DRAFT AMENDMENT ASSESSMENT REPORT

for

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG ESTATE NO. 613, PAARL, WESTERN CAPE

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for: ASLA Devco (Pty) Ltd

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Department Reference: 16/3/3/5/B3/28/1069/20 (Old: 16/3/l/1/B3/28/1120/14)

Case Officer: Bernadette Oosthuizen

Date: October 2021

Draft Amendment Assessment Report

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended) &

Environmental Impact Regulations2014 (as amended)

PORTION 3 OF FARM NEDERBURG ESTATE NO. 613, PAARL, WESTERN CAPE

Submitted for:

Stakeholder Review & Comment

Report compiled by
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i. EXECUTIVE SUMMARY

The proposed development of a mixed-use complex on Portion 3 of Farm Nederburg No. 613, Paarl, has been approved by various governmental departments and a subsequent Environmental Authorisation ('EA") was granted by the Department of Environmental Affairs and Development Planning (DEA&DP). The scope of the project has since been changed to improve the feasibility thereof. Due to the changes being made a Part 2 Amendment Application was launched at the DEA&DP. As per Regulation 32 (1) of the NEMA Act, 1998, an Amendment Assessment Report must be made available to the competent authority and be subject to a 30-day Public Participation period.

An Amendment Assessment was therefore done in line with the said legislative requirements. The inputs of several specialists were gathered to gain an in depth understanding of the impacts associated with the proposed changes. Despite the layout of the project being changed to include more residential opportunities, upgraded municipal services infrastructures and a new entrance off Sonstraal Road, the total amount of land to be cleared remains unchanged. The consensus of various specialists therefore is that the proposed changes will have little additional impact compared to the original approved project.

The changes made to project better addresses the need for housing in an ever-growing urban environment. The proposed changes made to the project therefore better addresses the issue of urbanisation than the original layout, as providing more housing units will reduce the need to clear additional land (agricultural or natural) in the future.

It is therefore recommended that the proposed amendment of the Nederburg Mixed-Use development on Portion 3 of Farm No. 613, Paarl, be approved by the competent authority. It is also important to note that the proposed amendment will be in line with the requirements and guidelines of the Drakenstein Municipality and other relevant state departments.

ii. LEGISLATIVE COMPLIANCE CHECKLIST

As per Regulation 32(1) of the NEMA Act, Act no. 107 of 1998 (as amended), the applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority—

(a) a report, reflecting—

(i) an assessment of all impacts related to the proposed change;

(ii) advantages and disadvantages associated with the proposed change; and

(iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and

(iv) any changes to the EMPr;

This report must be subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority. And reflects the incorporation of comments received, including any comments of the competent authority. This draft report is currently being subjected to a public participation process that has been agreed to by the competent authority by means of the approval of a public participation plan. The table below summarises the content requirements of such a report, with references to where there the specific requirements have been dealt with in the report.

Content Requirements, Regulation 32(1)(a)	**Reference**
Assessment of all impacts related to the proposed change.	Section 4
Advantages and disadvantages associated with the proposed change.	Section 5
Measures to ensure avoidance, management and mitigation of impacts associated with such proposed change.	Section 6
Changes to the EMPr.	Appendix G

1. INTRODUCTION

Virdus Works Environmental has been appointed by ASLA Devco (Pty) Ltd, hereafter referred to as the Applicant as the independent Environmental Assessment Practitioner (EAP) to facilitate a Part 2 application for an amendment of the project's Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998), for the authorised 'Proposed mixed-use development on Portion 3 of Farm Nederburg Estate No. 613, Paarl, Western Cape.

The current authorised layout for the development consists of 214 Residential units, 2 Institutions, 1 Business, 1 Internal Street, 3 Open spaces and 1 Remainder Road (Sonstraal Road), with a total extent of 10,84 Hectares. The applicant wishes to change the layout to improve the feasibly of the project. The new proposed layout consists of 305 Residential units, 1 Institution, 1 Internal Street, 5 Open spaces and 1 Remainder Road (Sonstraal Street) whilst having the same extent (10.84 Hectares). The changes also include the upgrading of municipal service infrastructure and a new entrance of Sonstraal Road. See Table 1 for the proposed new subdivision of the project.

The purpose of the Amendment Assessment Report is to describe the environment to be affected by the proposed changes and to identify and assess any resulting impacts that may result from the proposed changes within the adjacent to the authorised footprint. In compliance with the regulatory requirement, this report includes:

- An assessment relating to the impacts of the proposed amendments.
- The advantages and disadvantages associated with the proposed amendments.
- Measures to ensure avoidance, management and mitigation of impacts associated with the proposed amendment, and
- Amend the Environmental Management Programme (EMPr).

A Draft Amended report was circulated to all the registered and potential Interested and Affected Parties (I&APs), as identified during the previous BAR application, as part of a "Pre-Application" commentary process for a 30-day period from 3 June 2021. The feedback received was incorporated into the establishment of this Draft Amendment Assessment Report.

The Draft Amendment Assessment Report along with all the supplementary appendices will be made available to all registered and potential Interested and Affected Parties (I&Aps) for a 30-day comment period from (7 October 2021).

All comments received on the Draft Amendment Assessment Report will be considered, addressed, and incorporated into a Final Amendment Assessment Report to be submitted to the DEA&DP for consideration and decision making

1.1 Existing Authorisations

The following existing authorisations have been issued for the Nederburg Mixed-used development. Please note only authorisation and approvals received in terms of NEMA and the EIA regulations are reflected below.

Reference	Date	Details
16/2/1/1/B3/28/1120/14	1 June 2017	Original Environmental Authorisation
16/3/3/6/B3/28/1181/21	21 September 2021	Approval of the public participation plan submitted in terms of 9 Jan 2021 Covid Circular

1.2 Proposed amendments

The following amendments have been proposed for the development. Although the extent of the proposed development remains the same the number of residential units and open spaces increased, whilst the number of businesses and institutions decreased. See Appendix F for the subdivision layout plan for the project.

Table 1: Proposed new subdivision of Portion 3 of Nederburg Farm Estates No. 613, Paarl.

Land use	New Layout	Area (ha)	Approved (old) layout	Area (ha)
1.Residential	305	6.45	214	5.45
2.Open spaces	5	1.01	3	0.96
3.Institutional	1	0.22	2	0.39
4.Business	0	0.00	1	0.15
5.Internal street	1	2.20	1	2.85
6.Remainder road (Sonstraal Road)	1	1.02	1	1.02
Extent:		10,84		10.84

Recommendations from specialist studies from the Basic Assessment Report was incorporated into the new proposed subdivision layout plan. Which includes amongst others, a 10m conservation buffer from the edges of the Boontjies River.

The previous project plan proposed the building of services pipes such as water and sewage across the Boontjies River. This was not included in the new proposed project plan. Other changes to project include the upgrading of municipal services infrastructures and a new entrance off Sonstraal Road, opposite the SAPS/ Correctional services access.

1.3 Reasons for proposed amendments

The current demand for housing in the Paarl region, prompted the developers to increase the number of residential units for the development. The initial development underestimated the rapid increasing demand for housing, especially in the lower-income bracket. To address this and improve on the feasibility of the project, the applicant proposes to increase the number of residential units, as this would increase the number of housing available. Increasing the amount of housing provided by the project, would decrease the need for similar developments in the future. Global urbanisation trends indicates that by 2030, approximately 60% of the global population will live in cities. As cities grow due to the growing demand for housing, the available land would become less. To prevent the need for more Agricultural or Natural land to be cleared for housing in the future, we should utilize the current available land to its maximum capacity. The proposed amendments therefore are not only beneficial to the developers but also the greater Paarl region as less agriculture or natural resources would be affected in the future.

2. SITE DESCRIPTION

The proposed mixed-use development will take place on Portion 3 of Nederburg Farm Estates No. 613, Paarl. The project location project is located within the jurisdiction of the Drakenstein Local Municipality and falls within the Berg River Water Management Area (G10C Quaternary Catchment). The site is located on the corner of Sonstraal Road and Van der Stel Street. The site is bordered by a small canal to the south (Boontjies River), followed by a row of single residential properties to the south of this canal in the New Orleans Township. The Nederburg Wine Estate is bordering the proposed development to the east. To the north and across Sonstraal Road, the Allandale Correctional Facility and Police station is located. The remainder is 62.55 Ha in extent, but Portion 3, the portion to which this application relates is 10,84 Ha in extent.

The property is currently vacant. A key point is that the property is situated within the urban edge along Sonstraal Road in the urban/ rural transitional zone.

In terms of the Section 8 Scheme Regulations, Portion 3 of the farm Nederburg Estates No 613 is currently zoned "Agricultural Zone I" and lies vacant at this stage The site has been successfully rezoned to sub-divisional area in the past, but since the rights, at that stage, were not exercised, the zoning lapsed and reverted back to "Agricultural Zone I" zoning.

The land use management application is on behalf of Nederburg Wine Farms (Pty) Ltd (Registration no, 1950/039255/07) and made in terms of Section 15(2) of the Drakenstein Municipality: Bylaw on Municipal Land Use Planning, 2018:

- (g) an amendment, deletion or imposition of conditions in respect of an existing approval by the alteration of the layout plan and changing the approved uses; and
- (j) an amendment or cancellation of an approved subdivision plan or part thereof, including a general plan or diagram, by proposal of the new subdivision as indicated on the plan of subdivision with the application.

3. PROJECT NEED AND DESIRABILITY

The need and desirability of the total project considered in the previous environmental process will remain relevant.

One of the key challenges facing the Drakenstein Municipality according to previous Integrated Development Plans (IDP), are the delays with the commencement of housing projects. In terms of the IDP, Rural development is a broad concept the engages agencies across the public and private sectors. It requires of all agencies in national and provincial government, state-owned enterprises, and the private sector to also contribute to the areas if responsibly. The IDP states that municipalities are not solely responsible for the addressing the enormous challenges of rural poverty and rural development. Sustainable human settlements are one of the great challenges faced by the Municipality, with a huge backlog in terms of the provision of housing opportunities.

The development of this project will therefore fall within the Municipalities framework for development. In addition to this, the project is also planned within the urban zone and will create accessibility to the employment area for staff.

Opportunity costs could be defined as the loss of potential gain from other alternatives when one alternative is chosen. In terms of this, the development will not result in unacceptable opportunity costs. The development will formalise land, which is currently unutilised, in line with the requirements of the Municipal IDP.

Bearing the above in mind, its clear that the changes made to the project, particularly the increase of residential units, strongly aligns with the needs and desirability of the project.

4. ASSESSMENT OF ALL IMPACTS RELATED TO THE PROPOSED CHANGES

In terms of Regulation 32(1)(a)(i), an assessment of the impacts of the proposed amendments must be provided. This section focusses on the amendments that constitute physical changes to the environment namely:

- Changes to the proposed layout of the mixed-use development, which involves the increase of residential units and open spaces and the reduction of business and institutional buildings, the upgrading of municipal services infrastructure, a new entrance of Sonstraal Road and reducing the size of the internal road.

As requested by the competent authority, this amendment assessment is supplemented with statements from the following specialists:

- Traffic Impact Assessment
- Engineering service report
- Freshwater Ecological Impact Assessment
- Visual Impact Assessment

The abovementioned specialists were requested to provide a statement in terms of their specific disciplines to confirm the following:

- Whether the proposed amendments related to project layout will change the nature or significance any of the impacts assessed in the original study.
- Whether the proposed amendments relating to changes in the project layout is likely to result in any additional impacts that where not previously assessed in the original study.
- Whether any additional management outcomes or mitigation measures in terms of each specialist discipline would be applicable to the proposed amendments to accommodate the proposed changes to the project layout.

Discussion of general impacts associated with the proposed amendments are discussed in section 4.1 below and the outcome of the specialist statements is included in section 4.2.

4.1 Discussion of General Impacts

One of the most prevalent impacts associated with the proposed mixed-used development is the physical loss of habitat. Habitat loss leads attributes to habitat fragmentation and loss of biodiversity. But, although the project layout changed to include more residential units, the total extent of the project remains 10,84 Ha. This can be attributed to reduction of Business and Institutional uses and the inclusion of more open spaces. As such the total habit loss/ the area that will be cleared for the project, remains unchanged.

Other changes such to the project such as the new entrance and the upgrading municipal service infrastructure relates more to service delivery and limiting impact of the road network. This will have little impact on the environment beyond the construction phase. Although measure needs to be taken to ensure that these are as efficient as possible and is in line with roll out plan of the municipality.

4.2 Specialist Assessments

The specialist statements referred to above are attached in Appendix B-E and the findings of each of these specialists relating to the potential impacts of the proposed changes made to the project are summarised below.

4.2.1 Traffic Impact and Access

A traffic impact assessment was done by UDS Africa (attached hereto) to analyse the potential traffic impacts of the proposed changes to the development. The study found that the proposed changes to the development will have the potential to generate 162 peak hour trips (63 in, 99 out during AM peak hour and vice versa during the PM peak hour). The study found that the potential peak hour trips are not expected to have more of an impact on the surrounding road network than the previously approved proposal (including a business erf and two institutional erven).

The study recommends that the proposed development be considered for approval from a traffic point of view. The study also the suggested the following:

- That to accommodate the proposed development-traffic, a roundabout is suggested at the Sonstraal Road/Access intersection, the size of which is proposed to accommodate turning movements of large vehicles.
- That internal road reserves are minimum 10 metres, with the access section 16 metres and the 'main' route 13 metres, whilst the internal streets are 5,5 to 6,0 metres.
- That refuse removal will be handled by way of Municipal kerbside collection, for which the internal streets will be designed.
- That parking will be provided on the individual erven in line with Drakenstein Municipal requirements, with sufficient available isle width between the erven and the opposite edge of the internal streets
- That public transport embayments be provided along the Sonstraal Road outbound legs of the access-intersection, with accompanying sidewalks in the vicinity of the said embayments.

4.2.2 Services

An Engineering service report was done by UDS Africa, attached hereto, to analyse the requirements in terms of the engineering services relating to the proposed changes made to the project. The report found that the requirements for engineering services associated with the proposed changes should not be a problem and will not exceed the threshold of the Municipality's capacity. An engineering layout plan has not been finalised yet, as discussion between UDS Africa (consulting engineers) and the Drakenstein Municipality's Engineering Department is still ongoing. The Engineering layout plan will however be subject to the Municipal Regulations and best practises. Latest correspondence indicates that Municipality agreed to the develop and subsequent engineering requirements in principle, subject to the approvals by the relevant departments.

