challenge that the Municipality will group into short, medium and long time goals to maintain, update and replace. While no mention is made specifically of the Distillery Road Bridge, it is acknowledged that upgrading/maintaining and replacing infrastructure is in line with the Municipality's IDP and its goals contained therein, especially considering that this is the only current vehicle access to the Bosman's Crossing mixed development area.

4.3.	**The Spatial Development Framework (SDF) of the local municipality.**

The Stellenbosch Municipality's SDF (2019) comprises of seven key principles to assist in achieving its vision of becoming the "Valley of Opportunity and Innovations". The following key principles are applicable to the proposed project:

- Key Principle 2: "*Respect and grow our cultural heritage, the legacy of physical artefacts and intangible attributes of society inherited from past generations maintained in the present and preserved for the benefit of future generations*".
  The proposed project entails the rehabilitation of the Distillery Road Bridge which is older than 60 years. The bridge forms part of Stellenbosch's cultural heritage and it is assumed to be one of the oldest public works projects in the Province. The proposed project aims to preserve the cultural significance of this transportation corridor.
- Key Principle 5: "*Address human needs – for housing, infrastructure and facilities – clearly in terms of the constraints and opportunity related to natural assets, cultural assets, infrastructure and the role of settlements*".
  The proposed project aims at improving road safety and rehabilitating key existing infrastructure used to access a mixed-use development district within the Stellenbosch area.

4.4.	**The Environmental Management Framework applicable to the area.**

The Stellenbosch Municipality's Environment Management Framework (2018; EMF) notes that transport is a supportive sector that plays a key role in meeting objectives of economic growth, access to employment opportunities and social integration. Moreover, the transport policy within the EMF states that transport infrastructure will be constructed, operated and maintained in such a way that the principles of sustainability are followed. This is in line with the fact that the proposed project would be undertaken in compliance with the relevant national environmental and heritage legislation.

5.	**Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.**

A freshwater specialist site assessment of the proposed area of disturbance indicated that the Plankenbrug River lacks true instream vegetation. Hydrophytic vegetation within and immediately adjacent to the flowing stream channel was dominated by alien invasive species such as *Commelina bengalensis*, *Arundo donax,* and *Persicaria lapathifolia,* but with tolerant indigenous species such as *Cyperus dives, Cyperus textilis*, and *Isolepis prolifera* present in places. Downstream of the bridge, *Acacia saligna* and *Ricinus communis* are also present. The river also possesses a significant riparian zone much broader than the riverbank in places. Upstream of the bridge on the west bank, the riparian zone includes a mixture of alien and indigenous trees. The understorey in this area is dominated by the alien invasive *Tropaeolum majus* and *Pennisetum clandestinum*, with a single patch of indigenous *Chasmanthus aethiopica* noted. The canopy was dominated by the indigenous *Olea europaea ssp. africana* (wild olive) and the alien *Populus candescens* (poplar), with occasional *Eucalyptus cameldensus* towards the terrestrial extreme of the riparian zone. The top of the east bank upstream and both banks downstream of the bridge is levelled and compacted with sparse terrestrial pioneer vegetation dominated by *Cynodon dactylon* and *Pennisetum clandestinum* grasses. Occasional *Quercus palustris* are also present scattered within the disturbed terrestrial area downstream of the bridge on the west bank.

Given the above, there is considered to be no constraints from a biodiversity perspective and the proposed project has not been influenced in this regard.

6.	**Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.**

The Western Cape Biodiversity Spatial Plan (WCBSP; 2017) indicates the Plankenbrug River and riparian zone as a Critical Biodiversity Area (CBA) 1 watercourse – see Figure 5. It also indicates two CBA 1 wetland areas on the west of the Plankenbrug River within the project area approximately 50 m upstream and immediately downstream of the bridge. Two further wetlands are indicated within 500 m of the bridge – one immediately downstream of the Adam Tas Bridge and the other approximately 130 m upstream of the confluence with the Plankenbrug River. A CBA 1 terrestrial habitat and an Ecological Support Area (ESA) 2 are indicated to the west and east of the river, respectively. A specialist assessment of the area revealed that the CBA 1 wetlands were found not to exhibit either wetland soils or hydrophytic vegetation, while the third wetland further south was found to be a grassy knoll without a wetland vegetation community. The vegetation type in the surrounding area is mapped as Swartland Granite Renosterveld, which is rated as Critically Endangered.

As indicated in Section E5 above, a specialist site assessment was undertaken of the proposed area of disturbance. In summary of the findings above, no vegetation was noted that corresponds to the Critically Endangered terrestrial vegetation type and given the degree of past disturbance, infilling and compaction, the indigenous vegetation is deemed to be entirely lost, to the extent of the seed bank as well. The specialist has indicated that no impacts on terrestrial vegetation is expected as a result of the proposed development. However, given the CBA 1 watercourse and wetland classifications in the proposed area of disturbance, specific mitigation measures have been provided in the EMPr (see Appendix H).

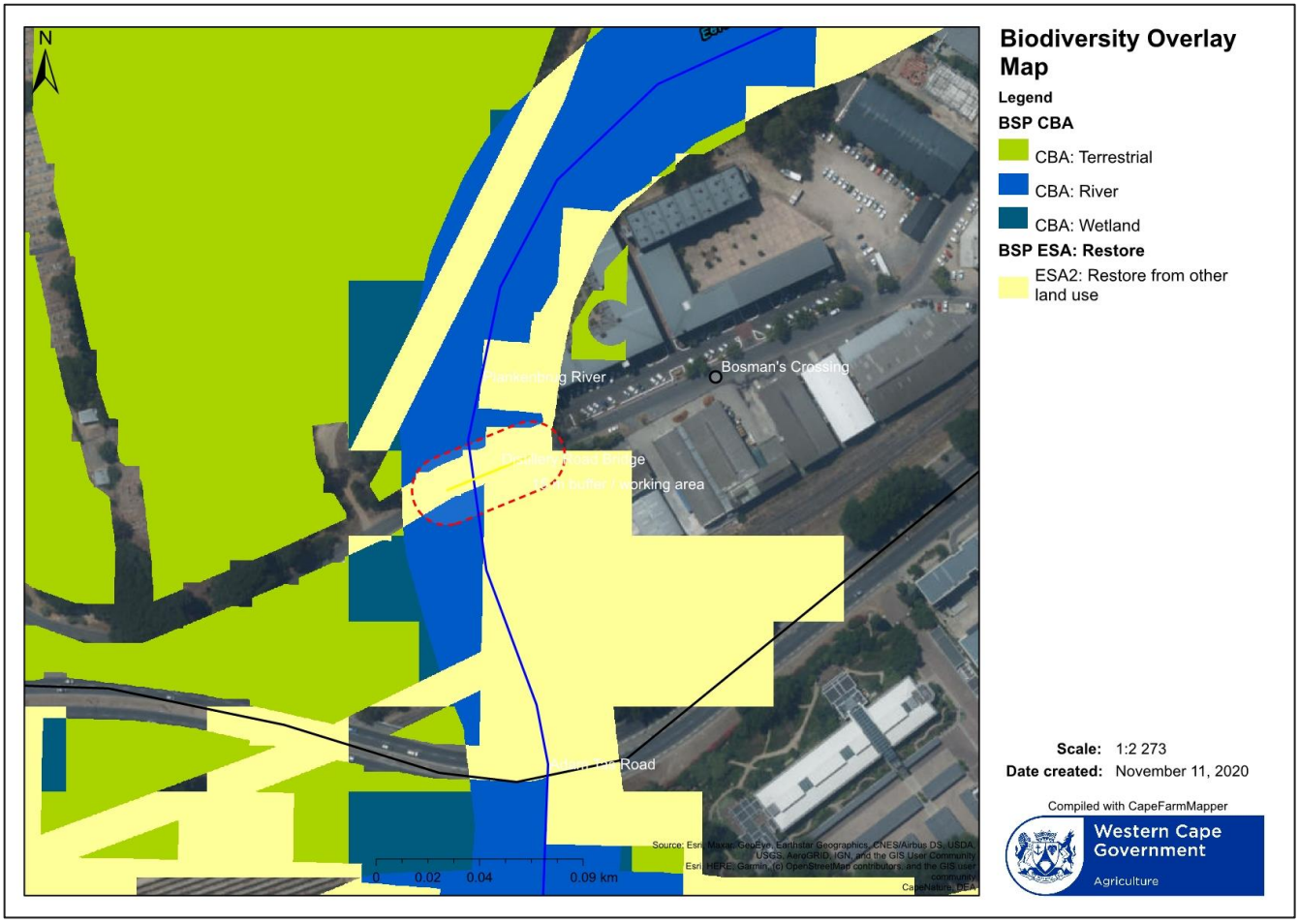


FIGURE 4: BIODIVERSITY OVERLAY MAP.

7.	**Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.**
N/A.	
8.	**Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.**
There has been no change to the Screening Report. The Screening Report is attached as Appendix I.	
9.	**Explain how the proposed development will optimise vacant land available within an urban area.**
As noted previously, the proposed works would be undertaken within an existing municipal road reserve alignment.	
10.	**Explain how the proposed development will optimise the use of existing resources and infrastructure.**
The proposed project entails the rehabilitation of an existing bridge, largely within the current road footprint.	
11.	**Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).**
N/A. Minimal water would be required for construction and generators would largely be used for electricity generation at the work site. Minimal construction rubble would be produced.	
12.	**In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.**
In line with the Department of Environmental Affairs and Development Planning (DEA&DP) Guideline on Need and Desirability (March 2013), the need and desirability of the proposed project has been considered as follows:	

Securing ecological sustainable development and use of natural resources	
How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	The Plankenbrug River and riparian zone have been indicated as a CBA 1 watercourse and several CBA 1 wetland areas have been mapped in close proximity to the project area. However, as mentioned in Section E5 and E6, the area is dominated by alien invasive species and the CBA 1 wetlands were found not to exhibit either wetland soils or hydrophytic vegetation, while the third wetland further south was found to be a grassy knoll without a wetland vegetation community.. The proposed project is not anticipated to have a significant negative impact on these mapped wetland areas. Given the presence of alien invasive species within the CBA 1 mapped areas and the proposal to remove this vegetation, the proposed project is anticipated to have a positive impact on the freshwater ecosystems and biodiversity within this section of the river.
How were the following ecological integrity considerations taken into account?: • *Threatened Ecosystems;* • *Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure;* • *CBAs and ESAs";* • *Conservation targets;* • *Ecological drivers of the ecosystem;* • *Environmental attributes and management proposals contained in relevant Environmental Management Frameworks;* • *Environmental attributes and management proposals contained in relevant Spatial Development Framework; and* • *Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).*	
How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	
What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	During construction, the bridge deck and parts of the sub-structure would be demolished and disposed of at an off-site location. This waste would primarily consist of reinforced concrete and stone masonry. A nominal amount of other waste would be produced, such as solid waste, asphalt waste and surplus fill material. A very small portion of the construction waste would likely be hazardous waste in the form of fuel and/or oil spills collected in drip trays and any contaminated soil resulting from accidental spills would be removed.
How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	During the construction phase, generators and municipal supply (at the main site camp) would be used. Due to the nature and scale of the project, resource (both renewable and non-renewable) use is considered to be negligible in the context of resource use within the overall municipal area. As such, no renewable energy sources have been investigated for this project.
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	
Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)?	
Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what	The proposed project would address a variety of structural and safety issues associated with the existing bridge (refer to Section B3.3). As such, the use of resources by rehabilitating an existing

are the opportunity costs of using these resources for the proposed development alternative?).	bridge along an existing municipal road is deemed to be acceptable.
How will the ecological impacts resulting from this development impact on people's environmental right in terms following: • *Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?* • *Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?* • *Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?* • *Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?* • *Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?* • *Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?*	During construction, dust and noise would be generated as a result of piling, bridge construction and roadworks. The appointed Contractor would be required to ensure that the generation of dust is minimised by implementing a dust control programme (e.g. wetting of areas being disturbed) to maintain a safe working environment and minimise nuisance for surrounding residents and businesses. These construction-related activities would be managed in line with the EMPr (see Appendix H) specifications. The Contractor would also be required to be familiar with and adhere to any regulations and by-laws regarding the generation of noise and hours of operation. The piling operations would be of a relatively short duration, but essential to the construction. Post-construction, the proposed project would improve access to resources in the form of a rehabilitated bridge and non-motorised facilities/pedestrian walkway. The proposed project would also improve traffic flow, given that the current use of the road is restricted to one-way traffic (one way in and out). The overall safety of the bridge would also be improved.
Promoting justifiable economic and social development	
What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?: • *The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area.* • *Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.).* • *Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.).* • *Municipal Economic Development Strategy ("LED Strategy").*	Refer to the planning context provided in the sections above.
Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Socio-economic impacts largely relate to nuisance impacts associated with construction activities, while socio-economic benefits relate to potential temporary employment opportunities during the construction phase. As mentioned previously, the proposed project would also improve traffic flow, given that the current use of the road is restricted to one-way traffic (one way in and out). The overall safety of the bridge and provision for non-motorised transport and pedestrians would also be improved.
Will the development: • *Complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?* • *Result in the creation of residential and employment opportunities in close proximity to or integrated with each other?* • *Reduce the need for transport of people and goods?*	Responses are provided as follows: • N/A • Partially - the proposed project would provide temporary employment opportunities during the construction phase. • N/A

• *Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport)?*	• Yes, the proposed project includes the provision of non-motorised facilities/pedestrian walkway.
• *Compliment other uses in the area?*	• N/A
• *Be in line with the planning for the area?*	• Yes – The proposed project is aimed at rehabilitating an existing bridge and provides access to Bosman's Crossing.
• *For urban related development, make use of underutilised land available within the urban edge?*	• Yes - the proposed project falls within the urban edge.
• *Optimise the use of existing resources and infrastructure?*	• Yes - the proposed project entails the rehabilitation of an existing bridge.
• *Consider opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement)?*	• Refer to previous response.
• *Discourage "urban sprawl" and contribute to compaction/densification?*	• Yes - the proposed project is located within the urban edge.
• *Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs?*	• N/A
• *Encourage environmentally sustainable land development practices and processes?*	• N/A
• *Take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.)?*	• N/A
• *Result in investment in the settlement or area in question that will generate the highest socioeconomic returns (i.e. an area with high economic potential)?*	• The proposed project would improve road safety, improve traffic flow and provide non-motorised facilities/pedestrian walkway. Also, it should be noted that the bridge provides the only access into Bosman's Crossing.
• *Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area?*	• Yes – the proposed project entails the rehabilitation of a bridge that is older than 60 years. Infrastructure, buildings etc. older than 60 years are considered to have cultural/heritage significance. Moreover, the bridge is adjacent to an archaeological area of great importance, i.e. Bosman's Crossing Provincial Heritage Site. In order to ensure that the historic fabric of the transport corridor is sufficiently documented and preserved, HWC has requested the completion of Section 34 and 35 permit processes in terms of the NHRA. These processes are being undertaken in parallel to the BA process and has been taken into consideration in the rehabilitation proposals. Moreover, the proposed bridge design has also been duly informed by the heritage significance of the structure and from input received from a heritage practitioner and architect with previous experience in the restoration of bridges with historical value
• *In terms of the nature, scale and location of the development, promote or act as a catalyst to create a more integrated settlement?*	• N/A
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?: • *What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?* • *What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities?* • *Critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?* • *Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development (and its alternatives)?*	The socio-economic impacts of the proposed project are limited to temporary nuisance (air quality, noise and visual) and traffic impacts and the provision of economic opportunities. Insofar as possible, the local community would be offered employment opportunities. Mitigation measures have been recommended to reduce potential negative impacts/risks while enhancement measures have been recommended to optimise potential benefits.

How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: • *Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?* • *Positive impacts. What measures were taken to enhance positive impacts?*	Due to the localised nature and scale of the project, the socio-economic impacts largely relate to nuisance impacts associated with construction activities. Socio-economic benefits relate to potential temporary employment opportunities during the construction phase. Post-construction, the project would improve access to resources in the form of a rehabilitated bridge and the provision of non-motorised facilities/pedestrian walkway. The proposed project would also improve traffic flow. The overall safety of the bridge would also be improved.
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	No undisturbed sensitive areas and/or biophysical resources have been identified on site or in close proximity to the site.
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Refer to the selection of the preferred layout alternative described in Section H.
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?	The proposed project would not result in impacts that would unfairly discriminate against any person.
Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	Yes, the proposed project is deemed to allow for the "best practicable environmental option" to be selected. The proposed single span bridge structure would allow for flow of water underneath the bridge, which is larger than the existing bridge structure.
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	Given the localised scale and nature of the proposed project, the requirement to enable access to environmental resources, benefits and services to meet basic human needs of persons disadvantaged by unfair discrimination is deemed to fall outside of the project-level scope.
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	See Section I below.
What measures were taken to ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge?	Due to the localised nature and scale of the project, no specific additional needs and values of I&APs, apart from providing safe and unobstructed access, were considered. In terms of the heritage significance of the transport corridor, the key local heritage bodies in Stellenbosch were consulted by the heritage specialist as part of the parallel heritage permit application processes.
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that If the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

A Public Participation Plan (PP Plan) was submitted to DEA&DP at the same time as the NOI. The following public participation tasks, as outlined in the PP Plan, were accepted by DEA&DP:

- A preliminary I&AP database is to be compiled consisting of landowners, authorities (local, regional and national, as applicable), Organs of State, Non-Governmental Organisations, Community-based Organisations and other key stakeholders;
- Site notices are to be placed at the Distillery Road Bridge, the Stellenbosch Public Library and Municipal offices and at Agrimark Stellenbosch. The site notices are to be visible to traffic travelling in both directions and are to be placed in English and Afrikaans;
- Online meetings are to be undertaken with key I&APs (local cultural heritage bodies) to discuss key concerns (this item has since been incorporated into the heritage permitting process);
- Advertisements notifying the public of the availability of the draft Basic Assessment Report (BAR) for a 30-day review and comment period are to be placed in the *Eikestadnuus* local newspaper and on the *Eikestadnuus Facebook* page in both English and Afrikaans*;*
- A notification letter is to be sent out to all registered I&APs on the project database to inform them of the availability of the draft BAR for a 30-day public and review comment period. The notification letter is to contain a link to the SLR website that I&APs can use to download the full draft BAR and Executive Summary;
- Should any I&AP contact SLR to indicate that they are not able to access any of the online project documentation; SLR is to send hard copies of the comprehensive Executive Summary of the Reports to the I&AP and have telephonic discussions to answer any queries the I&AP may have regarding the proposed project;
- A notification letter is to be sent to all commenting authorities to inform them of the availability of the draft BAR for a 30-day review and comment period. An electronic copy of the full draft BAR and Executive Summary is to be provided to all commenting authorities via email (via AMS Managed File Transfer (MFT)); and
- A notification letter, a soft copy (via AMS MFT) and hard copies of the full draft BAR are to be provided to DEA&DP.

A copy of the PP Plan and DEA&DP acceptance are attached as Appendix F1.

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

Pre-application public participation process:

- A preliminary I&AP database was compiled consisting of landowners, authorities (local, regional and national, as applicable), Organs of State, Non-Governmental Organisations, Community-based Organisations and other key stakeholders. This database was compiled using databases from previous projects undertaken in the broader study area. To date, 36 I&APs have been registered on the project database (see Appendix F2).
- Site notices were placed at both ends of the Distillery Road Bridge in order for the notices to be visible to traffic travelling in both directions; at the Stellenbosch Public Library and Municipal offices and at Stellenbosch Agrimark (see Appendix F3).
- HWC confirmed that no further processes under Section 38 of NHRA are applicable. As such, consultation with key I&APs that were identified (local heritage bodies) was undertaken by the heritage specialist and had been incorporated into the heritage permitting process being undertaken in parallel.

Public participation undertaken to date:

- Advertisements were placed in two regional newspapers (*Die Burger* and *Cape Times* in Afrikaans and English, respectively) (not in the *Eikestadnuus* as previously suggested). Text of the advertisement is provided in Appendix F4.
- A notification letter was sent to all registered I&APs on the project database to inform them of the public participation process. The letter also announced the availability of the draft BAR for a 30-day public review and comment period and invited I&APs to submit comments on any aspect of the Basic Assessment (BA) process and the proposed project. The electronic notification letter contained a link to the SLR website that I&APs could use to access and download the draft BAR (see Appendix F5.
- Copies of the full report and Executive Summary were made available on the website of SLR (www.slrconsulting.com).
- A notification letter was sent to all representatives of the relevant Organs of State (commenting authorities) to inform them of the availability of the draft BAR for review and comment and also contained an electronic copy of the draft BAR (via AMS MFT).
- A copy of the draft BAR was also submitted to DEA&DP to request their comment as required in terms of Regulations 32(a)(aa) and (bb) and 40(3) of Government Notice (GN) R. 326 of 7 April 2017.

Public participation process for the remainder of the Basic Assessment process:

- All comments received in response to the draft BAR will be collated and responded to in a Comments and Responses Report, which will be appended to the final BAR. The comments will be duly taken into account in updating the draft BAR into the final BAR.
- The final BAR will be submitted to DEA&DP for consideration and decision-making.
- The final BAR will be made available to registered I&APs for information purposes.

After DEA&DP has reached a decision, all registered I&APs will be notified of the outcome of the application and the reasons for the decision. A statutory appeal period in terms of the National Appeal Regulations, 2014 will follow the issuing of the decision.