Water Reticulation:
The Annual Average Daily Demand for water will be approximately 1359 kl/d. The internal water reticulation network of the proposed development will comply with the minimum specifications as indicated in the "Red Book- Guidelines for Human Settlement Planning and Design" and the municipal standards from Drakenstein Municipality.

It is proposed that the development connects to the existing 200mm pipeline located west of the site in Van Der Stel Road, See Figure 1 below.

Sewage:
The sewerage flow for the proposed development is calculated (in accordance with the Guidelines for Human Settlement Planning and Design) as follows:

Table 2: Sewage Demand Calculation

Sewage Flow	
Average Dry Weather Flow (ADWF) (90% of annual average daily water demand)	122 310 l/s (1.416 l/s)
Peak Factor	3.25
Peak Dry Weather Flow (PDWF)	4.600 l/s
Peak Wet Weather Flow (PWWF)	5.291 l/s

The internal sewer reticulation network of the proposed development to comply with the minimum specification as given in the "Red Book - Guidelines for Human Settlement Planning and Design" and the municipal standards from Drakenstein Municipality. The proposed connection point for the development will be on the new 250mm outfall sewer to be located west of the site in Van Der Stel Road.

Stormwater system:
The site has a gentle and uniform fall from contour level 110m in the southeast corner of the site to the 95m contour level in the northwest corner. The average slope over the site is 2.1%. A full stormwater management plan has been prepared for the proposed housing development, this will be submitted as a separate report to the engineering services report. An attenuation facility needs to be provided on site to accommodate the 1:50 year flood and

only allow the 1:2 year pre-development run-off to exit the site as per the requirement set by Drakenstein Municipality.

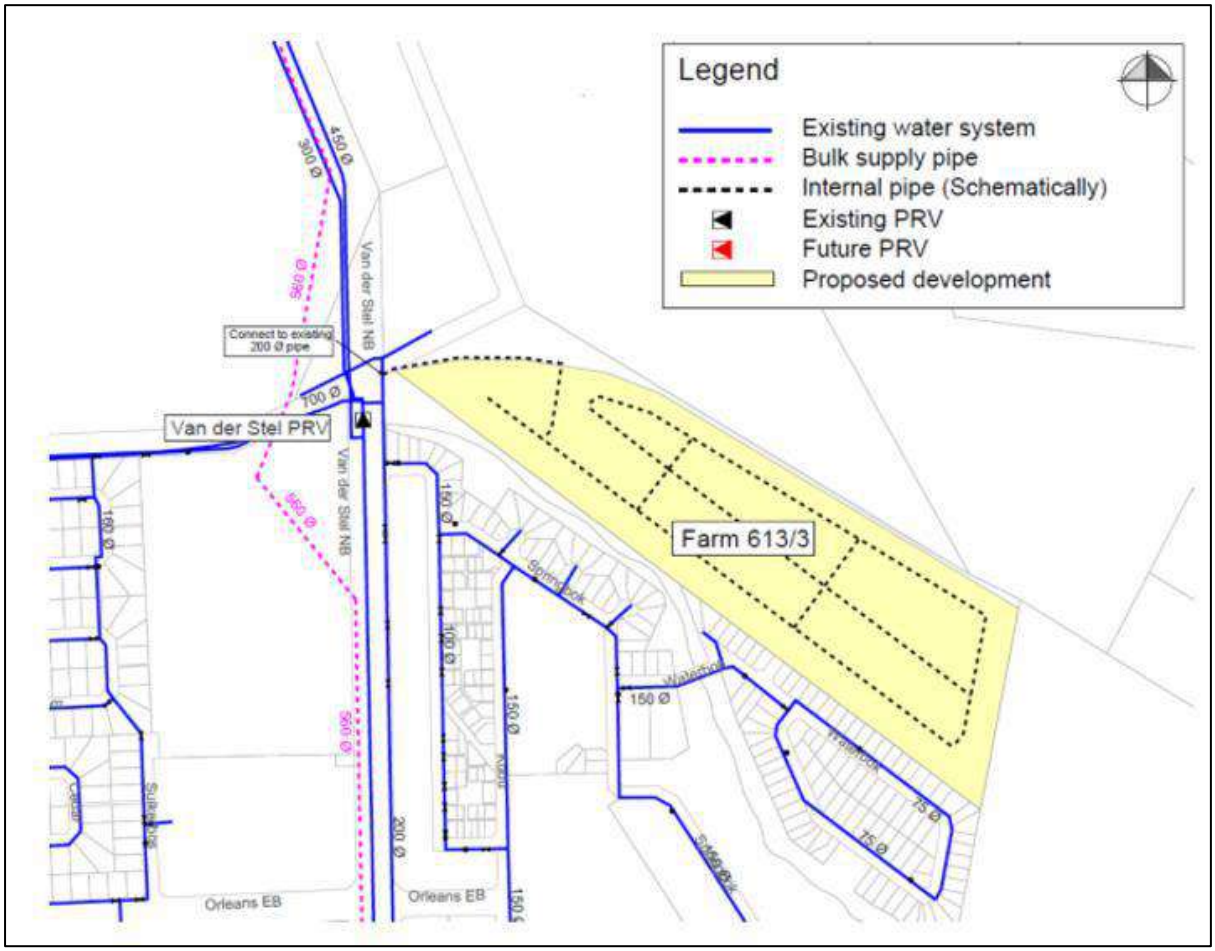

Figure 1: Existing Water Reticulation Services

4.2.3 Visual Impact

A Visual Impact Assessment was done by New World Associates (attached hereto to analyse the potential impacts of the proposed changes to the development. The study found that the visual and aesthetic sensitivity of the area is moderate to low while the anticipated impact on the landscape is moderate. The proposed changes to the development would not have significant additional impacts from a visual and aesthetic perspective.

The study made recommendations to minimise visual and aesthetic impacts with particular reference to a landscape plan, fynbos planting, uniform fencing, residential scheme colouring and landscape maintenance.

4.2.4 Freshwater impact

A Freshwater Impact Assessment was done by Virdus Consult S.L (attached hereto) to analyse the potential additional impacts posed by the proposed changes to the development. The study found that the proposed changes to the development does not pose significant additional risk to the freshwater ecosystem, adjacent and downstream of the project location.

The study recommended that the 10m conservation buffer (No go area) from the Boontjies River which was suggested by previous studies and included in the proposed subdivision are adhered to, that illegal dumping is prevented and waste managed, that overgrowth of nuisance aquatic vegetation is managed (impedes water flow and supply), that indigenous vegetation is used for landscaping (promotes biodiversity), that access to neighbouring residents is restricted and finally that an adaptive management approach is followed, which involves the monitoring of the mitigation measures and unexpected impacts.

The project, including changes made to the project, can be supported if all mitigation measures are implemented and the success thereof and unexpected impacts are monitored.

4.3 Impact summary

The table below provides a comparative summary of the nature and significance of overall impacts originally assessed versus those associated with the proposed changes to the project. As can be seen in this summary table, the proposed amendment does not change the nature, nor the significance of the impacts already assessed.

Table 3: Impacts of the proposed amendment to authorised development

Impact	**Significance of impact as authorised**	**Overall significance of impacts, including proposed amendment**
Traffic	Negative- Low	Negative- Low
Visual	Negative- Moderate	Negative- Moderate
Freshwater Ecosystem	Negative- Low	Negative- Low
Services	Negative- Moderate	Negative- Moderate
Social	Positive- Moderate	Positive- Moderate

As can be seen in in the table above, the proposed amendment to the mixed-use development does not change the nature, nor the significance of the impacts already assessed.

5. ADVANTAGES AND DISADVANTAGES ASSOCIATED WITH THE PROPOSED CHANGES

Advantages

As mentioned previously the proposed changes to the development would improve the feasibility thereof, by making better use of the available land. The land is not currently being used for agriculture, so the opportunity cost associated with the development is low. This would not necessarily be the case for future similar developments. As the demand for housing continues to grow, the need for clearing agricultural land and natural land would also increase. With little available land the opportunity cost for future similar housing development would be much higher. The proposed changes to the development would reduce or at least delay the need for clearing land for housing developments in the future, as more housing would be made available.

The changes made to the proposed development is better equipped to address the issue of lack of housing development, raised in the Municipality's Integrated Development Plan (IDP).

Disadvantages

The proposed changes to the development would increase the number of residents of the development. This leads to an increase in the demand for engineering services such as water, sewage and electricity, and municipal service such as waste disposal. Although discussion between the consulting engineers and the municipality indicates that sufficient supply of water to the site should not be a problem, the site development will also not be a tipping point for the upgrade of the treatment plant.

It is concluded that the advantages of the proposed amendments outweigh the disadvantages from an environmental perspective. The project, including the changes made, will have an overall positive socio-economic impact. The potential impacts on the environment will be mitigated, as to limit the impacts.

As a result, the implementation of the proposed amendments is considered acceptable from an environmental and social perspective and will not result in additional environmental impacts which were not considered in the original environmental process for the proposed development.

6. MANAGEMENT AND MITIGATION MEASURES

As required in terms of Regulation 32(1)(a)(iii), this assessment report must provide any additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed amendment.

Based on the outcome of this environmental assessment, it is recommended that the following additional mitigation measures be included as conditions of authorisation of the amendment decision:

- As the proposed changes includes the increase of residential units, it will result in an increase in residents, thus putting more pressure on the environmental resource in the immediate vicinity (The Boontjies River). Access to the freshwater ecosystem should therefore be restricted. Signs on the importance of the resource should be erected to educate residents on the importance of protecting it.
- Illegal dumping currently poses a great threat to the freshwater ecosystem abutting the study site. A concerted effort should therefore be made to implement a waste management plan, as to ensure that the increase in residents does not result in an increase of illegal dumping.
- To mitigate the impact of the anticipated traffic, a traffic circle should be established in Sonstraal Road. A sidewalk along the same road is also proposed as to accommodate the increase in foot traffic and mitigate its impacts.
- To mitigate the visual impact that the changes made to the development will have, mitigation measures are required. These include having a uniform design and colour

scheme for the houses, having gardens with indigenous vegetation, uniform scheme fencing and ongoing landscape maintenance.
- To mitigate the increased impact on the municipal service infrastructure due the proposed changes to the development, a concerted effort should be made to draft engineering service management plan, which is based on best practice. These plans should be agreed upon and approved by relevant competent authorities.

Mitigation measures for the various phases of the proposed development, as outlined in the Environmental Management Programme (EMPr) has also been amended to reflect the changes associated with the proposed amendment application. Please see Appendix G for the changes made to the EMPr.

7. PUBLIC PARTICIPATION PROCESS

A public participation plan has been compiled and approved by the competent authority.

This plan was submitted in compliance with regulation GNR660 published on 05 June 2020 in terms of the Disaster Management Act (57/2002) and titled: Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licences. In compliance with section 5.1 and annexure 2 of these regulations, a public participation plan must be presented to the competent authority for approval prior to implementation. Please find the approval of the Public Participation Plan attached hereto (Appendix I).

This application is for a part 2 amendment of an existing EA and is submitted in terms of regulation 31. The public participation requirements for a part 2 amendment are contained in regulation 32(1)(aa), which requires that the report (i.e. amendment assessment report) be subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential interested and registered interested and affected parties, including organs of state, which have jurisdiction in respect of the relevant activity and the competent authority.

8. CONCLUSION AND RECOMMENDATIONS

This environmental process is currently being undertaken to present the details of the proposed amendment to potential and registered I&APs and to identify and assess environmental impacts, issues and concerns that may result from the proposed amendment to the Environmental Authorisation.

Virdus Works Environmental is of the opinion that the information contained in this Amendment Assessment Report and the documentation attached hereto is sufficient to allow the registered and potential I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the amendments applied for.

This environmental process has not identified any fatal flaws nor major impacts with the proposed amendments. As such, it is the EAP's view that the proposed amendments can be considered for authorisation.

All participating specialists have confirmed that the proposed changes made to the mixed-use development is unlikely to result in any additional impacts nor increase any of the respective impacts previously assessed.

All stakeholders are requested to review this Draft Amendment Assessment Report and the associated appendices, and provide comment, or raise issues of concern, directly to Virdus Works Environmental within the specified 30-day comment period. All comments received during this comment period will be considered and incorporated into the Final Amendment Assessment Report that will be submitted to DEA&DP for decision making.

APPENDIX A: Locality Map

Map of Portion 3 of Nederburg Farm Estates No. 613

Legend

Portion 3 of Nederburg Farm Estates No. 613.

0 0.1 0.2 0.4 km

Scale: 1:10 000

Date created: May 27, 2021

Compiled with CapeFarmMapper

Western Cape Government
Agriculture

APPENDIX B: Freshwater Impact Assessment

VIRDUS CONSULT

ECOLOGICAL SERVICES

MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG NO. 613, PAARL, WESTERN CAPE.

Freshwater Assessment

Ludwig v.d Merwe

April 2021

Virdus Consult S.L.

Freshwater Assessment

For

Proposed mixed-use development on Portion 3 of Farm Nederburg No. 613, Paarl, Western Cape. DEA&DP Ref No. 1 6/3/3/5/B3/28/1069/20

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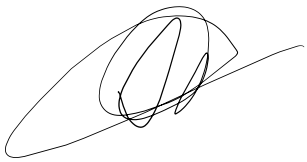
DISCLAIMER

This report is produced exclusively for the client, and the author is not aware of any interest of or reliance by any other party other than the client in or on the services rendered. This report, in its entirety, must be read and used as a unit. Any selective reading or use may lead to out-of-context inferences or misinterpretations. This assessment is based on professional opinion and experience. Care has been taken to ensure attention to detail and completeness of the requested services by the client, considering the temporal limitations associated with ecological assessments. Nonetheless, representative risks to the freshwater environment were defined for this report.

DECLARATION OF INDEPENDENCE

I, Ludwig van der Merwe, as the appointed specialist hereby declare that other than fair remuneration for work performed in terms of this report, have no business, financial, personal, or other interest in the activity or application and that there are no circumstances that may compromise my objectivity.



Ludwig van der Merwe
Signed 12 April 2021

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EXECUTIVE SUMMARY

ASLA DEVCO Pty (Ltd) has plans for the development of a mixed-use development complex on Portion 3 of Nederburg Farm Estates No. 613. The development will consist of 305 residential erven, an institutional building, an internal street, and the remainder road (Sontraal Road). See Appendix A for the proposed subdivision. An Environmental Authorisation has already been granted. However, there have been significant changes made to the scale of the proposed project. A freshwater impact assessment is required to supplement the compulsory Part Two Environmental Authorisation application. Consequently, this report assessed the potential impacts posed by this development (including the changes) to the freshwater ecosystem, as requested by appropriate Acts.