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

State Department / Organ of State	Date request	Date comment received:
CapeNature	At the same time as making this draft BAR available for public and authority review.	Comment still to be received
Cape Winelands District Municipality		
Department of Water, Sanitation and Human Settlements		
Western Cape Government (WCG): HWC	24 June 2020	7 July 2020
Metrorail	At the same time as making this draft BAR available for public and authority review.	Comment still to be received
Transnet Freight Rail		
Stellenbosch Local Municipality		
WCG: DEA&DP – Development Management		

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

N/A

5. If any of the State Departments and Organs of State did not respond, indicate which.

N/A.

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

To be provided in the final BAR.

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&AP's that all information submitted by I&AP's becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that *"Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but **must** be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority."*

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
  - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
  - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
  - if a facsimile was sent, a copy of the facsimile Report;
  - if an electronic mail was sent, a copy of the electronic mail sent; and
  - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

1. Groundwater

1.1.	**Was a specialist study conducted?**	YES	**NO ✓**
1.2.	**Provide the name and or company who conducted the specialist study.**		
N/A			
1.3.	**Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.**		
The proposed project is situated above an aquifer that is classified as major of most vulnerability and high susceptibility. However, it is not anticipated that the proposed project would have impacts on the aquifer. All construction works would be managed in line with an EMPr which provides for appropriate storage of materials, mixing of concrete and prevention of hydrocarbon spills that could potentially impact groundwater. The proposed construction works would also not entail any activities that would generate large volumes of effluent that could seep into groundwater.			
1.4.	**Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.**		
Groundwater depth is estimated at approximately 7 m below ground level. It must be noted that overall water table level is subject to seasonal fluctuations. A geotechnical investigation undertaken on 26 June 2020 recorded groundwater depth to be approximately 3 m below ground level. These levels were recorded just as the rainy, winter season commenced.			

2. Surface water

2.1.	**Was a specialist study conducted?**	**YES ✓**	NO
2.2.	**Provide the name and/or company who conducted the specialist study.**		
SLR Consulting (South Africa) (Pty) Ltd – Joshua Gericke Pr.Sci.Nat.			
2.3.	**Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.**		

The project area is located within the Southwestern Coast Belt Ecoregion, Berg Water Management Area and the G22H quaternary catchment. The Plankenbrug River and its tributaries drain the area from Simonsberg to the ridge near the Devonvale Golf Estate. It also drains the residential areas of Cloetesville, Kayamandi and much of Stellenbosch town, before flowing under the Distillery and Adam Tas Road bridges, to join the Eerste River. The catchment is dominated by a mixture of agriculture (predominantly vineyards) and urban land uses.

The South African National Biodiversity Institute (SANBI) National Wetlands Map (2018) does not indicate any wetlands within 500 m of the Distillery Road Bridge. The National Freshwater Ecosystem Priority Areas (NFEPA; 2011) wetlands layer indicates that a covered reservoir is located on a hillside to the north an upslope of the project area. The bridge does not fall within any identified Freshwater Ecological Priority Area (FEPA) as indicated by the databases.

As mentioned in Section E6, various CBA watercourse and wetland areas have been identified in the project area in terms of the WCBSP (2017) – these are, however, contradicted by the 2018 SANBI National Wetlands Map. Two indigenous fish species, namely the *Galaxius zebratus* and *Sandelia capensis* are known to inhabit the Eerste River catchment. Both species may therefore be present within the project area, but given their hardy nature, neither are expected to be impacted significantly by the proposed project. Several alien invasive fish species are known to inhabit the catchment such as the *Onchorynchus mykiss*, *Pseudocrenilabrus philander*, *Cyprinus carpio* and *Clarius capensis*. The alien invasive freshwater shrimp *Caridina africana* has also recently established itself in the Eerste River catchment.

The freshwater specialist conducted a site assessment to determine the nature of the site, the location of all watercourses likely to be impacted and the condition of the freshwater habitats (see Appendix G1). The CBA 1 wetlands were found not to exhibit either wetland soils or hydrophytic vegetation, while the third wetland further south was found to be a grassy knoll without a wetland vegetation community. The specialist indicated that the area downstream of the bridge had been severely disturbed historically and as a result of the replacement of a water pipeline for at least 50 m below the bridge. The area is now dominated by alien vegetation and cosmopolitan pioneer species. Soils in the area have been compacted by construction vehicles, stockpiling and earthworks associated with the pipeline replacement. Upstream, the eastern riverbank appears to be unnaturally steep, indicating that this bank had likely been infilled to create an elevated flat platform for construction adjacent to the industrial development and to constrain floodwater. Upstream to the west, approximately 15 m from the riverbank, lies a cleared, compacted platform used as a stockpiling and works area for the pipeline replacement project. Between the platform and the riverbank however, the majority of the disturbance is historical. Significant volumes

of rubble and dumped material covered by alien vegetation is common and unnatural landscape features including compacted mounds, scraped areas and constructed slopes all indicate historical earthmoving within this area. A large amount of wind-blown and dumped litter/waste was also observed.

The specialist concluded that the Plankenbrug River is considered to be in a Largely Modified state with a Moderate Ecological Importance and Sensitivity at the project site. The potential water quality and habitat impacts of the proposed project are currently present in the system at a much larger scale than may be contributed by the localised construction works on the bridge.

For these reasons, there is considered to be no freshwater constraints to the proposed project and the proposed project has not been influenced from this perspective. However, given the proposed construction work within the Plankenbrug River, specific mitigation measures pertaining to works within this watercourse have been provided in the EMPr to be implemented during the construction and ongoing maintenance phases (see Appendix H). Moreover, an application for registration of relevant water uses under the General Authorisation in terms of the National Water Act (No 36 of 1998) is being undertaken.

3. Coastal Environment

3.1.	**Was a specialist study conducted?**	YES	**NO ✓**
3.2.	**Provide the name and/or company who conducted the specialist study.**		
N/A			
3.3.	**Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.**		
N/A			
3.4.	**Explain how estuary management plans (if applicable) has influenced the proposed development.**		
N/A			
3.5.	**Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.**		
N/A			

4. Biodiversity

4.1.	**Were specialist studies conducted?**	**YES ✓**	NO
4.2.	**Provide the name and/or company who conducted the specialist studies.**		
SLR Consulting (South Africa) (Pty) Ltd – Joshua Gericke Pr.Sci.Nat.			
4.3.	**Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.**		

The National Geographic Information System and Department of Water Affairs river and drainage line database both indicated the presence of the perennial Plankenbrug River which flows beneath the Distillery Road Bridge. The databases indicate the name of the river as “Krom” and “Klippies”, respectively, while the Cape Farm Mapper Esri (2019) base map notes the river as the “Eerste”. The NFEPA wetlands layer indicates only a covered reservoir on a hillside to the north and indicates that the Distillery Road Bridge does not fall within any identified FEPA. As mentioned previously, the WCBSP (2017) indicates the Plankenbrug River and riparian zone as a CBA 1 watercourse. It also indicated two CBA 1 wetland areas on the west of the Plankenbrug River within the project area approximately 50 m upstream and immediately down steam of the bridge. Two additional wetland areas are indicated within 500 m of the bridge – one immediately downstream of the Adam Tas Bridge and the other approximately 130 m upstream of the confluence with the Plankenbrug River. As stated above, the site assessment by the freshwater specialist and the 2018 SANBI Wetlands Map, however, contradicts the 2017 wetlands mapping. A CBA 1 terrestrial habitat and an ESA 2 are indicated to the west and east of the river, respectively. These fall outside of the proposed new bridge footprint.

As indicated in Sections E5 and E6 above, the freshwater specialist site assessment revealed that no vegetation was noted that corresponds to the Critically Endangered terrestrial vegetation type. Moreover, the indigenous vegetation is deemed to be entirely lost, to the extent of the seed bank as well. The proposed project has thus only been influenced from an aquatic biodiversity perspective given the CBA 1 watercourse and wetland classifications in the proposed area of disturbance. This has led to the inclusion of specific mitigation measures, as is provided in the EMPr (see Appendix H).

4.4.	**Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.**
N/A	

4.5.	**Explain what impact the proposed development will have on the site-specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.**
The proposed project would entail the removal of all vegetation within the area of disturbance. However, as mentioned previously, the area is dominated by alien invasive species. The proposed project would entail work within the Plankenbrug River, however, due to the fact that the catchment is dominated by a mixture of agriculture and urban land uses, the potential water quality and habitat impacts are currently already present in the system at a much larger scale. The likely negative contribution from the temporary bridge construction works would thus be minimal in comparison, while the clearance of alien invasive species would be considered as a benefit. However, as mentioned previously, specific mitigation measures pertaining to works within the watercourse have been provided in the EMPr (see Appendix H).	
4.6.	**If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.**
The proposed project is not located within a protected area.	
4.7.	**Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.**
The proposed project is located within an urban environment, surrounded by existing development (commercial and residential areas) with minimal faunal habitats available. As such, no significant faunal aggregations are expected to occur on or adjacent to the site. Unique faunal habitats and species did not influence the design of the proposed project.	

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.
The topography is relatively flat and is not expected to affect the proposed project. As the proposed project entails the rehabilitation of an existing bridge crossing, it has necessitated additional construction phase and ongoing maintenance phase mitigation measures, given that the proposed works would be undertaken within an aquatic environment.

6. Heritage Resources

6.1.	**Was a specialist study conducted?**	**YES ✓**	NO
6.2.	**Provide the name and/or company who conducted the specialist study.**		
CTS Heritage – Jenna Lavin			
6.3.	**Explain how areas that contain sensitive heritage resources have influenced the proposed development.**		
Early Stone Age implements were discovered adjacent to the Distillery Road Bridge. The artefacts were exposed in the railway cutting and are associated with the younger gravels of the course alluvial fan and are dated to the earlier part of the Middle Pleistocene, between 700 00 and 300 000 years ago. Among these tools was an artefact type of great antiquity recognised as an early hand axe. Following this discovery, the Early Stone Age of South Africa was referred to as the "Stellenbosch Culture" and was only redefined in the 1960s. A large sandstone boulder, approximately 100 m southwest of the Distillery Road Bridge, marks the location of Bosman's Crossing Provincial Heritage Site which was declared a National Monument in 1962 as the location of where the Early Stone Age implements were found. This site has tremendous significance for the origins of archaeological research in South Africa as well as knowledge about the Early Stone Age. Due to the relatively small proposed project footprint at the bridge crossing, it is not expected that the bridge footprint itself would impact on the Provincial Heritage Site. In order to limit the construction footprint and avoid any impacts on sites and artefacts of heritage significance, the construction camp and laydown areas would be contained within the already cleared and compacted areas utilised during the previous pipeline replacement project, upstream from the Plankenbrug River. In their consideration of the NID, HWC confirmed that no further heritage impact assessment is required to be undertaken. A separate Section 35 permit application process is, however, being undertaken (with HWC as the competent authority) as a separate parallel process in order to address how potential heritage impacts are to be avoided in the vicinity of Bosman's Crossing Provincial Heortage Site. The HWC NID and Heritage Screener are attached as Appendix G2.		

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.

The area surrounding the bridge and the road corridor is known as Bosman's Crossing and up until the 1960s, was the main entrance into Stellenbosch from Cape Town. The bridge, as far as can be ascertained, is also known as the "Steenenbrug". It is believed to be the first public works project undertaken in the area in 1691.

Additionally, the Distillery Road Bridge is located within the 'Papegaaiberg Landscape Unit' which is considered to be a significant cultural area. This area got its names from a 14th century Dutch custom for marksmen to shoot at a wooden parrot covered in metal sheeting on a long wooden post. The flat piece of land next to the Distillery Road Bridge was chosen for this spot. The suburb at the foot of Papegaaiberg is called Onder Papegaaiberg and most of the open space is marked with large stone pines which also incorporate the Onder Papegaaiberg cemetery on the footslopes. According to the heritage specialist, the improvement of the Distillery Road Bridge is, however, unlikely to impact this cultural landscape and has not influenced the proposed project. However, there are several oak trees within the project footprint that would be affected by the proposed project. The oak trees would need to be transplanted or replaced in order to preserve the sense of place.

As the bridge deck is older than 60 years and elements of the bridge sub-structure may date back to the 1600s, a separate parallel Section 34 permit application is being undertaken by the heritage specialist in consultation with an architect with knowledge of historic bridge structures. HWC is the competent authority in this regard. Moreover, the proposed design has also been duly informed by the heritage significance of the structure and from input received from a heritage practitioner and architect with previous experience in the restoration of bridges with historical value.

8. Socio/Economic Aspects

8.1.	**Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.**

The proposed project is situated within the Stellenbosch Local Municipality. The municipal area covers approximately 900 km^2 and consists of urban settlements, as well as rural areas containing agricultural and natural environments. The closest residential suburbs to the proposed project are Die Boord and Devon Park, which lay approximately 300 m south and 700 m west of the bridge, respectively. A description of the socio-economic attributes for the Stellenbosch Local Municipality is provided below. The information was obtained from the Stellenbosch Municipality's IDP 2017-2022, the Census 2011 and Statistics South Africa (StatsSA) 2011.

In 2017 the population size of the Municipality was estimated at 173 557 and is expected to increase to 190 677 by 2023. The gender ratio for male and female is relatively evenly split at 48.8% and 51.2%, respectively. Approximately 52.2% of the population is Coloured, 28.1% is Black African, 18.5% is White, 0.4% is Indian / Asian and Other (0.8%). According to the 2011 Census, the Municipality had an average literacy rate of 84.9%. This is higher than the rate in the greater Cape Winelands District Municipality (81.7%) and South Africa (80.9%). Learner enrolment decreased between 2013 and 2014 by 1 383 learners but increased again by 855 learners between 2014 and 2015. Level of education according to StatsSA for the Municipality found that individuals with no schooling was 2.4%, some primary schooling was 31%, completed primary schooling was 5.4%, some secondary schooling was 27.5, those who completed matric was 17.1%, those with higher education was 6% and not applicable was at 10.6%.

The Stellenbosch Municipality has a range of primary health facilities which comprise seven fixed clinics, seven mobile/satellite clinics and one district hospital. In 2016, the Municipality recorded 4 808 patients being treated for HIV/AIDS across nine treatment centres in the areas. The HIV transmission rate from mother to child was recorded as 2.6%, which is higher than the District (1.7%) and the Province (1.4%).

Poverty intensity is measured by calculating the Poverty Gap Index, the estimation of the depth of poverty by considering how far, on the average, the poor are from the poverty line. The proportion of people in the Municipality that is below the poverty line decreased from 42.1% in 2011 to 39.8% in 2016. The Stellenbosch Municipality contributed roughly around R10 billion (24.1%) of the District's total of R44.161 billion in Gross Domestic Product (GDP). The average GDP growth for the Municipality was 3% per annum between 2005-2015, which is slightly less than the District (3.5%). The tertiary sector for Stellenbosch contributed the most towards the GDP covering R7.711 billion of the municipality GDP in 2015 followed by the secondary sector with a contribution of R2.183 billion and lastly the primary sector covering only R669 million.

8.2.	**Explain the socio-economic value/contribution of the proposed development.**

The proposed project would create approximately 20 temporary employment opportunities during the construction phase.

8.3.	**Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area.**

Due to the localised scale and nature of the proposed project, no specific social initiatives are expected to arise from the proposed project.

8.4.	**Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development.**

During construction, dust and noise would be generated as a result of piling, bridge construction and road works. The appointed contractor would be required to ensure that the generation of dust is minimised by implementing a dust control programme (e.g. wetting of areas being disturbed) to maintain a safe working environment and minimise nuisance for surrounding residents. These activities would be managed in terms of the requirements of the EMPr (see Appendix H). The Contractor would also be required to be familiar with and adhere to any regulations and by-laws regarding the generation of noise and hours of operation. However, the piling operations would be of a relatively short duration but essential to the construction. During construction, the proposed project would have a visual impact on neighbouring residents and visitors driving through the area. However, given the limited extent and duration of the proposed project, the residual impact is deemed of very low significance.

Post-construction, it is anticipated that the sense of place experienced by residents and visitors would be improved, given that traffic flow and overall road safety would be improved. No additional noise impacts are anticipated post-construction, given that the proposed project entails the rehabilitation of an existing bridge. The proposed project would have no visual impacts post-construction.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	**Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**
Provide a description of the preferred property and site alternative.	
The proposed project entails the rehabilitation of the existing bridge on Distillery Road in Stellenbosch (see Appendix A). The bridge and adjacent approaches are approximately 20 m in length and consists of a single carriageway. It is the only access road into Bosman's Crossing, a small mixed development area consisting of various commercial developments and apartment complexes.	
Provide a description of any other property and site alternatives investigated.	
No other property/site alternatives were investigated.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selection matrix.	
The motivation for the proposed project relates to the following issues: • The concrete bridge structure is generally in a structurally poor condition with general evidence of cracking and spalling, mainly the concrete cantilevers of the bridge deck which are in a severely deteriorated state and the reinforcement is badly corroded, thereby compromising its structural integrity; • All other elements of the bridge are also in a relatively poor condition and the substructure seems to consist of remnants of an earlier bridge structure; • The bridge has been downgraded to a single lane (one direction at a time with a stop-go system) to minimise loading on the cantilevers, thereby impeding traffic flow on the road during peak hours; • The current road width is 5.6 m, which is below the required minimum standard of 6 m; and • No allowance is made for non-motorised and pedestrian access over the bridge which represents an additional safety hazard.	
Provide a full description of the process followed to reach the preferred alternative within the site.	
N/A	
Provide a detailed motivation if no property and site alternatives were considered.	
The proposed project entails the rehabilitation of an existing bridge within its current road corridor. No location/site alternatives are thus applicable.	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
N/A	
1.2.	**Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**
Provide a description of the preferred activity alternative.	
The preferred activity alternative entails the demolition of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure.	
Provide a description of any other activity alternatives investigated.	
Following the successful diagnosis of damage to the bridge, the project engineer proposed various activity alternatives in this regard, as follows: 1. Do nothing; 2. Downgrade the functionality of the structure;	

3. Reduce further deterioration;
4. Strengthen or repair and protect;
5. Reconstruct (preferred); or
6. Demolish.

Provide a motivation for the preferred activity alternative.

Due to the advanced state of corrosion-related damage to the Distillery Road Bridge, no benefit could be derived from the first three alternatives (1. Do nothing; 2. Downgrade functionality; or 3. Reduce further deterioration).

The first viable technical solution (Alternative 4 – strengthen or repair and protect) involves the re-use (through maintenance, rehabilitation or strengthening) of the existing Distillery Road Bridge. A significant amount of highly specialized works would be required to enable the restoration of both the function and condition of the structure. Widening and strengthening of the bridge structure to achieve functional requirements would be required on both sides of the bridge deck. These dual-widenings dictate that the construction strategy utilizes two construction phases. This two-phase construction would attract additional costs and a longer construction programme in order to allow safety improvements to both sidewalks and reconstruct the damaged deck cantilevers. Elements such as deck cantilevers would require reconstruction while the longitudinal and transverse beams would require strengthening and rehabilitation. Further ongoing maintenance costs may materialise for the existing bridge elements that could contain hidden defects or defects that materialise from ongoing corrosion. Additional costs associated with the increased technical surveillance by the regular inspection of the existing bridge components was anticipated through the implementation of this alternative.

Alternative 6 is not a viable solution as it entails the demolition of the bridge. As mentioned previously, the bridge is the only access into Bosman's Crossing and should this alternative be implemented, an alternative access into this area would need to be provided. The associated costs were deemed not economically feasible.

Alternative 5 is therefore considered to be the only viable solution.

Provide a detailed motivation if no activity alternatives exist.

N/A

List the positive and negative impacts that the activity alternatives will have on the environment.

N/A

1.3.	**Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts**

Provide a description of the preferred design or layout alternative.

Refer to the description provided in Section B3.3 above.

Provide a description of any other design or layout alternatives investigated.

In light of the historical / heritage significance of the bridge, several design alternatives were considered to inform the design process, including:

1. Total demolition and rebuild as new;
2. Total demolition with memorialisation;
3. Removal of concrete upper structure and retention of central pier (non-functional pier);
4. Retention of stone substructure and incorporation into the design structurally (functional pier);
5. Restoration and replacement; and
6. Repair and renovate.

Provide a motivation for the preferred design or layout alternative.

The proposed design (alternative 3 above) entails the removal of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure. The alternative designs are not preferred for the following reasons:

- Alternative 1 is not recommended as it would negate any authentic heritage significance of the site as a whole;
- Alternative 2 is not recommended as, beyond any possible intrinsic significance vested in the fabric of the bridge itself, once divorced from its functional role and context, it would retain little meaning;
- Alternative 4 is not preferred as, although this alternative would retain the more significant fabric of the bridge with the incorporation of these elements into the functional design of the bridge, engineering investigations have revealed that the bearing capacity of the existing pier would be exceeded and would require additional structural modifications, including an additional row of piles at the central pier;
- Alternative 5 is not recommended as it would result in significant costs to both restore and replace the bridge. Additionally, it would disturb the clarity of the original route, along the historic alignment;
- Alternative 6 is ideal from a heritage perspective but comes at the cost of future structural failure. This would also incur substantial costs in future. The final structure would remain approximately the same and would not meet the project aims;
- The preferred design (alternative 3) would limit the construction works in the watercourse to the removal of the existing bridge, whereas the alternative entails extensive works in the river to construct pier supports with complex foundation works, thereby increasing environmental impacts/risks;
- The preferred alternative would result in significant cost and time savings;
- The structural upgrade of the bridge from the preferred alternative would not detract from the significance from the bridge; and
- This alternative is considered to be the best from a joint structural engineering and heritage perspective.