The freshwater ecosystem adjacent to Portion 3 of Farm Nederburg Farm Estate No. 613 was not delineated as a wetland but is connected to a NFEPA wetland further downstream. The freshwater ecosystem within the study site is regulated by legislation as it falls within 500m of a NFEPA classified wetland. The Ecological Importance and Sensitivity Classification (EISC) of the freshwater ecosystem was found to be Moderate. The freshwater ecosystem has been degraded, mainly due to anthropogenic pressures. Despite this, the freshwater ecosystem could potentially provide valuable regulating, supporting and provisioning ecosystem services.

Pipes for services such as water and sewage are currently planned to be connected to an existing service point on the north-eastern side of the property, meaning no pipes would need to be constructed over the Boontjies River. Therefore, from an impact viewpoint, the proposed development, including changes made, is not expected to impede, or divert the flow of water, and would have only a limited impact on the bank and characteristics of the watercourse abutting the study site. Due to the low impacts posed by the development, a Section 21 and (c) and (i) water-use licence in terms of the National Water Acts (NWA) is not required for this development, but rather a General Authorization for 21 (i). This view was shared by previous accessors since a General Authorisation Water Use License has already been issued. An application for the amendment of the current Water Use License would need to be done in the future.

It is recommended that the 10m conservation buffer (No go area) from the Boontjies River which was suggested by previous studies and included in the proposed subdivision are adhered to, that illegal dumping is prevented and waste managed, that overgrowth of nuisance aquatic vegetation is managed (impedes water flow and supply), that indigenous vegetation is used for landscaping (promotes biodiversity), that access to neighbouring residents are restricted and finally that an adaptive management approach is followed, which involves the monitoring of the mitigation measures and unexpected impacts.

The project, including changes made to the project, can be supported if all mitigation measures are implemented and the success thereof and unexpected impacts are monitored.

INTRODUCTION

Freshwater conservation in a development context

With no substitute, fresh water is an essential resource for human life and for many natural systems that support human well-being. Despite this, expanding human activity has extensively altered the planet's freshwaters, with modification impacting the physical, chemical, and biological features of aquatic systems (Carpenter et al., 2011). As such freshwater ecosystems and their subsequent goods and services are threatened globally. South Africa, which is classified as a water-scarce country, is no exemption. The Drivers are climate change, hydrological flow modification, land-use change, chemical inputs, aquatic invasive species, and harvest (Ormerod et al., 2010). Drivers and responses interact, and their relationships must be disentangled to understand the causes and consequences of change as well as the correctives for adverse change in any given watershed (Carpenter et al., 1992).

Over half of humanity now lives in towns and cities, and by 2030 that fraction will have increased to 60%. Meaning, that in slightly over two decades, from 2010 to 2030, another one and a half billion people will be added to the population of cities (Elmqist et al., 2017). Creating healthy, habitable, urban living spaces for so many more people will be a major global challenge. The trend of rapidly expanding urban environments is evident at the project level, as the necessity for housing is responsible for the need for development. Consequently, the growing demographic pressure on the environment, especially on water resources, highlights the importance of the conservation of urban freshwater systems.

Fortunately, South African law provides for the holistic regulation and management of freshwater ecosystems. The relevant legislation includes the National Water Act (NWA Act 36 of 1998), the National Environmental Management Act (NEMA Act 107 of 1998), and more recently the National Environmental Management: Biodiversity Act (NEM: BA Act 10 of 2004). These regulations essentially help govern, economic, social, and environmental sustainability in developing-world context. Consequently, it supports the balance of the delicate triple bottom line.

Report scope

ASLA DEVCO Pty (Ltd) has plans for the development of a mixed-use development complex on Portion 3 of Farm Nederburg No. 613, Paarl, Western Cape. The site is accessed via Sonstraal Road and borders the Boontjies River, a freshwater non-perennial watercourse. The study site falls within the G10D Quaternary Catchment. The development will consist of 305 residential erven, an institutional building, an internal street, and the remainder road (Sontraal Road). See Appendix A for the proposed sudivision. This triggers Listed Activity No. 19 and 28 set out Listing Notice 1 (GN No. R. 983) and Listed Activity No. 9 and 11 of GN No. R. 544, which is not similarly listed. A previous Basic Assessment Report (BAR), which included a Wetland Delineation and a Baseline Aquatic Study, was done, and a subsequent Environmental

Authorisation (EA) granted. The scope of the project has since changed significantly (see Table 1), therefore a Part Two amendment application of the EA should be lodged to the DEA&DP. The National Water Act regulates activities that may impede or deviate the flow characteristics of a watercourse (Section 21 (c)) or alter the beds, banks, course, or characteristics of a watercourse (Section 21 (i)), which can be triggered by the proposed development. The main aim of the assessment is, therefore, to help the appointed Environmental Assessment Practitioner (EAP) gauge the potential additional impacts posed by the changes made to the proposed development on the freshwater ecosystem, as requested by the appropriate Acts.

Table 1: Proposed new subdivision of Portion 3 of Nederburg Farm Estates No. 613, Paarl.

Land use	**New Layout**	**Area (ha)**	**Approved (old) layout**	**Area (ha)**
1.Residential	305	6.45	214	5.45
2.Open spaces	5	1.01	3	0.96
3.Institutional	1	0.22	2	0.39
4.Business	0	0.00	1	0.15
5.Internal street	1	2.20	1	2.85
6.Remainder road (Sonstraal Road)	1	1.02	1	1.02
Extent:		10,84		10.84

WETLAND CLASSIFICATION AND CHARACTERISTICS

Wetland Basics

The term "wetland" is a family name given to a variety of ecosystems, ranging from rivers, springs, seeps and mire in the upper catchment, to midlands marches, pans and floodplains, to coastal lakes, mangroves swamps and estuaries at the bottom of the catchment (DWA, 2005). These ecosystems all share a common primary driving force, namely water, as its prolonged presence in a wetland is a fundamental determinant of soil characteristics and plant and animal species composition (ibid). The National Water Act defines wetlands as "*land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.*"

Wetlands must have one or more of the following attributes: 1) Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation. 2) The presence, at least occasionally, of water-loving plants (hydrophytes). 3) A high water table that results in saturation at or near the surface, leading to anaerobic conditions developing in the top 50cm of the soil. Wetlands are therefore best described as those areas that have water on the surface or within the root zone for long enough periods throughout the year to allow for the development of anaerobic conditions (lacks 'free' oxygen). These conditions allow for the development of unique soil conditions (hydric soils) and support vegetation developed adaptations to these flood conditions.

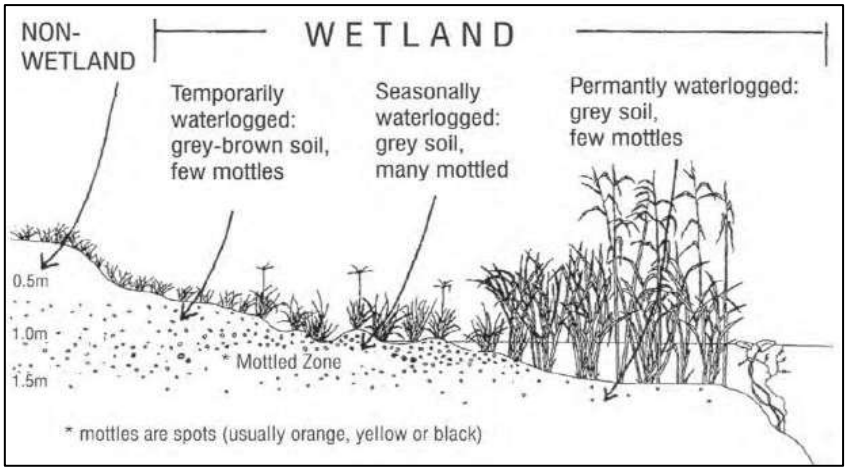

Figure 1: Cross section through a wetland, indicating how the soil wetness and vegetation indicators change as one moves along a gradient of decreasing wetness, from the middle to the edge of the wetland (DWA, 2005).

Wetland delineation and ground-truthing

To determine the status, extent and specific hydrogeomorphic (HGM) wetland unit for the Boontjies River, the National Freshwater Ecosystem Priority Area (NFEPA) and National Geospatial Information (NGI) databases were consulted using the CapeFarmMapper version 2.3.4 online software (Western Cape Department of Agriculture). Additionally, one site visit was made, on 23 March 2021, to ground-truth the desktop assessment. The site visit was done after a rainfall event, towards the end of the dry season. During the site visit the wetland delineation procedure, as set out by the Department of Water Affairs and Sanitation (DWA, 2005), was considered. The four guidelines to delineating a wetland are:

- The *Terrain Unit Indicator* - helps to identify those parts of the landscape where wetlands are more likely to occur.
- The *Soil Form Indicator* - identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.
- The *Soil Wetness Indicator* - identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation.
- The *Vegetation Indicator* - identifies hydrophilic vegetation associated with frequently saturated soils.

Terrain Unit Indicator:
The terrain unit indicator is an important practical index for identifying those parts of the landscape where wetlands are likely to occur. A wetland usually qualifies as a valley bottom unit, see Figure 2 below. Some wetlands occur on steep to mild slopes higher up in the catchment, where groundwater discharge is taking place through seeps, which may not be recognisable as depression areas (DWA, 2005).

Soil Form Indicator:
Hydromorphic soil displays unique characteristics resulting from its prolonged and repeated saturation. When soil becomes saturated for an extended time, roots and microorganisms

gradually consume oxygen present in pore spaces within the soil. In an unsaturated soil, oxygen consumed in this way would be replenished by diffusion from the air at the soil surface. However, since oxygen diffuses 10 000 times more slowly through water than air, the replenishing process is significantly slower. Therefore, once oxygen is depleted it effectively remains anaerobic. This wetland effective at removing many pollutants, as the chemical reaction required to achieve this, can only take place in the absence of oxygen (DWA, 2005).

Soil Wetness Indicator:

The colours of various soil components are often the most diagnostic indicator of hydromorphic soils. The colour of these components is strongly influenced by the frequency and duration of soil saturation. Generally, the higher the duration and frequency of saturation in a soil profile, the more prominent grey colours become in the soil matrix (DWA, 2005). Coloured mottles, a feature of hydromorphic soils, are usually absent in permanently saturated soils, and are at their most prominent in seasonally saturated soils, becoming less abundant in temporarily saturated soils until they disappear completely in dry soils. Generally, in mineral soils, a grey soil matrix and/or mottles must be present for the soil horizon to qualify as having signs of wetness in the temporary, seasonal and permanent zones.

Temporary Zone

The boundary of the wetland is defined as the outer edge of the temporary zone of wetness, which is characterised by:

- Minimal grey matrix (<10%)
- Few high chroma mottles
- Short periods of saturation (< three months per annum)

Seasonal Zone

The seasonal zone of wetness is characterised by:

- Grey matrix (>10%)
- Many low chroma mottles present
- Significant periods of wetness (at least three months per annum)

Permanent Zone

The permanent zone of wetness is characterised by:

- Prominent grey matrix
- Few to no high chroma mottles
- Wetness all year round
- Sulphuric odour (rotten egg smell)

Vegetation Indicator:

Vegetation is a key component of the wetland definition in the National Water Act. However, using vegetation as a primary indicator requires undisturbed conditions and expert knowledge. Therefore, it is recommended that it is used with a focus on the soil wetness indicator. Plant communities undergo distinct changes in species composition as one move along the wetness gradient from the centre of a wetland to its edge, and into adjacent areas (Figure 1; Table 2). These variabilities in species composition provide valuable clues for determining the wetland boundary and wetness zones.

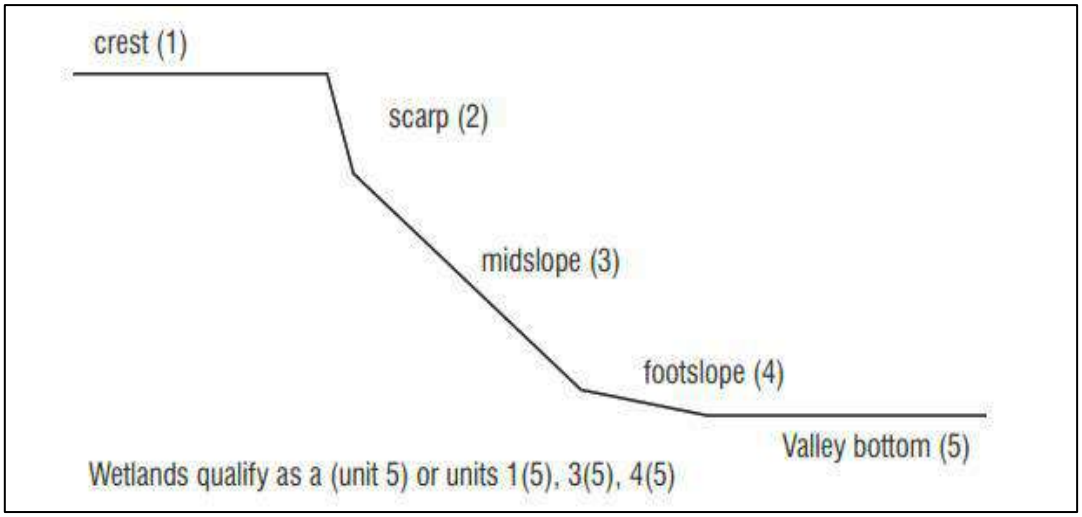

Figure 2: Terrain Unit Indicator (DWA, 2005)

Table 2: Relationship between wetness zones and vegetation types (DWA, 2005)

Vegetation	**Temporary**	**Seasonal**	**Permanent/ Semi-permanent**
If herbaceous:	Predominantly grass species; a mixture of species that occur extensively in non-wetland areas, and hydrophilic plant species which are restricted largely to wetland areas.	Hydrophilic sedge and grass species which are restricted to wetland areas.	Dominated by: (1) emergent plants, including reeds (*Phragmites australis*), a mixture of sedges and bulrushes (*Typha capensis*), usually >1m tall; or (2) floating or submerged aquatic plants.
If woody:	A mixture of woody species which occur extensively in non-wetland areas, and hydrophilic plant species which are restricted largely to wetland areas.	Hydrophilic woody species, which are restricted to wetland areas.	Hydrophilic woody species, which are restricted to wetland areas. Morphological adaptations to prolonged wetness (e.g. prop roots).

Findings

The primary-executed desktop study revealed that no NFEPA classified wetlands are present on Portion 3 of Nederburg Farm Estates No. 613. This was confirmed by the subsequent site visit, where no unrecorded signs of wetlands were found. The Boontjies River, which was viewed as a potential wetland, was revealed to rather be a riparian zone, due to the non-perennial nature thereof. The freshwater ecosystem on the study site is a regulated area as it falls within 500m of a NFEPA classified wetland. Three NFEPA classified wetlands (Artificial and Natural) were found in the surrounding area (Figure 3). Two are found across from Sontraal Road in the North and North-Eastern direction. These are however situated at higher altitude, therefore will be unaffected by the proposed development on the study site. The other

wetland, which is found across from the Van Der Stel and Sontraal Road intersection, situated in the Orleans Caravan Park, is fed by the Boontjies River. Meaning that the prosed development can indirectly impact the wetland.

The vegetation type is indicated as the critically endangered Swartland Alluvium Fynbos and Swartland Shale Renosterveld (Figure 4;5). Ground-truthing however, revealed that this is a relic description, as the vegetation present consists mostly of non-native (but not NEM:BA classified invasive species) and native plants (Figure 6). Despite no agriculture being practised on the site for at least the last 25 years, the state of the ecosystem is still best described as degraded. Satellite images on Google Earth illustrated that the site is cleared using heavy machinery and controlled burns every other year (Figure 7). This was confirmed by an interview with a long-term resident of the adjacent neighbourhood, who stated that the control was done for security reasons. The highest Biodiversity is maintained at intermediate levels of disturbance (Catford et al., 2011), the frequent disturbance for security reasons, favours fast-growing non-native grass species, as they outcompete indigenous vegetation. This is evident by the lack of tree and shrub species on the study site. The level of the biodiversity on the study site is therefore unsurprisingly low and the natural ecosystem does not appear to be intact any longer.

The Boontjies River is overgrown with non-native (but not NEM:BA classified invasive species) and native aquatic vegetation, with *Typha capensis* (Bulrush) being the most prevalent species in the lower reaches of the study site. Whilst *Cyperus textills* (Mat sedge) is more prevalent in the middle reaches (see Figure 8). Ground covering aquatic vegetation are also widespread among areas of the watercourse where banks are less steep and water flow are reduced. The flow of the Boontjies River is impeded by the overgrowth of nuisance vegetation in the watercourse. Erosion is present along the banks of the river, especially in areas with low vegetation cover. The river is greatly impacted by human activity as illegal dumping of household waste is present throughout the watercourse. The amount of waste is beyond the level of just the odd littering. A hole was next dug next to the watercourse to dump household waste. The household waste disposed of in the river impedes the flow of the river and cause pollution. The overgrowth of nuisance vegetation in the watercourse indicates that the Boontjies River is not a fast-flowing river and that there has not been a flooding event in recent times. Despite many viewing *Typha capensis* as a pest, the species provides a valuable regulating ecosystem service, as it removes pollutants from the watercourse. Better control of the growth of the nuisance species must be implemented though. Despite the degraded state of the freshwater ecosystem, little invasive alien plant infestation was noted.

The terrain of the study site is relatively flat, with the highest point being on the South Eastern side (110m) and the lowest on the North-Western side (95m) (see Figure 9). Surface water would predominately drain in a South Eastern direction, towards Sontraal Road. A full stormwater management plan will be prepared using best practices as per legislative requirements. Consequently, the proposed development would unlikely dramatically increase surface water runoff into the Boontjies River.

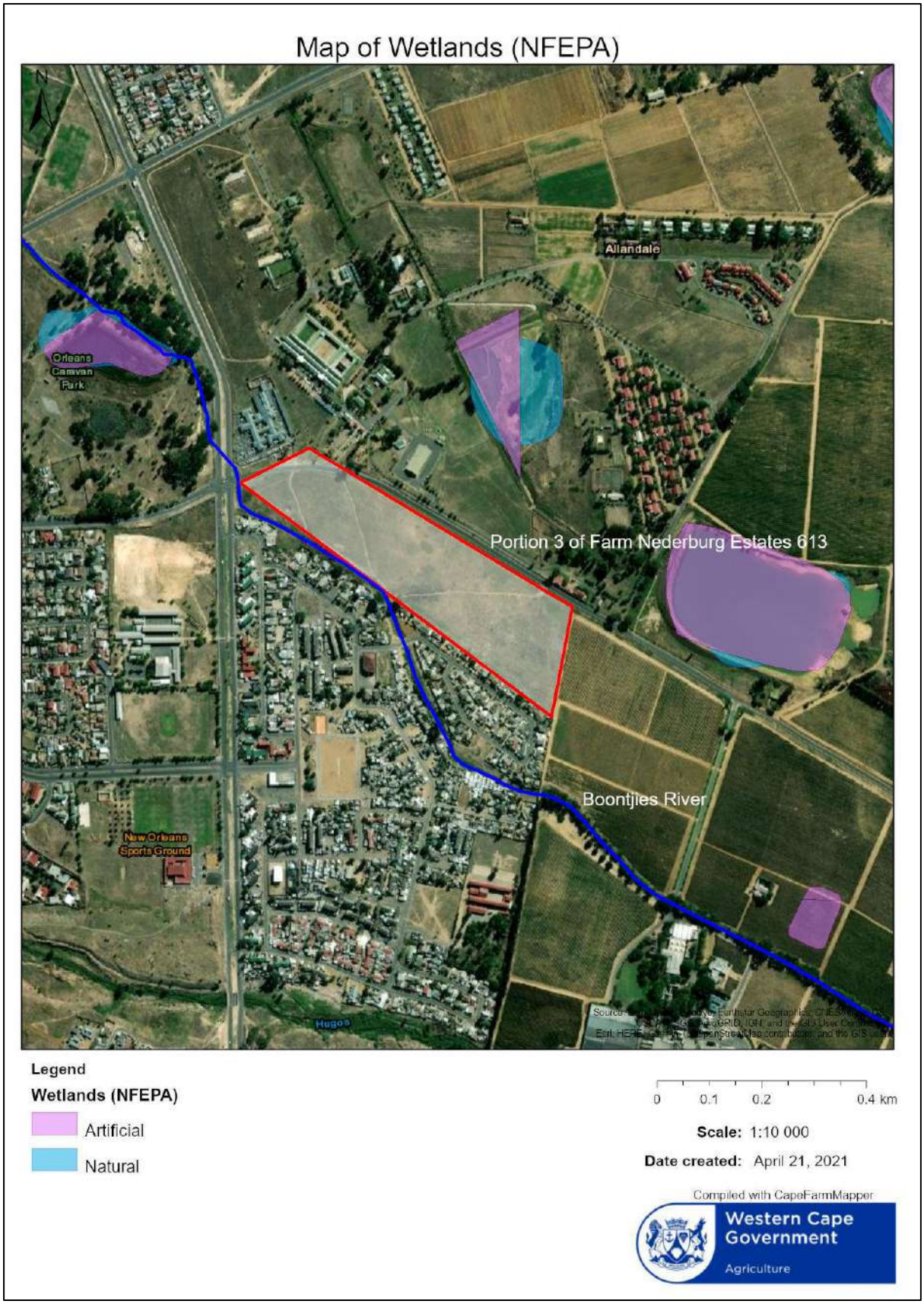

Figure 3: Map illustrating NFEPA classified wetlands in the proximity of the study site.

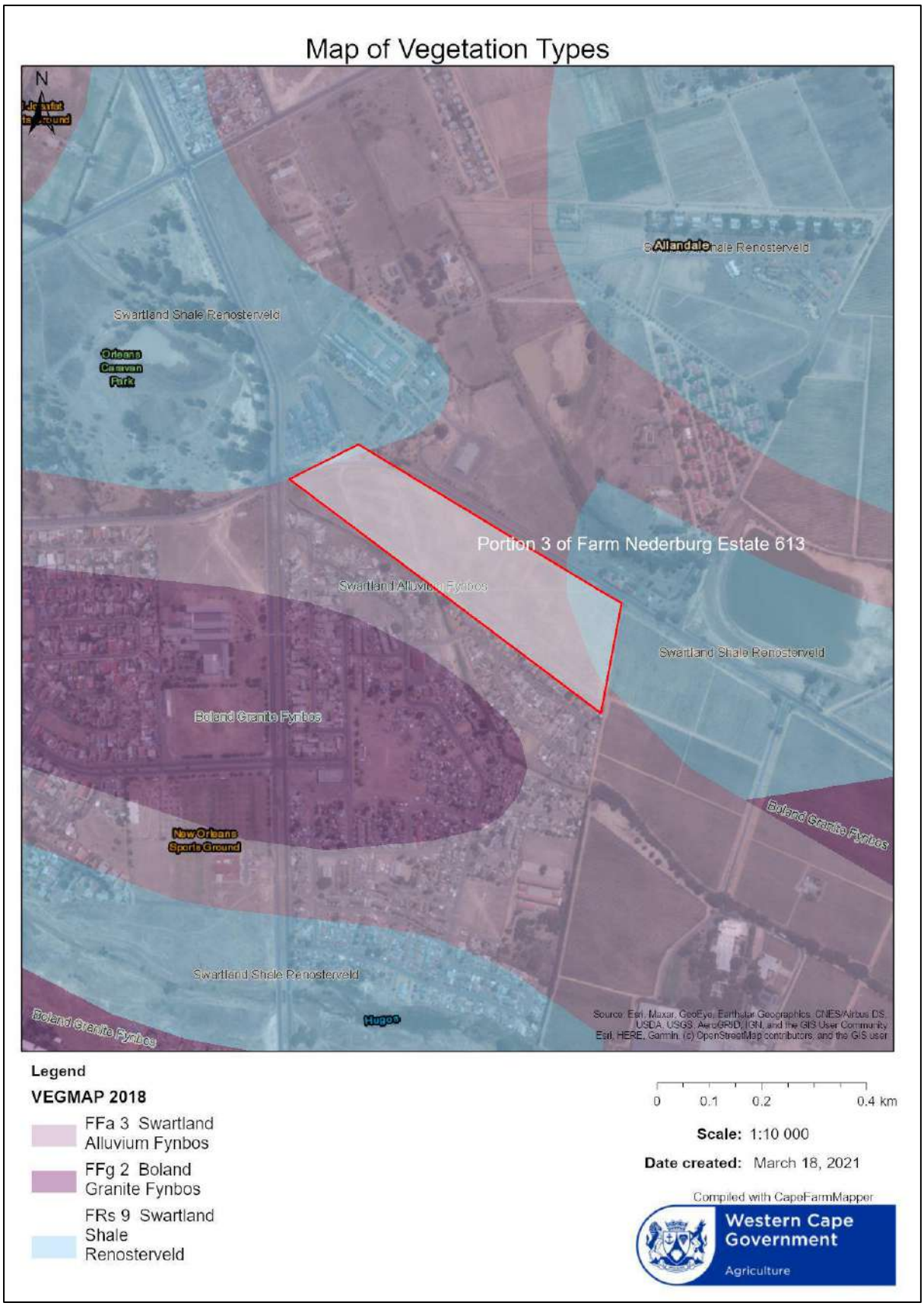

Figure 4: Map illustrating the Vegetation Types at the study site.

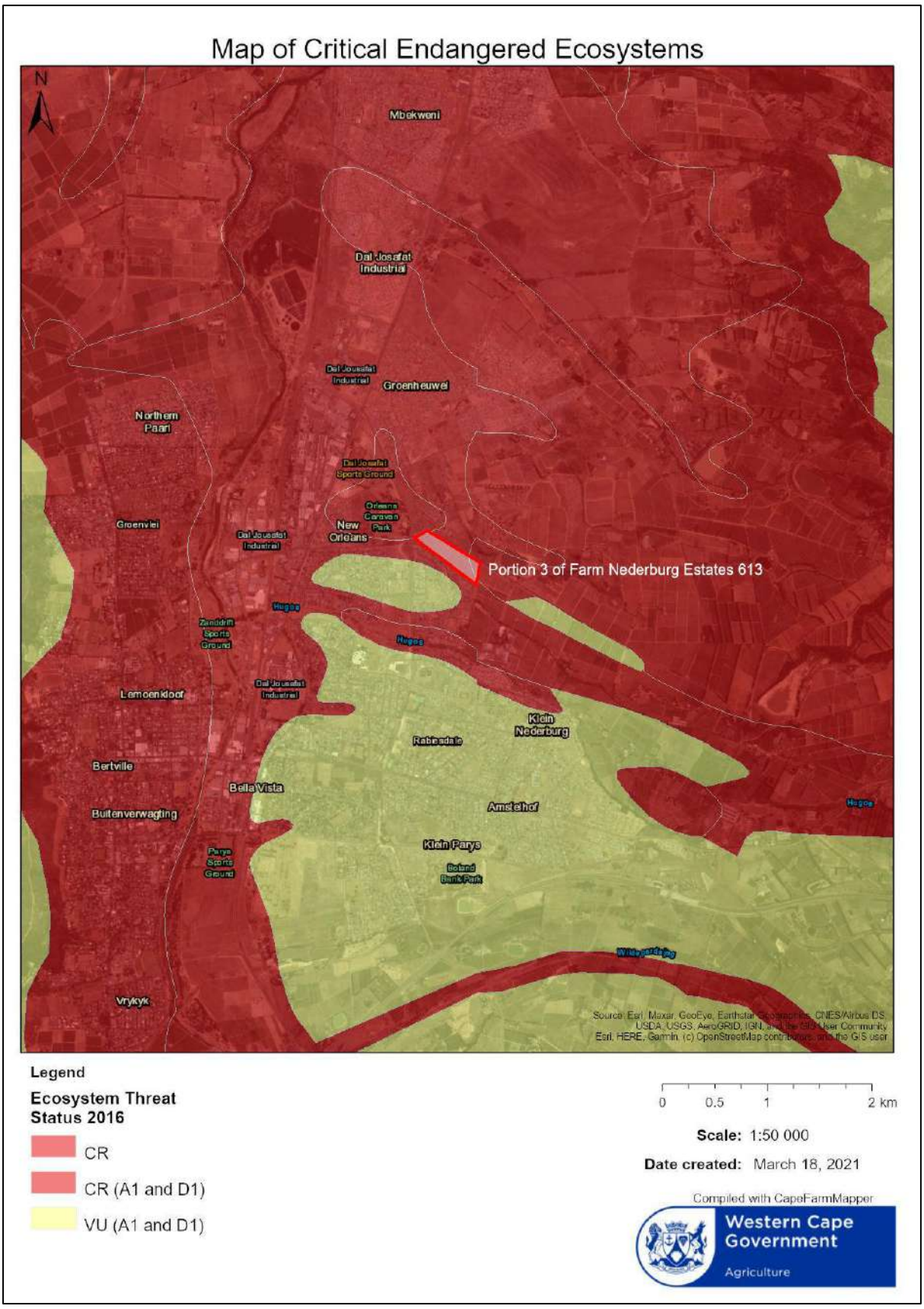

Figure 5: Map illustrating the Critical Endangered Ecosystems of the area.