Provide a detailed motivation if no design or layout alternatives exist.

N/A

List the positive and negative impacts that the design alternatives will have on the environment.

N/A

1.4.	**Technology alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**

Provide a description of the preferred technology alternative:

It is proposed to utilise pre-stressed concrete (reinforced concrete with pre-stressed additional steel) in the bridge construction.

Provide a description of any other technology alternatives investigated.

A technology alternative considered as part of the proposed project includes utilising reinforced concrete (concrete and unstressed steel) in the bridge construction.

Provide a motivation for the preferred technology alternative.

Pre-stressed concrete is preferred due to the decision to implement the preferred design alternative, comprising of a single 20 m span deck as opposed to two 10 m span decks. Bridges with spans greater than 15 m are more feasible with pre-stressed concrete. On this bridge structure, pre-stressed concrete would allow for a more slender bridge deck and a larger hydraulic capacity.

Provide a detailed motivation if no alternatives exist.

N/A

List the positive and negative impacts that the technology alternatives will have on the environment.

N/A

1.5.	**Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**

Provide a description of the preferred operation alternative.

N/A

Provide a description of any other operational alternatives investigated.

N/A

Provide a motivation for the preferred operational alternative.

N/A

Provide a detailed motivation if no alternatives exist.

N/A

List the positive and negative impacts that the operational alternatives will have on the environment.

N/A

1.6.	**The option of not implementing the activity (the 'No-Go' Option).**

Provide an explanation as to why the 'No-Go' Option is not preferred.

The No-Go alternative is the option of not proceeding with the proposed project. This would result in the status quo remaining and the negative impacts associated with the proposed project not being realised (i.e. potential impacts on cultural/heritage resources and

freshwater ecosystems). However, the bridge would continue to deteriorate and would compromise the safety of road users. The provision of non-motorised facilities/pedestrian walkways would also not be realised.

1.7.	**Provide an explanation as to whether any 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 other alternatives were identified.

1.8.	**Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.**

The outcome of the consideration of alternatives can be summarised as follows:

- No site alternatives have been investigated, given that the proposed project entails the rehabilitation of an existing bridge.
- Six activity alternatives were considered with the preferred alternative being the reconstruction of the bridge.
- Six design alternatives were considered. The preferred alternative entails the demolition of the existing deck. It would comprise of a single 20 m deck span with the retention of the existing pier (non-functional), with piled abutments which would span the existing substructure. The proposed design has been duly informed by the heritage significance of the structure and from input received from a heritage practitioner and architect with previous experience in the restoration of bridges with historical value.
- Technology alternatives considered pertain to the use of either reinforced concrete or pre-stressed concrete. Pre-stressed concrete is the preferred alternative as it has proven to be more feasible for use in bridges with spans greater than 15 m and allows for a similar deck depth to the existing.
- No operational alternatives were identified for the proposed project.
- The No-Go alternative is not deemed environmentally or socially reasonable in the long term, given that the ongoing deterioration of the current bridge would compromise the safety of road users. Additionally, the provision of non-motorised facilities/pedestrian walkway would also not be realised.

2. "NO-GO" AREAS

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).

The following No-Go areas have been identified for the proposed project:

- All areas in the Plankenbrug River outside of the immediate proposed working area (15 m up and downstream of the bridge).
- Bosman's Crossing Provincial Heritage Site (unless a Section 27 permit in terms of NHRA is obtained).

3. METHODOLOGY TO DETERMINE THE SIGNIFICANCE RATINGS OF THE POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.

The identification and assessment of environmental impacts/risks is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, *inter alia*: the purpose and need for the project; views and concerns of I&APs, and general public interest.

1. Identification and Description of Impacts

Identified impacts are described in terms of the nature of the impact, compliance with legislation and accepted standards, receptor sensitivity and the significance of the predicted environmental change (before and after mitigation). Mitigation measures may be existing measures or additional measures that were identified through the impact assessment and associated specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of mitigation.

2. Evaluation of Impacts and Mitigation Measures

2.1. Introduction

Impacts are assessed using SLR's standard convention for assessing the significance of impacts, a summary of which is provided below. In assigning significance ratings to potential impacts before and after mitigation the approach presented below was followed.

1. **Determine the impact consequence rating:** This is a function of the "intensity", "duration" and "extent" of the impact (see Section 2.2). The consequence ratings for combinations of these three criteria are given in Section 2.3.
2. **Determine impact significance rating:** The significance of an impact is a function of the consequence of the impact occurring and the probability of occurrence (see Section 2.2). Significance is determined using the table in Section 2.4.
3. **Modify significance rating (if necessary):** Significance ratings are based on largely professional judgement and transparent defined criteria. In some instances, therefore, whilst the significance rating of potential impacts might be "low", the importance

of these impacts to local communities or individuals might be extremely high. The importance/value which I&APs attach to impacts arehighlighted, where necessary, and recommendations made as to ways of avoiding or minimising these perceived negative impacts through project design, selection of appropriate alternatives and/or management.

4. **Determine degree of confidence of the significance assessment:** Once the significance of the impact has been determined, the degree of confidence in the assessment is qualified (see Section 2.2). Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact.

2.2. Criteria for Impact Assessment

The criteria for impact assessment are provided below.

Criteria	Rating	Description
Criteria for ranking of the INTENSITY (SEVERITY) of environmental impacts	**ZERO TO VERY LOW**	Negligible change, disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People/communities are able to adapt with relative ease and maintain pre-impact livelihoods.
	LOW	Minor (slight) change, disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people's livelihood.
	MEDIUM	Moderate change, disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.
	HIGH	Prominent change, disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods.
Criteria for ranking the DURATION of impacts	**SHORT TERM**	< 5 years.
	MEDIUM TERM	5 to < 15 years.
	LONG TERM	> 15 years, but where the impact will eventually cease either because of natural processes or by human intervention.
	PERMANENT	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.
Criteria for ranking the EXTENT/SPATIAL SCALE of impacts	**LOCAL**	Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its immediate surroundings.
	REGIONAL	Impact is confined to the region, e.g. coast, basin, catchment, municipal region, etc.
	NATIONAL	Impact is confined to the country as a whole.
	INTERNATIONAL	Impact extends beyond the national scale.
Criteria for determining the PROBABILITY of impacts	**IMPROBABLE**	Where the possibility of the impact to materialise is very low either because of design or historic experience, i.e. ≤ 30% chance of occurring.
	POSSIBLE	Where there is a distinct possibility that the impact would occur, i.e. > 30 to ≤ 60% chance of occurring.
	PROBABLE	Where it is most likely that the impact would occur, i.e. > 60 to ≤ 80% chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. > 80% chance of occurring.
Criteria for determining the DEGREE OF CONFIDENCE of the assessment	**LOW**	≤ 35% sure of impact prediction.
	MEDIUM	> 35% and ≤ 70% sure of impact prediction.
	HIGH	> 70% sure of impact prediction.
Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED - the degree to which an impact can be reduced/enhanced	**NONE**	No change in impact after mitigation.
	VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
	LOW	Where the significance rating drops by one level, after mitigation.
	MEDIUM	Where the significance rating drops by two to three levels, after mitigation.

	HIGH	Where the significance rating drops by more than three levels, after mitigation.
Criteria for LOSS OF RESOURCES - the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable	**LOW**	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
	MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
	HIGH	Where the activity results in an irreplaceable loss of a resource.
Criteria for REVERSIBILITY - the degree to which an impact can be reversed	**IRREVERSIBLE**	Where the impact is permanent.
	PARTIALLY REVERSIBLE	Where the impact can be partially reversed.
	FULLY REVERSIBLE	Where the impact can be completely reversed.

2.3. Determining Consequence

Consequence attempts to evaluate the importance of a particular impact, and in doing so incorporates extent, duration and intensity. The ratings and description for determining consequence are provided below.

Rating	Description *
VERY HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***long term***; OR of ***high intensity*** at a ***national level*** in the ***medium term***; OR of ***medium intensity*** at a ***national level*** in the ***long term.***
HIGH	Impacts could be EITHER: of ***high intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***high intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***medium term;*** OR of ***low intensity*** at a ***national level*** in the ***long term***; OR of ***high intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***regional level*** in the ***long term.***
MEDIUM	Impacts could be EITHER: of ***high intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***medium intensity*** at a ***regional level*** in the ***medium term***; OR of ***high intensity*** at a ***regional level*** in the ***short term***; OR of ***medium intensity*** at a ***national level*** in the ***short term***; OR of ***medium intensity*** at a ***local level*** in the ***long term***; OR of ***low intensity*** at a ***national level*** in the ***medium term;*** OR of ***low intensity*** at a ***regional level*** in the ***long term.***
LOW	Impacts could be EITHER of ***low intensity*** at a ***regional level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***national level*** in the ***short term***; OR of ***high intensity*** at a ***local level*** and endure in the ***short term***; OR of ***medium intensity*** at a ***regional level*** in the ***short term***; OR of ***low intensity*** at a ***local level*** in the ***long term***; OR of ***medium intensity*** at a ***local level*** and endure in the ***medium term.***
VERY LOW	Impacts could be EITHER of ***low intensity*** at a ***local level*** and endure in the ***medium term***; OR of ***low intensity*** at a ***regional level*** and endure in the ***short term***; OR of ***low to medium intensity*** at a ***local level*** and endure in the ***short term.*** OR **Zero to very low intensity** with any combination of extent and duration.

* Note: For any impact that is considered to be “Permanent” or “International” apply the “Long-Term” and “National” ratings, respectively.

2.4. Determining Significance

The consequence rating is considered together with the probability of occurrence in order to determine the overall significance using the table below.

		PROBABILITY			
		IMPROBABLE	POSSIBLE	PROBABLE	DEFINITE
CONSEQUENCE	VERY LOW	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	LOW	VERY LOW	VERY LOW	LOW	LOW
	MEDIUM	LOW	LOW	MEDIUM	MEDIUM
	HIGH	MEDIUM	MEDIUM	HIGH	HIGH
	VERY HIGH	HIGH	HIGH	VERY HIGH	VERY HIGH

In certain cases it may not be possible to determine the significance of an impact. In these instances the significance is **UNKNOWN**.

4. ASSESSMENT OF EACH IMPACT/RISK IDENTIFIED FOR EACH ALTERNATIVE

Note: The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. The EAP may decide to include this section as Appendix J to this BAR.

4.1. PROJECT-RELATED IMPACTS/RISKS

4.1.1 Construction Phase Impacts/Risks

4.1.1.1 Nuisance impacts (air quality, noise and visual)

Criteria	Description
Nature of impact:	Construction activities, such as vegetation clearing, earth moving, movement of vehicles, material hauling, hammering, excavating, batching and soil stockpiling would result in a localised increase in dust, noise levels and visual impacts. These potential impacts may be a nuisance to the surrounding community. Although the intensity of these potential impacts could be high at times during construction, the overall construction period would be over the short-term.
Extent and duration of impact:	Local and short-term
Intensity of impact or risk:	High
Consequence of impact or risk:	Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Fully reversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation:	**Low**
Degree to which the impact can be avoided:	Low to Medium
Degree to which the impact can be managed:	Medium
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	• The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In

	addition, the provisions of SANS 10103 regarding the generation of noise shall apply to all areas within audible distance of residents. • The Contractor shall endeavour to keep noise-generating activities to a minimum, particularly during night-time work. • Implement a procedure for recording and managing external grievances/complaints. Actions shall be identified as required. • No high noise-generating activity outside of normal hours, regardless of its proximity to residences, shall take place without application to the Resident Engineer (RE) for approval. The application must include proposed noise containment measures. High noise-generating activities include pile driving, grinding, road material loading/unloading, hammering, excavating, etc. • The Contractor shall restrict all operations that result in high noise disturbance to local communities to daylight working hours on weekdays or as otherwise agreed with the RE and local authority. • Ensure vehicles and equipment are adequately maintained and in good working order. • The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme (with due consideration to conserving water) to maintain a safe working environment, minimise nuisance for surrounding residents and businesses and prevent damage to natural vegetation. • Provide appropriate measures for visual screening (e.g. at construction yards, batching plants, laydown areas, etc.).
Residual impacts:	Isolated incidents of nuisance factors such as noise and dust may still occur despite the implementation of appropriate mitigation measures.
Cumulative impact post mitigation:	Very Low
Significance rating of impact after mitigation	**VERY LOW**

4.1.1.2 Socio-economic impacts (employment opportunities)

Criteria	**Description**
Nature of impact:	The proposed project would create approximately 20 (skilled and unskilled) employment opportunities during the construction phase. This is a positive impact; however, the employment opportunities would only be temporary.
Extent and duration of impact:	Local and short-term
Intensity of impact or risk:	Low
Consequence of impact or risk:	Very Low
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Degree to which the impact can be reversed:	N/A
Indirect impacts:	Income from employment would contribute to improving quality of life of employees and employees' dependents, albeit for a short period of time.
Cumulative impact prior to mitigation:	Very Low (positive)
Significance rating of impact prior to enhancement:	***Very Low (positive)***
Degree to which the impact can be avoided:	N/A
Degree to which the impact can be managed:	Low
Degree to which the impact can be enhanced:	Low
Proposed enhancement:	• As far as possible, employ local Broad-Based Black Economic Empowerment (B-BBEE) services and providers and local labour from the local community. • Ensure that, where required, appropriate training of personnel is provided.
Residual impacts:	N/A
Cumulative impact post enhancement:	Very Low (positive)
Significance rating of impact after enhancement	***VERY LOW (POSITIVE)***

4.1.1.3 Traffic disruption impacts

Criteria	Description
Nature of impact:	Disruptions to traffic during the construction phase are anticipated mainly as a result of lane deviation and movement of construction vehicles. Although the intensity of this potential impact could be high at times during construction, this would be of short-term duration during the construction period.
Extent and duration of impact:	Local and short-term
Intensity of impact or risk:	High
Consequence of impact or risk:	Low
Probability of occurrence:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Degree to which the impact can be reversed:	Fully reversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation	**Low**
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	Medium
Degree to which the impact can be mitigated:	Very Low
Proposed mitigation:	• The Contractor shall appoint suitably trained traffic safety officers who shall be responsible for ensuring that construction activities do not obstruct traffic and that adequate traffic accommodation measures are put in place. • The Contractor shall also ensure that adequate pedestrian traffic accommodation, signage and safety measures (as appropriate) are put in place on site. • All construction vehicles shall comply with speed limits. • Movement of heavy vehicles shall be limited to daylight hours, as far as possible.
Residual impacts:	Isolated traffic disruptions may occur despite the implementation of appropriate mitigation measures.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation	**LOW**

4.1.1.4 Surface/groundwater contamination

Criteria	Description
Nature of impact:	The handling and storage of hazardous substances and the batching of concrete during the construction phase increases the potential occurrence of spillages. Spillages have the potential to leak into the ground and/or run off into surface water resources hereby leading to the contamination of these resources. Excavation may also release organic sediments that have the potential to run off into surface water resources. This may reduce dissolved oxygen levels. However, given the turbulent nature of the flow in the vicinity of the bridge which tends to reoxygenate the water, the scale of the impact is likely to be extremely localised. Moreover, while the intensity of the impacts could be high at times during construction, the overall construction period would be of short-term duration and the implementation of mitigation measures would effectively mitigate impacts.
Extent and duration of impact:	Local and short-term
Consequence of impact or risk:	Very Low
Intensity of impact or risk:	Medium
Probability of occurrence:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Very low
Degree to which the impact can be reversed:	Fully reversible
Indirect Impacts:	None
Cumulative impact prior to mitigation:	Very Low

Criteria	Description
Significance rating of impact prior to mitigation	**Very Low**
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	Very Low
Proposed mitigation:	• As far as possible, no stockpiling of materials shall be undertaken within 30 m of the Plankenbrug River, unless within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge • The construction camp shall not be established within 30 m of the Plankenbrug River, unless within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge • The Contractor shall prepare and implement a Method Statement for the containment, handling, storage and disposal of hazardous substances. • The Contractor shall prepare and implement a Method Statement detailing the procedure for dealing with accidental leaks and spills and shall ensure that its employees are aware of the procedures to be followed. • All fuel, oil and other hazardous substances shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers/storage facilities. • Suitable warning signs indicating the nature of the stored materials shall be displayed at the storage facility. • Drip trays or similar forms of secondary containment shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g. excavators, hauling trucks, etc.). • Where reasonably practical, plant and vehicles shall only be refuelled in a demarcated refuelling/servicing area using suitable equipment (e.g. pumps, funnels, etc. • The surface under the refuelling area shall be protected against pollution (e.g. the use of drip trays, concrete sump, etc.). • The Contractor shall ensure that a suitable hydrocarbon spill clean-up kits are readily available at refuelling areas. • All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or moved to a suitable contained area. • When servicing equipment, drip trays shall be used during the collection of waste oil and other hazardous substances (e.g. coolants, fuel, grease, etc.). • Cement and concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces. • Unused (full) cement bags shall be stored undercover and away from surface runoff. • Used (empty) cement bags shall be collected and stored in weatherproof containers. • All excess concrete shall be removed from site on completion of concrete works and disposed of. • Washing of the excess cement/concrete into the ground shall not be allowed.
Residual impacts:	Isolated incidents of hydrocarbon spillages may still occur despite the implementation of appropriate mitigation measures.
Cumulative impact post mitigation:	Very Low
Significance rating of impact after mitigation	**VERY LOW**

4.1.1.5 Deterioration of freshwater ecosystems and riparian vegetation

Criteria	Description
Nature of impact:	Widening of the Distillery Road Bridge would result in the loss of riparian and marginal stream habitat up and downstream of the existing bridge within the new widened bridge footprint (13.35 m). The habitat would be replaced directly by the bridge and will be lost permanently. Moreover, vegetation would also be lost and damaged in the adjacent area (approximately 15 m up and downstream

	of the bridge) due to the movement of heavy vehicles during construction. However, the riparian habitat in the area where loss would occur is of a very low quality and is dominated by alien invasive species with sparse herbaceous indigenous vegetation. Biota, including benthic invertebrates and amphibians, are likely to be crushed by heavy vehicles during excavation and general construction activities. However, benthic invertebrates are likely to repopulate the area within days by migration, and lost individuals are likely to be replaced within weeks to months by reproduction.
Extent and duration of impact:	Local and permanent (loss of habitat) and short-term (loss of biota)
Intensity of impact or risk:	Low
Consequence of impact or risk:	Very Low to Low
Probability of occurrence:	Definite (loss of habitat) and Probable (loss of biota)
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Partially reversible
Indirect impacts:	None.
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation:	**Very Low to Low**
Degree to which the impact can be avoided:	N/A
Degree to which the impact can be managed:	Low
Degree to which the impact can be mitigated:	Very Low

Proposed mitigation:	• Revegetate disturbed portions of the riparian zone within the construction footprint. This will increase the quality and availability of riparian habitat overall. Use the following locally indigenous plants species for revegetation:
	  ○ *Cyperus textilis* (marginal)
	  ○ *Pteridium aquilinum* (marginal)
	  ○ *Cliffortia strobilifera* (marginal)
	  ○ *Olea europaea ssp. africana* (riparian)
	• Stockpile materials only within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge.
	• Determine the minimum construction area required within the riparian zone and stream channel for vehicular access. Demarcate this area with danger tape or a similar material and do not allow vehicular access to the stream channel or riparian zone outside of this demarcated area.
	• Where possible, work from the downstream side of the bridge using either or both banks for access as this area has been recently disturbed and is least sensitive.
	• If it is essential to access the area upstream of the bridge with vehicles, do so via the east bank and avoid entering the riparian area on the west bank with vehicles as far as possible.
	• If it is essential to access the west bank of the river avoid removing indigenous trees within the riparian area (only applicable to the west bank upstream of the bridge).
	• Avoid stream flow diversion, if possible, by undertaking work in the stream channel during summer, or return flow as soon as possible to the affected area to minimise the duration of the stream flow diversion.
	• The Contractor shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction site as a result of their activities.
	• The use of herbicides and pesticides is prohibited unless approved by the RE.
	• Ensure that, where required, appropriate training in the removal of alien vegetation is provided.
	• Where dewatering of excavations is required, no water is to be pumped directly into the river. Implement a sediment pond/sump system in order to prevent sedimentation of the river from dewatering activities.