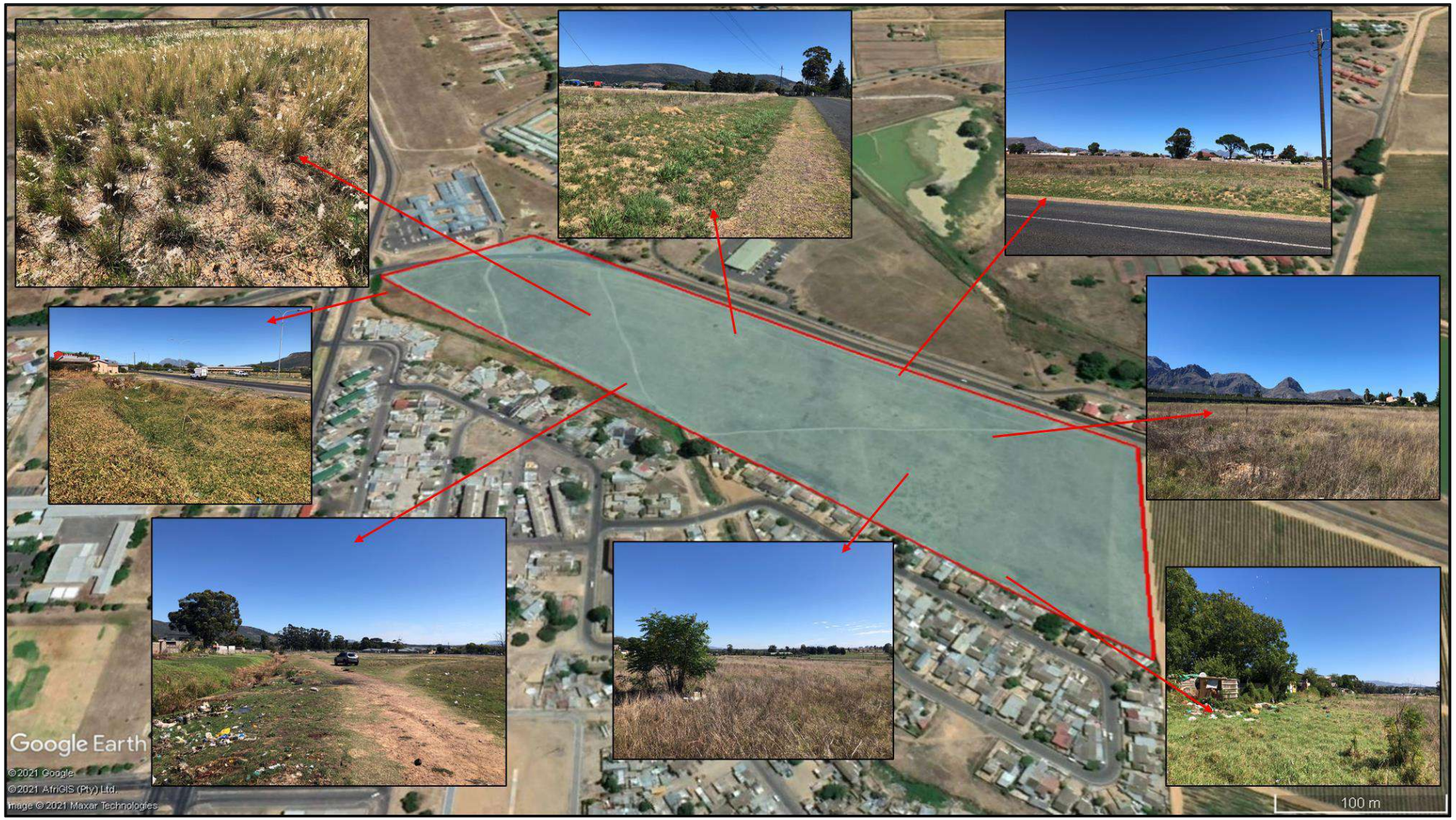

Figure 6: Images illustrating vegetation found at the study site. Grasses are the dominant vegetation species at the study site. Prevalent grass species included *Imperata Cylindrica* and *Pennisetum* (photos taken by Ludwig van der Merwe, March 2021).

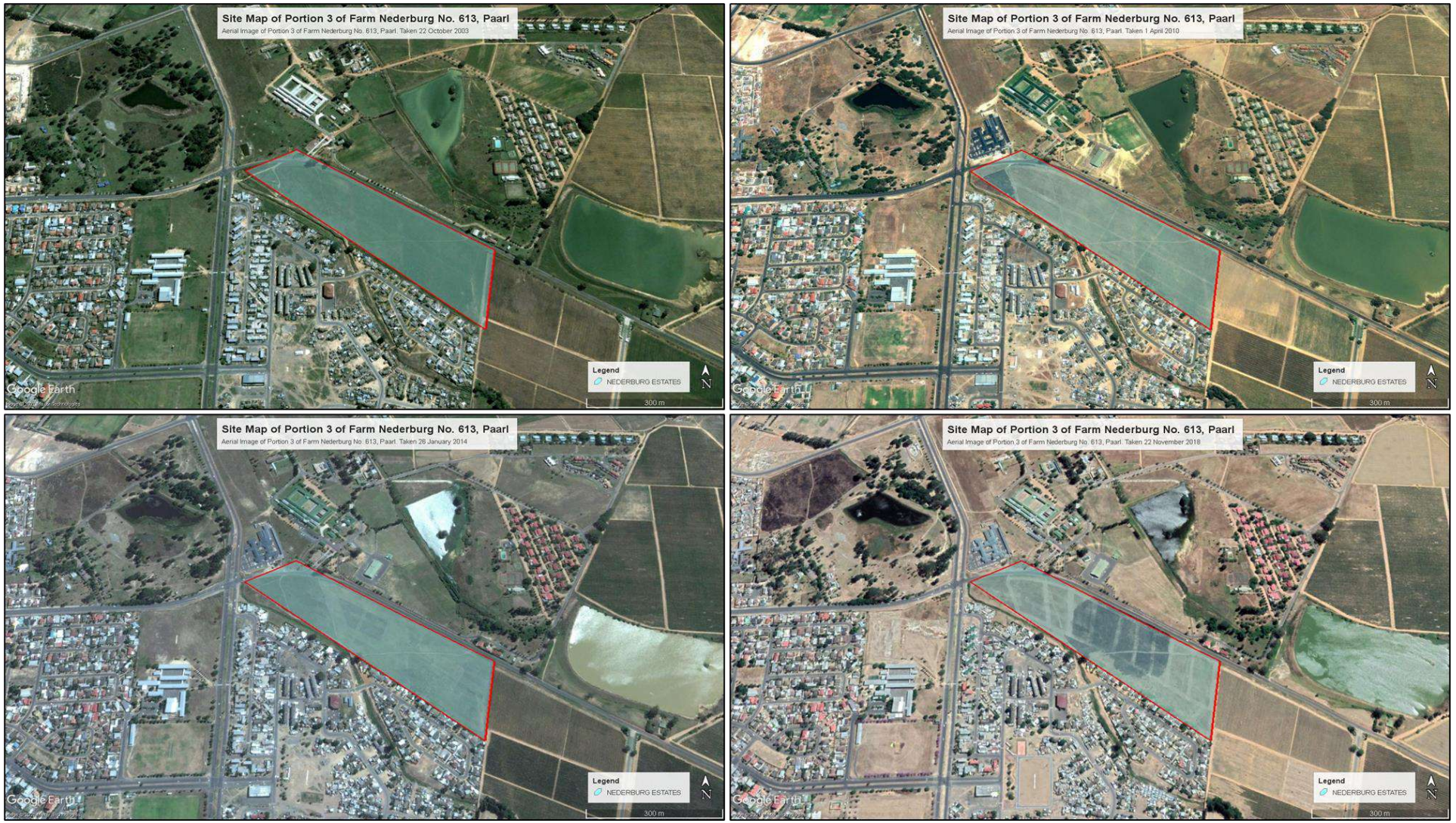

Figure 7: Timeline of satellite images illustrating the use of heavy machinery and fire for vegetation control for security reasons. Images was taken in 2003, 2010, 2014 and 2018, respectively. (Google Earth).

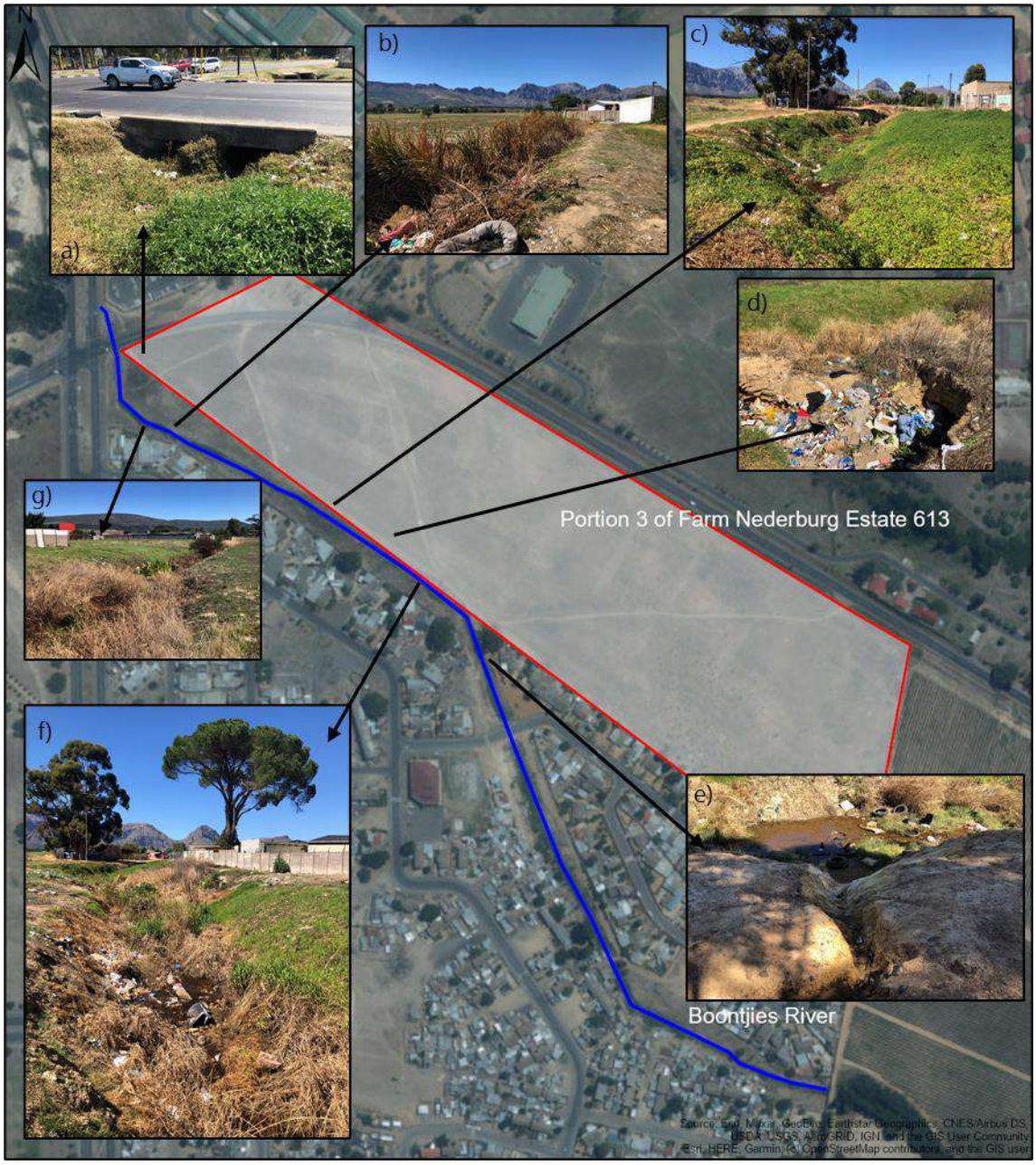

Figure 8: Images taken of the Boontjies River, adjacent to Portion3 of Farm Nederburg Estate 613. a) Illustrates the overgrowth of vegetation in the water canal downstream of the Boontjies River, at the edge of the farm portion. b) Illustrates the thick growth of *Typha capensis* (Bulrush) in the lower reaches of the Boontjies River on the study site. c) Illustrates the thick growth of *Cyperus textilis* (mat sedge) found in the water course along the middle reaches of the Boontjies River on the study site. d) Illustrates large hole (at least 1.5m x 2m) used for illegal dumping of household waste, found adjacent to the Boontjies River, along the middle reaches. e) Illustrates the presence of erosion along the banks of upper reaches of the Boontjies River, on the study site. Note the lack of vegetation cover. f) Illustrates the flow of the water being impeded by household waste objects and vegetation growth in the water course of the middle reaches of the Boontjies River on the study site. g) Illustrates the overgrowth of vegetation in the watercourse of the middle reaches of the Boontjies River on the study site. (photos taken by Ludwig van der Merwe, March 2021).

Figure 9: Map illustrating the contours of the study site. A gentle slope in a North Western direction is indicated.

Conservation rank

A very small section of Portion 3 of Nederburg Estate No. 613 is indicated as a Terrestrial Critical Biodiversity Area (Figure 10), although this delineation is inaccurate as the area indicated consists of lawns and a sidewalk on the opposite side of Sontraal road across from where the proposed development will take place. There is also no area on the farm portion that is indicated as an Ecological Support Area (Figure 11). The ecological state of the study site is in poor condition, this can be attributed to the previous agricultural practices on the site and the frequent use of heavy machinery and fire to control vegetation growth for security reasons ever since. There is little evidence to suggest that an effort was made to rehabilitate the area following its use for agriculture. The site is used for access by residents of the neighbouring New Orleans community. With access not being restricted, the site is used for the disposal of household waste, dead domestic animals and is also prone to littering. Areas used for access has little to no vegetation cover, due to disturbance caused by trampling.

Most household waste items were found in and around the Boontjies river. Household waste poses a threat to the freshwater ecosystem as it alters water flow and releases pollutants in the watercourse, leading to the degradation thereof. This poor ecological condition favours the establishment of invasive alien and non-native plants, as they have a higher tolerance for survival in degraded ecosystems (Henderson, 2001). However, despite the poor condition of the Boontjies River's freshwater ecosystem, no invasive alien plant infestation was recorded, and valuable regulatory, provisioning and supporting ecosystem services are still provided. The watercourse is however in dire need of better management, not only for the control of the illegal dumping but also the control of growth of vegetation in the watercourse.

Invasive alien plant (IAP) management is a notoriously expensive endeavour, due to the labour-intensive nature thereof. A Net Biodiversity Gain (Figure 12) of the Boontjies River freshwater water ecosystem could therefore be achieved at a lower cost to many of the waterways in the Western Cape, where IAPs infestations are rife.

Figure 10: Map that illustrates Critical Biodiversity Areas (CBAs) in area surrounding the study site.

Figure 11: Map that illustrates Ecological Support Area (ESA) in area surrounding the study site.

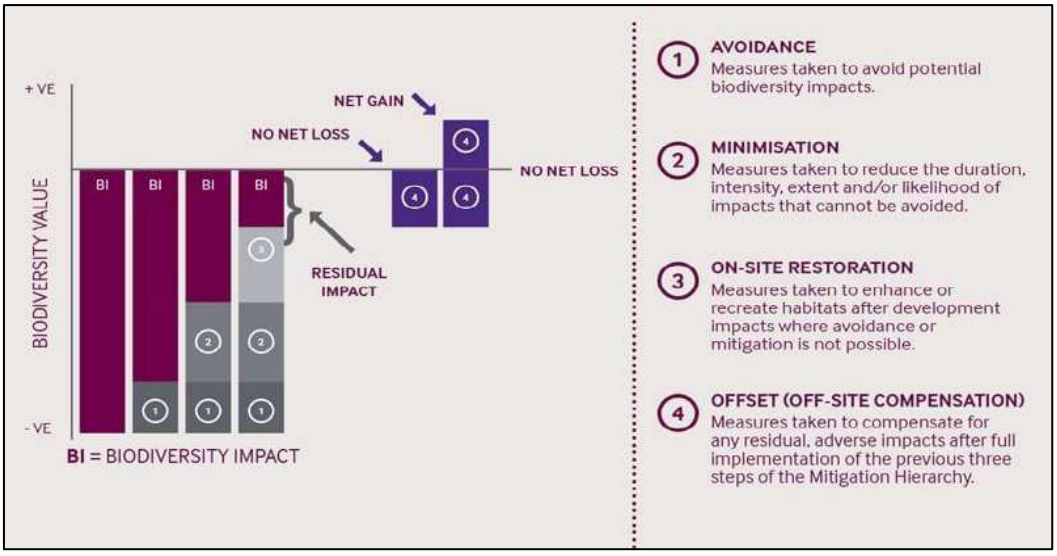

Figure 12: Diagram that illustrate how a Net Biodiversity Gain can be achieved (Baker et al., 2019).

ECOSYSTEM SERVICES ASSESSMENT

Despite being under threat by anthropogenic activities, the Boontjies River might still provide important ecosystem services (see Figure 13) in its urban environment. Therefore, this section assesses both the current and potential ecosystem services. This is done by employing techniques outlined in Kotze et al. (2009) to assesses the functional value of the freshwater ecosystem of the study site. Each ecosystem service benefit was thus rated from 0 for low to 4 for high. This assessment considered future drier climates as predicted for the broader region. Confidence in these scores is moderate to high as the site was physically inspected helping ascertain service provisioning.

From the ecosystem services assessment, where a maximum mean score of 4 can be achieved, the freshwater ecosystem of the study site currently has a low score, in line with degraded watercourses, but have the potential to improve ecosystem provisioning in the future (see Table 3). Firstly, streamflow regulation could increase through the removal of household waste items from the watercourse, which currently impedes streamflow. This increase can be maintained if the future dumping of household waste can be prevented and the overgrowth of nuisance vegetation in the watercourse is controlled. Secondly, erosion control can be increased through the revegetation of areas along the watercourse with no vegetation cover. Revegetation will also increase the carbon storage capacity of the ecosystem. Thirdly, biodiversity maintenance could increase through vegetation and waste management, which also could benefit downstream habitats. Finally, the establishment of an open space along the watercourse (as shown in the proposed subdivision) could increase recreational value. Education can increase by erecting signage on the proposed open space which highlights the importance of freshwater ecosystems and protection thereof. Information should also be provided on the importance of proper waste disposal. In turn, at present the relatively high phosphate, nitrate and toxicant assimilation is achieved through the large populations of *Typha capensis* and *Cyperus textills.*

Ecosystem services supplied by wetlands	Indirect benefits	Regulating and supporting benefits	Flood attenuation	The spreading out and slowing down of floodwaters in the wetland, thereby reducing the severity of floods downstream
			Streamflow regulation	Sustaining streamflow during low flow periods
			Water quality enhancement benefits: Sediment trapping	The trapping and retention in the wetland of sediment carried by runoff waters
			Water quality enhancement benefits: Phosphate assimilation	Removal by the wetland of phosphates carried by runoff waters
			Water quality enhancement benefits: Nitrate assimilation	Removal by the wetland of nitrates carried by runoff waters
			Water quality enhancement benefits: Toxicant assimilation	Removal by the wetland of toxicants (e.g. metals, biocides and salts) carried by runoff waters
			Water quality enhancement benefits: Erosion control	Controlling of erosion at the wetland site, principally through the protection provided by vegetation.
			Carbon storage	The trapping of carbon by the wetland, principally as soil organic matter
	Direct benefits	**Biodiversity maintenance**[2]		Through the provision of habitat and maintenance of natural process by the wetland, a contribution is made to maintaining biodiversity
		Provisioning benefits	Provision of water for human use	The provision of water extracted directly from the wetland for domestic, agriculture or other purposes
			Provision of harvestable resources	The provision of natural resources from the wetland, including livestock grazing, craft plants, fish etc.
			Provision of cultivated foods	The provision of areas in the wetland favourable for the cultivation of foods
		Cultural benefits	Cultural heritage	Places of special cultural significance in the wetland, e.g. for baptisms or gathering of culturally significant plants
			Tourism and recreation	Sites of value for tourism and recreation in the wetland, often associated with scenic beauty and abundant birdlife
			Education and research	Sites of value in the wetland for education or research

Figure 13: Diagram that explains the various ecosystem services provided by freshwater ecosystems (Kotze et al., 2009).

Table 3: Present and future ecosystem services potentially provided by the freshwater ecosystem at the study site.

Ecosystem Service	Present Potential	Future Potential
Flood attenuation	3	3
Streamflow regulation	1	2.5
Sediment trapping	1.5	1.5
Phosphate assimilation	1.5	1.5
Nitrate assimilation	1.5	1.5
Toxicant assimilation	1.5	1.5
Erosion control	2	2.5
Carbon storage	2.5	3
Biodiversity maintenance	2	3
Water supply for human use	0	0
Harvestable resources	0	0
Cultural significance	0	0
Cultivated foods	0	0
Tourism and recreation	0	1
Education and research	0	1
Mean Benefit	**1.1**	**1.5**

ECOLOGICAL IMPORTANCE AND SENSITIVITY (EIS)

The ecological importance and sensitivity (EIS) of the freshwater ecosystem at the study site were considered using methods described in Kleynhans (1999). The ecological importance of a watercourse is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales (Kleynhans, 1999). Ecological sensitivity (or fragility) refers to the system's ability to resist disturbance and its capability to recover from disturbance once it has occurred (resilience) (Milner, 1994). For the assessment, ecological importance and sensitivity is a general and unrefined estimation. It is strongly biased towards the potential importance and sensitivity of the watercourse delineation as expected under unimpaired conditions. Meaning that the present ecological status is generally not considered in determining EIS per se (Kleynhans, 1999).

A five-point (0 to 4) scoring system is used to assess the various aspects of EIS. Determinants are also assessed according to 1) biological determinants and 2) aquatic habitat determinants. The median of the scores will be calculated to derive the ecological importance and sensitivity category (Table 5).

The EIS assessment of the freshwater ecosystem of the study site revealed a moderately important and sensitive watercourse (Table 4, Table 5). The watercourse on the study site is important in that it provides regulating and provisioning ecosystem services, which benefits downstream aquatic habitats. These essential ecosystem services may be delivered directly within the limits of the urban areas, such as through the regulation of surface run-off (flood attenuation), or may occur beyond the urban limits within the wider watershed, such as the recharge of groundwater for urban drinking water supplies (McInnes, 2010). It also provides conservation stepping-stones (habitat corridors) for the fragmented aquatic habitats of the region. Habitat connectivity is the degree to which the landscape facilitates animal movement and other ecological flows (e.g., pollination, nutrient cycling, propagule dispersal) and is influenced by habitat corridors such as stepping-stones in this case. The benefits of habitat connectively to biodiversity are well documented globally. Gilbert-Norton et al. (2010) found that habitat corridors increase movement between habitat patches by approximately 50% compared to patches that are not connected with corridors. They also found that habitat corridors were more important for the movement of invertebrates, nonavian vertebrates, and plants than they were for birds.

Consequently, despite being degraded, the freshwater ecosystem of the study site is still ecologically important. This should serve as evidence for the resilient nature of the freshwater ecosystem or low sensitivity to changes.

Table 4: Assessment of the Ecological Importance and Sensitivity (EIS) of the freshwater ecosystem at the study site.

Biotic Determinants	**Score**	**Confidence**
Rare and endangered biota	0	3
Unique biota	1	2
Intolerant biota	1	3
Species/ taxon richness	1	3
Aquatic Habitat Determinants	**Score**	**Confidence**
Diversity of aquatic habitat types or features	2	2
Refuge value of habitat types	1	3
Sensitivity of habitat type to flow changes	2	2
Sensitivity to flow-related water quality changes	3	2
Migration route/corridor for instream and riparian biota	3	3
National parks, Wilderness areas, Nature reserves, Natural Heritage sites, Natural areas	2	3
Median Score	1.5	3
EIS category	Moderate	High Confidence

Table 5: Ecological Importance and Sensitivity categories (Kleynhans, 1999).

Ecological Importance and Sensitivity Categories	**General Description**
Very High	Quaternaries/delineations that are considered to be unique on a national or even international level based on unique biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually very sensitive to flow modifications and have no or only a small capacity for use.
High	Quaternaries/delineations that are considered to be unique on a national scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) may be sensitive to flow modifications but in some cases, may have a substantial capacity for use.
Moderate	Quaternaries/delineations that are considered to be unique on a provincial or local scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually not very sensitive to flow modifications and often have a substantial capacity for use.
Low/marginal	Quaternaries/delineations that are not unique at any scale. These rivers (in terms of biota and habitat) are generally not very sensitive to flow modifications and usually have a substantial capacity for use.

ENVIRONMENTAL IMPACTS WITH MITIGATION FOR PLANNED DEVELOPMENT

Table 6: Probable impacts to the freshwater ecosystem on the study site during and after construction, with mitigation strategies given for each.

KEY IMPACT		Without Mitigation	With Mitigation
DURING CONSTRUCTION			
Habitat and biotope degradation Contractors building the various infrastructures driving into wet areas, getting stuck, disturbing topsoil and plant communities. Mitigation: Contractors installing infrastructure to follow existing access roads where possible, which are already degraded and largely devoid of vegetation. The area that is unsuitable for development (10m buffer area from the Boontjies River) to be cordoned off during construction.	*Probability*	High Moderate Low	High Moderate Low
Dust generation and settling thereof in the waterbody Dust falling into the watercourse would increase sediment input and turbidity. Mitigation: Vehicles on the construction site should drive below 20 km p/h and must not brake suddenly to prevent tyres from kicking up dust close to the watercourse. Sand used for construction should be stored away from the watercourse, using the correct measures to prevent wind from carrying it into the watercourse.	*Probability*	High Moderate Low	High Moderate Low
Fuel and oil contamination via leaking vehicles Construction involves large vehicles that may leak fuel and oil from time to time. Mitigation: Manage trucks, pumps, mixers, skips, hand tools to be in good functioning condition, report any accidental leak immediately to the site environmental officer and, in general, lessen access to vehicles from driving within 15m away from the watercourse. Petroleum and other hazardous chemicals should be stored in an allocated area, away from the watercourse. Construction should take place during the low-flow period (summer in Western Cape), to limit leaked materials being transported by water.	*Probability*	High Moderate Low	High Moderate Low
Changing landscape hydrology by obstructing or deviating water flow Construction of sewage and water pipes, across the watercourse (currently not proposed), and the building of residential units within 32m of a watercourse.	*Probability*	High Moderate Low	High Moderate Low

Mitigation: No construction may take place in the delineated watermark, so as not to deviate surface flow. The watercourse and the surrounding 10m buffer area should be marked as a no-go area for construction workers. If the watercourse must be used for access during the construction of sewage and water pipes (not currently proposed), disturbance should be kept to an absolute minimum.			
Activity on the watercourse banks could destabilise soil causing erosion Heavy vehicles and trampling could degrade soils that in turn could breakaway into the water. Mitigation: Lessen and strictly regulate access to vehicles from driving within 15m from a watercourse. Stabilise any problematic bank with the correct erosion control method, trapping any sediment run-off.	*Probability*	High Moderate Low	High Moderate Low
Human waste and refuse leaking into the watercourse Construction workers will be on-site each day for an extended period, although no temporary facilities are currently planned close to the dam from where it could leak into it. Mitigation: Ablution facilities should be inspected for leakages if at all within 15m of the watercourse. Refrain from putting up temporary ablution facilities within 15m of the delineated vegetation edge of the watercourse, nor near stormwater drains. Littering should be strictly prohibited, particularly plastics.	*Probability*	High Moderate Low	High Moderate Low
Introduction of Invasive Alien Plant Species Leaking of IAP propagules into watercourse from introduced soil used for construction or/and landscaping. Mitigation: Extreme care should be taken to ensure that any foreign soil that is to be used on the site during construction is free of IAP propagules, to prevent an IAP infestation.	*Probability*	High Moderate Low	High Moderate Low
AFTER CONSTRUCTION		**Without Mitigation**	**With Mitigation**
Fuel and oil contamination via leaking vehicles Dedicated parking zones and access roads away from the watercourse, meaning no vehicles will be driving around the watercourse. Mitigation: Lessen access to the watercourse by vehicle, if any, and report any accidental leak immediately to relative authority.	*Probability*	High Moderate Low	High Moderate Low
Non-native plant invasion proliferation There are known non-native plant invaders on site that can, and will, spread into any open spaces accidentally created during preceding construction activities.	*Probability*	High Moderate Low	High Moderate Low

Mitigation: Limit accidents. Do not drive into vegetated areas. But if so, a non-native plant clearing plan should be drawn up as soon as possible after construction, implemented, and then monitored for the next 3-5 years.			
Recreation activity on the banks of the watercourse could destabilise soil, causing erosion The use of the watercourse for recreation must be limited to the proposed green open space (indicated on the proposed subdivision plan). Mitigation: People especially children must not be allowed to enter the watercourse and disturb the vegetation.	*Probability*	High Moderate Low	High Moderate Low
People littering plastics and/or other ecologically harmful waste materials People litter and dispose of waste in unlawful manners Mitigation: Littering should be strictly prohibited, particularly plastics. The watercourse should be regularly cleared of any litter and other ecologically harmful waste.	*Probability*	High Moderate Low	High Moderate Low

RECOMMENDATIONS

General

The ecosystem on Portion 3 of Farm Nederburg No. 613, is modified and degraded, due to historic agricultural practices and regular clearing using heavy machinery and fire. The Boontjies River, a non-perennial watercourse adjacent to the study site, is severally degraded due to overgrowth of non-native aquatic vegetation (but not NEM:BA classified invasive species) and illegal dumping of household waste. Despite this, its freshwater ecosystem can provide value regulating, supporting and provisioning ecosystems services and serve as a steppingstone habitat corridor for the fragmented aquatic habitats in the landscape.