Residual impacts:	Isolated incidents of disturbances to aquatic habitats and biota may occur despite the implementation of appropriate mitigation measures.
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation	**VERY LOW**

4.1.1.6 Compaction of sediment/erosion in riparian zone

Criteria	**Description**
Nature of impact:	Operation of heavy vehicles and general construction activities within the riparian zone and stream channel would disturb sediment, potentially resulting in bank and stream bed erosion. Compaction of banks would also inhibit vegetation growth, thereby increasing the potential for erosion during rain events and subsequent sedimentation of the stream channel.
Extent and duration of impact:	Local and short-term
Consequence of impact or risk:	Very Low
Intensity of impact or risk:	Low
Probability of occurrence:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Fully reversible
Indirect Impacts:	None
Cumulative impact prior to mitigation:	Very Low
Significance rating of impact prior to mitigation	**Very Low**
Degree to which the impact can be avoided:	Very Low
Degree to which the impact can be managed:	Low
Degree to which the impact can be mitigated:	Very Low
Proposed mitigation:	• Demarcate project area with danger tape or a similar material and do not allow vehicular access to the stream channel or riparian zone outside of this demarcated area. • Revegetate disturbed portions of the riparian zone within the construction footprint as per the above-mentioned recommendations in this regard. • As far as possible, undertake work within the stream channel and banks during the summer months (November to March) to minimise the risk of erosion of the disturbed and compacted sediments during a rain event. • Compacted ground shall be rehabilitated by ripping to a minimum depth of 600 mm. Topsoil of at least 20 cm should be placed on top of the ripped soil.
Residual impacts:	None
Cumulative impact post mitigation:	Very Low
Significance rating of impact after mitigation	**VERY LOW**

4.1.1.7 Flow diversion

Criteria	**Description**
Nature of impact:	Installation of the foundations of the new bridge substructure may require diversion of stream flow within the broader stream channel. The diversion would be localised, affecting only approximately a 25m length of the river channel. The width of the active, flowing channel during the site assessment (undertaken during June) was under 3 m and would likely be far narrower during summer. Complete diversion can therefore be accomplished, if required, between the stream banks with a lateral movement of just over 3 m at the most. Diversion may not be required at all should stream flow be minimal during construction.
Extent and duration of impact:	Local and short-term
Consequence of impact or risk:	Very Low
Intensity of impact or risk:	Medium
Probability of occurrence:	Possible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Fully reversible

Indirect Impacts:	None
Cumulative impact prior to mitigation:	Very Low
Significance rating of impact prior to mitigation	**Very Low**
Degree to which the impact can be avoided:	Medium
Degree to which the impact can be managed:	Low
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	• If possible, undertake work within the stream channel during mid to late summer (November to March) to ensure that minimal flows are present at the time. • Only divert flow if operationally necessary. • Divert flow over as short a length of river as possible, but no more than 25 m. • Return flow to the original channel as soon as possible after completion.
Residual impacts:	None
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation	**INSIGNIFICANT**

4.1.2 Maintenance/Operational Phase Impacts/Risks

4.1.2.1 Deterioration of Freshwater Ecosystems

Criteria	**Description**
Nature of impact:	Potential impacts on aquatic habitats within the Plankenbrug River are likely to occur as a result of routine maintenance activities such as work on the bridge and associated vegetation management, etc. Potential impacts are the spread of alien vegetation and disturbance/damage to aquatic species. Potential impacts are anticipated to be local in extent over the long term, given that maintenance periods are of a short duration but will need to take place many times over the life of the bridge structure.
Extent and duration of impact:	Local and long-term
Consequence of impact or risk:	Low
Intensity of impact or risk:	Low
Probability of occurrence:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Partially reversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation	**Low**
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	Medium
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	• Minimise the spatial extent of disturbance. • Minimise the frequency of (or requirement for) maintenance activities. • Do not impede the movement of aquatic and riparian biota. • Minimise alterations to flow- and sediment-capacity. • Rehabilitate and re-vegetate disturbed areas as soon as possible. • Clear alien invasive plant species. • Restrict maintenance activities to the dry season where possible. • Prevent erosion and rehabilitate eroded areas. • Use existing access routes as far as possible. • Store and handle all hazardous materials and waste in a suitable manner, and at least 30 m outside of the Plankenbrug River. • Remove excess spoil material and solid waste and ensure it is disposed of at approved waste disposal sites. • Ensure maintenance activities do not lead to channelisation or canalisation of the watercourses. • Remove cleared woody material from the areas adjacent to the watercourse and wetlands to prevent it being washed into the watercourse.

Criteria	Description
	• Maintenance activities are to be undertaken in line with the Stellenbosch River Management Plan Update (June 2011)
Residual impacts:	None
Cumulative impact post mitigation:	Very Low
Significance rating of impact after mitigation	**VERY LOW**

4.1.2.2 Socio-economic impacts (improved safety, access and facilities)

Criteria	Description
Nature of impact:	The proposed project would improve overall road user safety and provide non-motorised facilities/pedestrian walkways, hereby providing an overall socio-economic benefit. The anticipated impacts would be over the long term and is expected to have a *high positive significance.*
Extent and duration of impact:	Local and long-term
Intensity of impact or risk:	High
Consequence of impact or risk:	High
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Degree to which the impact can be reversed:	N/A
Indirect impacts:	The project may have an indirect impact on the sense of place and may improve the quality of life for local road users who would feel safer using the non-motorised transport facilities/pedestrian walkways.
Cumulative impact prior to mitigation:	High (positive)
Significance rating of impact prior to enhancement	***High (Positive)***
Degree to which the impact can be enhanced:	Very Low
Proposed enhancement:	• None
Residual impacts:	N/A
Cumulative impact post enhancement:	High (positive)
Significance rating of impact after enhancement	***HIGH (POSITIVE)***

4.1.3 Decommissioning and Closure Phase

N/A - it is not anticipated that the bridge would be subject to decommissioning and closure.

4.1.4 No-Go Alternative

POTENTIAL IMPACTS OF THE NO-GO ALTERNATIVE	
Criteria	**Description**
Nature of impact:	The No-Go alternative is the option of not proceeding with the proposed project. This would result in the status quo remaining and the potential negative impacts associated with the construction phase of the proposed project not taking place. However, failure to implement the rehabilitation of the bridge as required could potentially result in failure/collapse of the structure, thereby compromising the safety of road users as well as cutting off access to a mixed-used area. The short-term benefits of local employment creation and participation in the local economy by the Contractor would also not accrue to the local community under the No-Go alternative. The No-Go alternative is not a desirable alternative and would hold no benefits to society.
Extent and duration of impact:	Local and long-term
Consequence of impact or risk:	High
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low

Degree to which the impact can be reversed:	Fully reversible by implementing the proposed project
Indirect impacts:	N/A
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation	**High**
Degree to which the impact can be avoided:	N/A
Degree to which the impact can be managed:	N/A
Degree to which the impact can be mitigated:	N/A
Proposed mitigation:	N/A
Residual impacts:	N/A
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation	**HIGH**

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1.	**Provide a summary of the findings and impact management measures identified by all Specialists and an indication of how these findings and recommendations have influenced the proposed development.**

Freshwater Assessment

The assessment of the freshwater ecosystem and riparian vegetation in the proposed project footprint noted the following:

- The project area is located within the G22H quaternary catchment.
- The catchment is dominated by a mixture of agriculture (predominantly vineyards) and urban land uses.
- The CBA 1 wetlands were found not to exhibit either wetland soils or hydrophytic vegetation, while a third wetland further south was found to be a grassy knoll without a wetland vegetation community.
- The area downstream of the bridge had been severely disturbed historically and as a result of the replacement of a water pipeline for at least 50 m below the bridge. Soils in the area have been compacted by construction vehicles, stockpiling and earthworks associated with the pipeline replacement.
- The area is now dominated by alien vegetation and cosmopolitan pioneer species. Hydrophytic vegetation is dominated by alien invasive species such as *Commelina bengalensis, Arundo donax*, and *Persicaria lapathifolia*, but with tolerant indigenous species such as *Cyperus dives, Cyperus textilis*, and *Isolepis prolifera* present in places
- The Plankenbrug River is in a Largely Modified state with a Moderate Ecological Importance and Sensitivity. The potential water quality and habitat impacts of the proposed project are currently present in the system at a much larger scale than may be contributed by the construction works on the bridge.
- The vegetation type in the surrounding area is mapped as Swartland Granite Renosterveld, which is rated as Critically Endangered. However, no vegetation was noted that corresponds to the Critically Endangered terrestrial vegetation type and given the degree of past disturbance, infilling and compaction, the indigenous vegetation is deemed to be entirely lost, to the extent of the seed bank as well.

The proposed project has not been influenced from a freshwater perspective, other than by the inclusion of specific mitigation measures pertaining to works within the Plankenbrug River in the EMPr.

Heritage Notice of Intent to Develop

Based on the assessment of cultural heritage risks associated with the proposed project, the following was noted:

- The Distillery Road Bridge is older than 60 years.
- The bridge is adjacent to archaeological resources that was declared a Provincial Heritage Site, namely, the Bosman's Crossing Provincial Heritage Site which was declared a National Monument in 1962.
- The bridge is located within the "Papegaaiberg Landscape Unit" which is considered to hold cultural significance.
- There are old oak trees within the project footprint that might need to be transplanted or replaced in order to preserve the sense of place of the Papegaaiberg Landscape Unit.
- No further action under Section 38 of NHRA is required.

In their consideration of the NID, HWC confirmed that no further heritage impact assessment is required to be undertaken. A separate Section 35 permit application process is, however, being undertaken (with HWC as the competent authority) as a separate parallel process in order to address how potential heritage impacts are to be avoided in the vicinity of Bosman's Crossing.

As the bridge is older than 60 years and elements of the bridge sub-structure may date back to the 1600s, a separate parallel Section 34 permit application is being undertaken by the heritage specialist in consultation with an architect with knowledge of historic bridge structures. HWC is also the competent authority in this regard. This process would also include recommendations for the management of oak trees within the project footprint.

2.	**List the impact management measures that were identified by all Specialists that will be included in the EMPr**

The mitigation measures listed below have been extracted directly (as far possible) from the Freshwater Assessment. Where relevant, these have been consolidated, grouped or rephrased differently in this report and/or the EMPr in order ensure that the language and terminology used is consistent (see Appendix H).

Freshwater Assessment: Construction Phase

- Revegetate portions of the riparian and marginal zones that are disturbed by the operation of construction vehicles during construction. This must be undertaken within four weeks of completion of the work within these areas. Use locally indigenous plants of the following species for revegetation:
  - *Cyperus textilis* (marginal)
  - *Pteridium aquilinum* (marginal)
  - *Cliffortia strobilifera* (marginal)
  - *Olea europaea ssp. africana* (riparian)
- Stockpile materials only within the area historically disturbed and used during the replacement of the pipeline upstream of the bridge.
- Determine the minimum operational area required within the riparian zone and stream channel for vehicular and equipment access. Demarcate this area with danger tape or a similar material and do not allow vehicular access to the stream channel or riparian zone outside of this demarcated area.
- Where possible, work from the downstream side of the bridge using either or both banks for access as this area has been recently disturbed and is least sensitive.
- If it is essential to access the area upstream of the bridge with vehicles, do so via the east bank and avoid entering the riparian area on the west bank with vehicles as far as possible.
- If it is essential to access the west bank of the river, avoid removing indigenous trees within the riparian area (only applicable to the west bank upstream of the bridge).
- Demarcate the working area within the riparian zone and stream channel and restrict access to the riparian zone and stream channel outside of this area.
- Insofar as possible, undertake work within the stream channel and banks during the summer months (November to March) to minimise the risk of erosion of the disturbed and compacted sediments during a rain event, to ensure that minimal flow is present and to avoid prolonged river diversions.
- Insofar as possible, undertake work within the stream channel during mid to late summer (November to March) to ensure that minimal flows are present at the time.
- Only divert flow if operationally necessary.
- Divert flow over as short a length of river as possible, but no more than 25 m.
- Return flow to the original channel as soon as possible after completion.
- Designate a bunded area at least 30 m from the stream bank for the placement of toilets, for the pouring and mixing of cement and concrete and for the parking and servicing of vehicles. Ensure that none of these activities occur outside of the designated area.