The prosed development abutting the watercourse, including changes made to the project, is not expected to impede or divert the flow of water and will have only a limited impact on the banks and characteristics of the watercourse. Due to this and considering the low impacts posed by the development, a Section 21 (c) and (i) water use licence in terms of the NWA is not required for this development, but rather a General Authorization (see Appendix B). Since a WULA has already been granted, an amendment application should be made in the future.

Illegal dumping currently poses a greater risk to the freshwater ecosystem of the study site than the proposed development thereof. Apart from releasing pollutants into the watercourse, household waste items also impede stream flow and may pose a flood risk if a build thereof occurs. The prevention of illegal dumping of household items and the management thereof would therefore be greatly beneficial to aquatic habitat, not only on the study site but also downstream and should therefore be prioritised. This can be achieved through the restriction of access to the watercourse and actively managing waste. Placing refuse bins on strategic places and information boards (education) along the watercourse would encourage better waste disposal practices by the residents.

The development will increase the local population size, thereby may indirectly increase the threat of illegal dumping. The implementation of the mitigation measures outlined in Table 6 above, is therefore important for the management of this risk.

The composition of plant species is currently low, due to frequent disturbance, thus favouring the establishment of fast-growing grass species. This lack of biodiversity could be addressed by using a high variety of indigenous plant species (drought-resistant preferably) for the landscaping of the proposed development.

Erosion on the site is associated with areas of low vegetation cover, which seems to coincide with areas disturbed by residents of the neighbouring community, using the site for access to adjacent locations. Limiting the use of the area for access (no walking access indicated on the proposed subdivision), would reduce the disturbance of vegetation growth, and in turn promote vegetation cover.

Overgrowth of nuisance aquatic vegetation is currently impeding water flow and reducing water supply to downstream aquatic habitats. This can be addressed through better control of overgrowth of the nuisance aquatic vegetation in the watercourse.

Due to the moderate sensitivity of the watercourse, the 32m buffer as required by the National Environmental Act of 1998 (NEMA) listed activities can be relaxed to 10m (also suggested in previous studies). See Figure 14 for additional information. The 10m area will be sufficient in terms of habitat corridor supply and infiltration area over and above the flood zone.

With the area being relatively flat, and with surface water draining predominantly into a northwestern direction, the proposed development would unlikely dramatically increase surface water runoff into the Boontjies River. However, a stormwater management plan, approved by the relevant authority, must be adhered to, to prevent possible flood risk.

An adaptative management approach of the freshwater ecosystem, during and beyond construction, should be taken based on the success of mitigation measures and unforeseen impacts, both determined using monitoring. Monitoring should take place at intervals determined and outlined in the approved Environmental Management Programme (EMPr).

Conclusion

The growing trend of urbanisation has put pressure on freshwater ecosystems, an essential resource for human life and for many natural systems that support human well-being. The protection of freshwater ecosystems in urban environments is therefore of utmost importance. The freshwater ecosystem on Portion 3 of Farm Nederburg Estates No. 613, is degraded by human impacts from the neighbouring community, with the main threat being illegal dumping of household material. However, despite being degraded, it can serve as an Urban Green-and Blue space that can potentially provide important regulation, supporting and provisioning ecosystem services. The extent of the problem of illegal dumping on the study site exceeds the potential impacts of the proposed development, including the changes made to the project. Prevention of illegal dumping of household materials should be prioritised.

It is recommended that the 10m conservation buffer (No go area) from the Boontjies River which was suggested by previous studies and included in the proposed subdivision are adhered to, that illegal dumping is prevented and waste managed, that overgrowth of nuisance aquatic vegetation is managed (impedes water flow and supply), that indigenous vegetation is used for landscaping (promotes biodiversity), that access to neighbouring residents are restricted and finally that an adaptive management approach is followed, which involves the monitoring of the mitigation measures and unexpected impacts.

The project, including changes made to the project, can be supported if all mitigation measures are implemented and the success thereof and unexpected impacts are monitored.

Figure 14: Map illustrating the suggested Buffer Areas of the study site.

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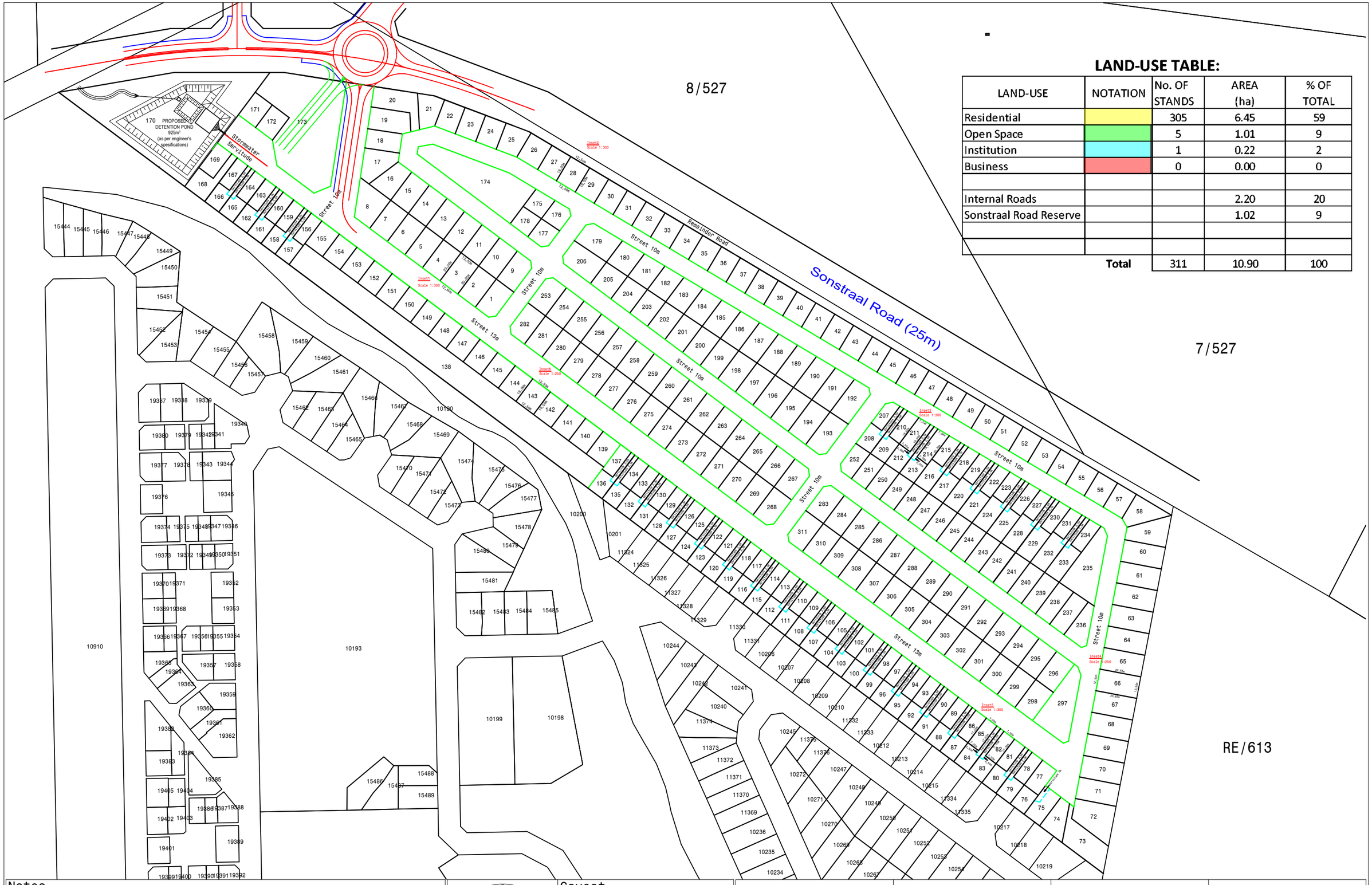
APPENDIX B: PROPOSED SUBDIVISION PLAN



LAND-USE TABLE:

LAND-USE	NOTATION	No. OF STANDS	AREA (ha)	% OF TOTAL
Residential		305	6.45	59
Open Space		5	1.01	9
Institution		1	0.22	2
Business		0	0.00	0
Internal Roads			2.20	20
Sonstraal Road Reserve			1.02	9
	Total	311	10.90	100

Notes

TN

Caveat

1. Any areas and dimensions are provisional and will be finalised at time of subdivision survey.
2. All levels are to be confirmed prior to construction.

Scale 1:2000	Date:September2020	Contours: N/A	System: WG 19

PROPOSED SUBDIVISION PORTION 3 OF THE FARM NEDERBURG ESTATES No. 613 PAARL

Ref:PA613-3 | Dwg:PROPOSED SUB_REV7

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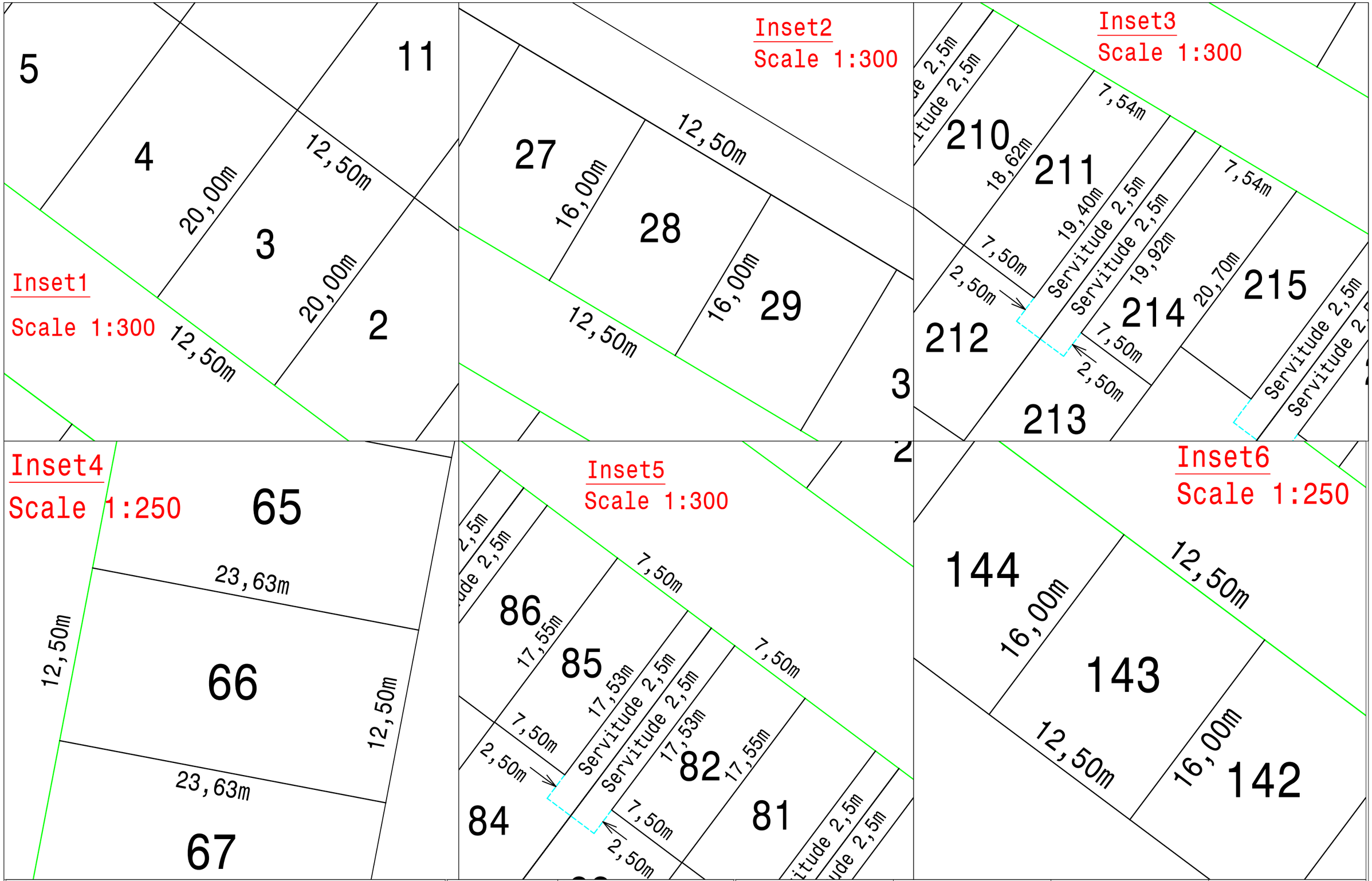

Notes

TN

Caveat
1. Any areas and dimensions are provisional and will be finalised at time of subdivision survey.
2. All levels are to be confirmed prior to construction.

Scale 1:2000	Date:September2020	Contours: N/A	System: WG 19

TYPICAL ERF SIZES

Ref:PA613-3 | Dwg:PROPOSED SUB_REV7

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APPENDIX B: RISK MATRIX (Based on DWS 2015 publication: Section 21 (c) and (i) water use Risk Assessment Protocol)

Section 21 of the National Water Act (Act 36 of 1998) regulates the use of water anywhere in South Africa. Accordingly, any area within 500m of a NFEPA classified wetland is regulated area as per section 21 (c) and (i) of the Act. This matrix assessed the potential risks posed by this development, including changes made, to freshwater ecosystem using the prescribed Risk Matrix as provide by the Department of Water and Sanitation (DWS). This Risk Matrix is required by the DWS to determine the type of water use authorization for this development.