3.	**List the specialist investigations and the impact management measures that will not be implemented and provide an explanation as to why these measures will not be implemented.**

N/A.

4.	**Explain how the proposed development will impact the surrounding communities.**

Key impacts on the neighbouring residents, businesses and road users would be nuisance impacts (e.g. air quality, noise and visual) and traffic impacts during construction. During construction, the proposed project would have a temporary, beneficial impact on the surrounding communities, through the provision of temporary employment opportunities.

5.	**Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.**

Due to the localised scale and nature of the proposed project, the risks of climate change have not been considered in the project design. No specific risks to the proposed project as a result of climate change are, however, anticipated.

6.	**Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.**

No conflicting recommendations have been proposed.

7.	**Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.**

The various findings and recommendations from the Freshwater and Cultural/Heritage Specialists have been incorporated into the EMPr.

8.	**Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.**

The mitigation hierarchy has been considered in the selection of the preferred activity and design alternatives. Refer to Section H(1) for a discussion on the project alternatives which were considered in this regard.

SECTION J: GENERAL

1. ENVIRONMENTAL IMPACT STATEMENT

1.1.	**Provide a summary of the key findings of the EIA.**

The majority of the impacts are expected to be of **INSIGNIFICANT** to **LOW** significance after mitigation. Socio-economic benefits related to potential temporary employment opportunities are rated as of ***VERY LOW (POSITIVE)*** significance during the construction phase. Long term socio-economic benefits related to improved road safety, traffic alleviation and provision of non-motorised facilities/pedestrian walkway are rated as of ***HIGH (POSITIVE)*** significance post-construction. Traffic impacts during the construction phase are deemed to be of a **LOW** significance after mitigation.

Construction activities would result in a localised increase in dust, noise levels and visual impacts which may be a nuisance to local residents. Given the short duration and extent of the construction phase, this impact is deemed to be of **VERY LOW** significance after mitigation. Surface and groundwater impacts during the construction phase are deemed of **VERY LOW** significance pre and post mitigation, respectively.

Given the largely modified state of the Plankenbrug River and the dominance of alien invasive species within the project area, impacts related to aquatic ecosystems are deemed to be of Very Low (habitat loss) to Low (biota loss) significance before mitigation and of **VERY LOW** significance after mitigation. Impacts related to sedimentation/erosion in the riparian zone and temporary flow diversion is deemed to be **INSIGNIFICANT** to **VERY LOW** significance**.**

During the maintenance phase, aquatic ecosystems may be impacted negatively through the spread of alien vegetation and disturbance/damage to aquatic species. With the implementation of the recommended mitigation measures, the residual impacts are deemed to be of **VERY LOW** significance**.**

The No-Go alternative would not be beneficial to society in any way and would mean that the bridge would continue to deteriorate, thereby compromising road user safety and access. Additionally, the short-term employment benefits would not be realised. The No-Go alternative is rated as having a **HIGH** negative significance.

1.2.	**Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)**

A site sensitivity map is attached as Appendix B. A biodiversity overlay map is attached as Appendix D.

1.3.	**Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.**

A summary of the positive and negative impacts identified for the proposed project is provided below:

Table 1: Construction-related Impacts/Risks.

Impact	Significance without mitigation	Significance with mitigation
Nuisance aspects (air quality, noise and visual)	Low	**VERY LOW**
Socio-Economic aspects (employment opportunities, etc.)	*Very Low (positive)*	***VERY LOW (POSITIVE)***
Traffic disruption	Low	**LOW**
Surface and Groundwater contamination	Very Low	**VERY LOW**
Deterioration of Freshwater Ecosystems and riparian vegetation	Very Low to Low	**VERY LOW**
Compaction of sediment/erosion in riparian zone	Very Low	**VERY LOW**
Flow diversion	Very Low	**INSIGNIFICANT**

Table 2: Maintenance-related Impacts/Risks.

Impact	Significance without mitigation	Significance with mitigation
Deterioration of Freshwater Ecosystems (ongoing maintenance activities)	Low	**VERY LOW**
Reduced flow impedance	*Very Low (positive)*	***VERY LOW (POSITIVE)***
Socio-Economic (improved safety, access and facilities)	*High (positive)*	***HIGH (POSITIVE)***

Table 3: Impacts associated with the no-go option.

Impact	Significance without mitigation	Significance with mitigation
No-Go Alternative	High	**HIGH**

2. RECOMMENDATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

2.1.	**Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMPr**

The impact management outcomes included in the EMPr include:

- Effective management and monitoring of the EMPr and Environmental Authorisation (EA) requirements.
- Compliance with legislative requirements.
- Damage to the environment is avoided/minimised.
- Clean and well-maintained ablution facilities provided in suitable locations.
- Effective housekeeping.
- Safe supply of drinking water.
- Prevention of community conflict and unsupervised activities.
- Maximisation of local B-BBEE employment.
- Minimisation/avoidance of disturbance to road traffic and surrounding community.
- Prevention of access to No-Go areas.
- Minimal loss of topsoil.
- Effective management of subsoil.
- Safe passage of goods between destinations.
- Effective containment, handling, storage and disposal of hazardous substances.
- Spillages of hazardous substances from equipment is prevented.
- Spillages during refuelling is avoided.
- Contamination of the environment as a result of maintenance activities, accidental leaks, waste/wastewater management, concrete batching is prevented.
- Soil loss and sedimentation of water resources are prevented.
- Safe traffic management.
- Effective fire control and prevention.
- Minimisation of noise disturbance to neighbouring properties.
- Minimisation of dust.
- Minimisation/prevention of impacts on cultural heritage resources.
- Successful restoration of disturbed areas.
- Compliance with legislative requirements.
- No damage to the environment with respect to the construction camp location and layout.
- No chemical spills from ablutions.
- No litter on site.
- No wastage of water and unauthorised use of water resources.
- No environmental destruction.
- No negative impact on the aesthetics of the area.
- No disturbance to road traffic and surrounding community
- Shortest transportation time and no damage to sensitive environments.
- No hazardous fuels spills, effective containment in the event of a spill.
- No contamination of surface and groundwater resources.
- No damage and disturbance to watercourse.
- No traffic incidents.
- No damage arising from fires.
- No noise disturbance to neighbouring properties.
- No dust nuisance.
- No damage to water resources.
- Alien vegetation removal and management.
- Benefits and opportunities to local communities.

2.2.	**Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.**

None identified.

2.3.	**Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.**

Implementation of the proposed project is intended to improve road user safety and provide non-motorised facilities/pedestrian walkways. These outcomes, as well as the anticipated economic benefits during the construction phase were deemed to be positive impacts associated with the implementation of the proposed project. All potential negative impacts related to the proposed project (during both the construction and maintenance phases) are rated as of very low to low significance after mitigation.

The key principles of sustainability, including ecological integrity, economic efficiency, and equity and social justice, are integrated below as part of the supporting rationale for providing a reasoned opinion on whether or not the proposed project should be approved.

Ecological integrity

The proposed project would take place within a municipal road corridor. The relatively limited footprint of the proposed project and the recommended mitigation measures would ensure that the potential negative impacts are kept at acceptably low levels.

Economic efficiency

The proposed project is in line with the planning framework for the district and local municipal areas within which the proposed project is located. The engineering analysis confirmed that the preferred activity, design and technological alternatives would yield the greatest economic return and time saving.

Equity and social justice

The provision of local employment and business opportunities during the construction phase (short term), the improvement in road safety and the provision of non-motorised facilities/pedestrian walkways post-construction (long term) would have a positive impact on the lives of those employed (and the well-being of their dependents) and road users in general.

Conclusion

In light of the above, it is the reasoned opinion of SLR that there is no reason why the proposed project should not receive a favourable decision. Furthermore, this study recommends that the proposed project be implemented with due consideration of the recommendations outlined in this report. These mitigation measures are all considered to be feasible and have been included in the EMPr for the proposed project (see Appendix H).

Authorisation conditions

A condition for inclusion in the authorisation is that an Environmental Control Officer (ECO) is to be employed to oversee and monitor compliance with the EMPr for the duration of the construction phase of the project. .

2.4.	**Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.**

SLR assumes that there would be no significant change to the project description or change in the nature of the receiving environment which would require a re-assessment of the potential impacts as assessed in this report. SLR also assumes that all the data and information provided by the applicant and project consulting engineer were accurate and unbiased.

2.5.	**The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.**

Ten years for the completion of the project development phase.

3. WATER

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.

Only a minimal volume of water may be required for dust suppression measures during the construction phase. Areas would only be wetted using non-potable water during windy days and/or when dust may become a nuisance to surrounding residents and businesses. All water tanks and water trucks would be maintained in a good working condition to ensure that no unnecessary water leaks occur.

4. WASTE

Explain what measures have been taken to reduce, reuse or recycle waste.

The appointed Contractor would be responsible for the establishment of a solid waste control and removal system in order to prevent the spread of waste in, and beyond, the construction area. The following measures have been included in the EMPr (see Appendix H):

- An integrated waste management approach should be used, based on the principles of waste minimisation, reduction, reuse and recycling of materials. Containers for glass, paper, metals and plastics should be provided. All non-recyclable solid waste should be disposed of off-site at a licenced landfill site; and
- All hydrocarbons (e.g. fuel, oils and contaminated soil/materials) and other hazardous waste resulting from spills, refuelling and maintenance activities should be disposed of at a licenced hazardous waste site or, where possible, sold to an approved used-oil recycling company.

5. ENERGY EFFICIENCY

8.1.	Explain what design measures have been taken to ensure that the development proposal will be energy efficient.
N/A – no design measures have been identified in relation to ensuring energy efficiency of the proposed bridge rehabilitation.	

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

I, Jacobus Gideon Louw, ID number 530515 5007 089, in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;

- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;

- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - ~~meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;~~

- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;

- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;

- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

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

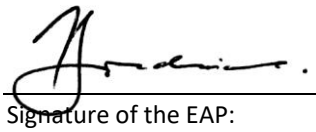
Signature of the Applicant: Date: 9/11/2020

Stellenbosch Municipality
Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I, Fuad Fredericks, EAPASA Registration number (in progress) as the appointed EAP hereby declare / affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and that:
- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
  - ~~am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);~~
- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all 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 prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;



11 November 2020

Signature of the EAP: Date:

SLR Consulting (South Africa) (Pty) Ltd

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

I, Joshua Gericke, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

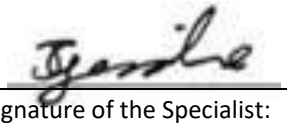
- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



11 November 2020

Signature of the Specialist: Date:

SLR Consulting (South Africa) (Pty) Ltd

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

I, Jenna Lavin, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or

  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

11/11/2020

Signature of the EAP: Date:

CTS Heritage

Name of company (if applicable):

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