Table 1: DWS Risk Matrix for the proposed development on Portion 3 of Nederburg Farm Estates No. 613, Paarl. Compiled by Ludwig van der Merwe, SACNASP Reg No. 133969. Under supervision of Casper Crous (Pr.Sci.Nat), SACNASP Reg No. 008610.

Phases	Activity	Aspect	Impacts	Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of Impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence (%)	Control Measures	EIS
Construction	Construction of mixed-use development	Habitat and biotope degradation	Contractors building the various infrastructures driving into wet areas, getting stuck, disturbing topsoil and plant communities.	1	1	2	4	1	1	5	1	8	32	LOW	80	Contractors installing infrastructure to follow existing access roads where possible, which are already degraded and largely devoid of vegetation. The area that is unsuitable for development (10m buffer area from the Boontjies River) to be cordoned off during construction.	Moderate
Construction	Construction of mixed-use development	Dust generation and settling thereof in the waterbody	Dust falling into the watercourse would increase sediment input and turbidity.	1	1	2	4	1	2	5	2	10	40	LOW	80	Vehicles on the construction site should drive below 20 km p/h and must not brake suddenly to prevent tyres from kicking up dust close to the watercourse. Sand used for construction should be stored away from the watercourse, using the correct measures to prevent wind from carrying it into the watercourse.	Moderate

Phases	Activity	Aspect	Impacts	Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of Impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence (%)	Control Measures	EIS
Construction	Construction of mixed-use development	Fuel and oil contamination via leaking vehicles	Construction involves large vehicles that may leak fuel and oil from time to time.	2	1	2	5	1	1	5	1	8	40	LOW	80	Manage trucks, pumps, mixers, skips, hand tools to be in good functioning condition, report any accidental leak immediately to the site environmental officer and, in general, lessen access to vehicles from driving within 15m away from the watercourse. Petroleum and other hazardous chemicals should be stored in an allocated area, away from the watercourse. Construction should take place during the low-flow period (summer in Western Cape), to limit leaked materials being transported by water.	Moderate
Construction	Construction of mixed-use development	Changing landscape hydrology by obstructing or deviating water flow	Construction of sewage and water pipes, across the watercourse, and the building of residential units within 32m of a watercourse.	2	1	2	5	1	1	5	1	8	40	LOW	80	No construction may take place in the delineated watermark, so as not to deviate surface flow. The watercourse and the surrounding 10m buffer area should be marked as a no-go area for construction workers. If the watercourse must be used for access during the construction of sewage and water pipes (not currently proposed), disturbance should be kept to an absolute minimum.	Moderate
Construction	Construction of mixed-use development	Activity on the watercourse banks could destabilise soil causing erosion	Heavy vehicles and trampling could degrade soils that in turn could breakaway into the water.	1.5	1	2	5	1	1	5	1	8	36	LOW	80	Lessen and strictly regulate access to vehicles from driving within 15m from a watercourse. Stabilise any problematic bank with the correct erosion control method, trapping any sediment run-off.	Moderate

Phases	Activity	Aspect	Impacts	Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of Impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence (%)	Control Measures	EIS
Construction	Construction of mixed-use development	Human waste and refuse leaking into the watercourse	Construction workers will be on-site each day for an extended period, although no temporary facilities are currently planned close to the dam from where it could leak into it.	1.5	1	2	5	1	1	5	1	8	36	LOW	80	Ablution facilities should be inspected for leakages if at all within 15m of the watercourse. Refrain from putting up temporary ablution facilities within 15m of the delineated vegetation edge of the watercourse, nor near stormwater drains. Littering should be strictly prohibited, particularly plastics.	Moderate
Construction	Construction of mixed-use development	Introduction of Invasive Alien Plant Species	Leaking of IAP propagules into watercourse from introduced soil used for construction or/and landscaping.	3	1	2	6	1	1	5	1	8	44	LOW	80	Extreme care should be taken to ensure that any foreign soil that is to be used on the site during construction is free of IAP propagules, to prevent an IAP infestation.	Moderate
After Construction	Operation of mixed-use development	Fuel and oil contamination via leaking vehicles	Dedicated parking zones and access roads away from the watercourse, meaning no vehicles will be driving around the watercourse.	2	1	1	4	1	1	5	1	8	32	LOW	80	Lessen access to the watercourse by vehicle, if any, and report any accidental leak immediately to relative authority.	Moderate

Phases	Activity	Aspect	Impacts	Severity	Spatial Scale	Duration	Consequence	Frequency of Activity	Frequency of Impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence (%)	Control Measures	EIS
After Construction	Operation of mixed-use development	Non-native plant invasion proliferation	There are known non-native plant invaders on site that can, and will, spread into any open spaces accidentally created during preceding construction activities.	3	1	1	5	1	1	5	1	8	36	LOW	80	Limit accidents. Do not drive into vegetated areas. But if so, a non-native plant clearing plan should be drawn up as soon as possible after construction, implemented, and then monitored for the next 3-5 years.	Moderate
After Construction	Operation of mixed-use development	Recreation activity on the banks of the watercourse could destabilise soil, causing erosion	The use of the watercourse for recreation must be limited to the proposed green open space.	3	1	2	6	1	1	5	1	8	48	LOW	80	People especially children must not be allowed to enter the watercourse and disturb the vegetation.	Moderate
After Construction	Operation of mixed-use development	People littering plastics and/or other ecologically harmful waste materials	People litter and dispose of waste in unlawful manners	2	1	3	6	1	1	5	1	8	48	LOW	80	Littering should be strictly prohibited, particularly plastics. The watercourse should be cleared of any litter and other ecologically harmful waste regularly.	Moderate

**Disclaimer: It assumed that best practices are used by all contractors and sub-contractors during the construction phase of the proposed development and that best practises are implemented during the operational phase of the proposed development.*

Table 2: Rating classes

Rating	Class	Management Description
1-55	Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated.
56-169	Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
170-300	High Risk	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

APPENDIX C: Visual Impact Assessment

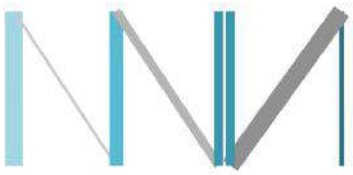
NEDERBURG 3/613 DEVELOPMENT

VISUAL IMPACT ASSESSMENT

PORTION 3 OF FARM 613, PAARL

MAY 2021 ☙ PHOTOGRAPH 1: VIEW OF PART OF THE SITE FROM SONSTRAAL ROAD

researched and produced by
New World Associates LA © for **Virdus Works (Pty) Ltd**



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Viewing of images is best done on screen.

Reflection

- "The term **'visual and aesthetic'** is intended to cover the broad range of visual, scenic, cultural, and spiritual aspects of the landscape. However, for the purpose of brevity, the term **'visual'** is used in the text' (p 1). **Thus it includes aspects of "the area's sense of place, ... natural and cultural landscapes, ... the identification of all scenic resources, protected areas and sites of special interest, together with their relative importance in the region, ... the need to include both *quantitative* criteria, such as 'visibility', and *qualitative* criteria, such as landscape or townscape 'character'** (pp 1-2)."

  This report (p 18) from the *PGWC Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (November 2005)*

- **"Visual impact. The value of the environment is often under-estimated from a visual perspective.** It is the visual quality of the environment that, to a large degree, generates the attraction for the tourism industry and draws people to certain areas as desired locations for living a lifestyle outside of the large cities and densely developed urban areas. **The visual resources of rural areas, such as scenic landscapes and the cultural streetscapes and farmsteads,** and environments such as the Garden Route [Swartland], constitute major tourist attractions. ...

  Each area has its own unique visual character and atmosphere, which plays an important role in the quality of any tourist experience. The diversity of the landscapes makes it essential to consider all development **and more particularly the expansion of urban areas, an issue that requires special consideration.** The intention is to manage urban development in such a way that no development would detract from the visual quality of the environment **and that all development conform to a characteristic style and urban form that suits the character of the area."**

  This report (p 20) from the *PGWC Urban Edge Guideline (December 2005)*

ꕥ Beauty is in the eye of the beholder.

What the eye doesn't see, the heart doesn't grieve over.

English Proverbs

ꕥ Do not seek revenge or bear a grudge against one of your people,

but love your neighbour as yourself. I am the LORD.

Mosaic Law, Leviticus 19.18, The Holy Bible (NIV)

NWA

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NWA

1 Executive Summary

1.1 Summary

The proposed residential development covering 10.9 hectares comprises 305 erwen ranging from 131 to 295sqm, mostly over 200sqm. The property is clean and flat covered with secondary grass. The site is largely only visible in the immediate area being seen mostly when driving past it on Sonstraal Road. The visual and aesthetic sensitivity of the area is moderate to low while the anticipated impact on the landscape is moderate. Recommendations are made to minimise visual and aesthetic impacts with particular reference to a landscape plan, fynbos planting, uniform fencing, residential scheme colouring and landscape maintenance.

1.2 Project Description (see page 11)

1. The proposed development of a housing area on the site will fill in the gap of a longstanding open space between the nearby suburb and Sonstraal Road.
2. The site is being subdivided into 305 erwen ranging in size from 131sqm to 295sqm. Most of the erwen are over 200sqm.
3. Open space has been provisioned across the site although tends to be concentrated to the eastern and western ends.

1.3 Legal and Administrative Requirements (see page 17)

1. Provision is made for scenic, visual and aesthetic protection in the NHRA (1999), WC Provincial Urban Edge Guideline (2005), WC Provincial SDF (2014) and the Swartland SDF (2017-2022) inter alia.
2. The Provincial Government of the Western Cape *Guideline for Visual and Aesthetic Specialists in EIA processes* defines the scope and preparation of VIAs.
3. VIA is integral to assessing environmental and heritage impact in scenic heritage areas like the Swartland.
4. The site lies within the Urban Edge and is a designated urban infill zone slated for row housing. It lies at the start of the rural Scenic Route on Sonstraal Street.

1.4 Visual Environment Description (see page 25)

1. The site is in clean condition covered with degraded grassland vegetation.
2. The back of New Orleans suburb lies on the southern boundary of the site.
3. The vineyards and scenic wine route on Sonstraal Road lies to the east of the site.
4. Historic Nederburg Estate and homestead lies on the eastern boundary, while over the road is the Allandale Prison.
5. The character of the area is periurban open space with low density development bordering onto vineyards in the east.
6. There is one visual link with New Orleans around a drain. Some large gums and pines are landmarks in New Orleans providing height in an otherwise flat, single storey landscape.

1.5 Visual Impact Assessment (see page 41)

1. VISUAL IMPACT: The proposed development will have a moderate impact on the landscape causing noticeable change to the visual environment.
2. VISIBILITY: The development has low visual exposure; moderate visual absorption capacity; medium compatibility; and high visibility in a narrow area.
3. NATURE OF IMPACT: The development's visual impact has local extent, long-term duration, medium intensity, definite probability, and medium significance on the landscape.
4. Recommendations are made around the need for a landscape plan using with endemic/fynbos species, uniform scheme fencing, a friendly residential colour scheme and ongoing landscape maintenance.

1.6 Visual Management and Monitoring Plan (see page 55)

1. Sound Visual Management is the ultimate aim of the VIA process. The Mitigation Recommendations developed in the report need to be implemented.
2. This process of implementation will occur throughout the lifetime of the project, hence, the need for a Monitoring Plan. Institutions, individuals and organisations referred in the Monitoring Plan must develop a means of achieving the monitoring otherwise this report serves no purpose.
3. Once the VIA Report has been approved, the Developers must seek the implementation of the recommendations as soon as possible.

2 Project Description

2.1 Summary

The proposed development of a housing area on the site will fill in the gap of a longstanding open space between the nearby suburb and Sonstraal Road. The site is being subdivided into 305 erwen ranging in size from 131sqm to 295sqm. Most of the erwen are over 200sqm. Open space has been provisioned across the site although tends to be concentrated to the eastern and western ends.

2.2 Introduction

Combined with Section 3, this chapter presents the relevant project information required to develop a Visual Impact Assessment (VIA) of the development for Environmental Impact Assessment (EIA) and Heritage Impact Assessment (HIA) purposes. This chapter reviews the relevant basic aspects of the proposed development and includes plans and diagrams as appropriate to this end.

2.2.1 Background

New World Associates was commissioned by the development management consultants Virdus Works (Pty) Ltd to prepare the VIA for this project. Virdus Works are also undertaking the Environmental Application. Developments of this scale and nature in scenic and historic environments, within or without the Urban Edge, require Visual Assessments in accordance with the PGWC *Guideline for Specialist Visual Studies* (pp 11-12).

2.2.2 Accreditation

Bruce Eitzen ML BSc PrLArch PHP MEMBER ILASA APHP conducted this assessment. He is a registered Landscape Architect and Environmental Planner with the South African Council of Landscape Architecture Professionals (SACLAP), and Specialist Practitioner in Visual and Landscape Heritage. He has thirty years experience across the board of Landscape Architecture and Environmental Planning and has practised in South Africa, Central Africa and East Africa. He holds a BSc (Botany) from the University of Cape Town and a Masters in Landscape Architecture

from the University of Pretoria. His public service includes serving for three years on the Association of Heritage Assessment Practitioners Executive Committee chairing Professional Practice. He also served on the National Executive Committee of the Institute for Landscape Architects in South Africa and was the Chair of ILASA Cape for four years. He also chaired the Local Organising Committee (LOC) of the International Federation of Landscape Architects (IFLA) World Congress 2012 that was held in Cape Town. He is the founder of Landscape Heritage SA, a new heritage organisation focussing on Southern African Landscape Heritage.

2.2.3 Statement of Independence

New World Associates is an independent consulting firm practising in the abovementioned fields. None of its members have any financial interest in the proposed development nor are involved in any other projects being undertaken by the developer.

2.2.4 Reporting Requirements

This report is generally based on South African environmental management procedures and, more specifically, on the provincial guideline endorsed by the Provincial Government of the Western Cape (PGWC) on 3 November 2005: *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes* (November 2005, PGWC).

2.2.5 Assumptions and Limitations

This assessment has been conducted based on the information presented in the report as received from the development team at the time of the report's preparation. While the information provided is limited to these plans, a comprehensive site inspection and impact analysis allowed mitigation recommendations to be made. We assume that the information provided was accurate and complete, and there are no gaps in our knowledge of the project proposal for this level of assessment.

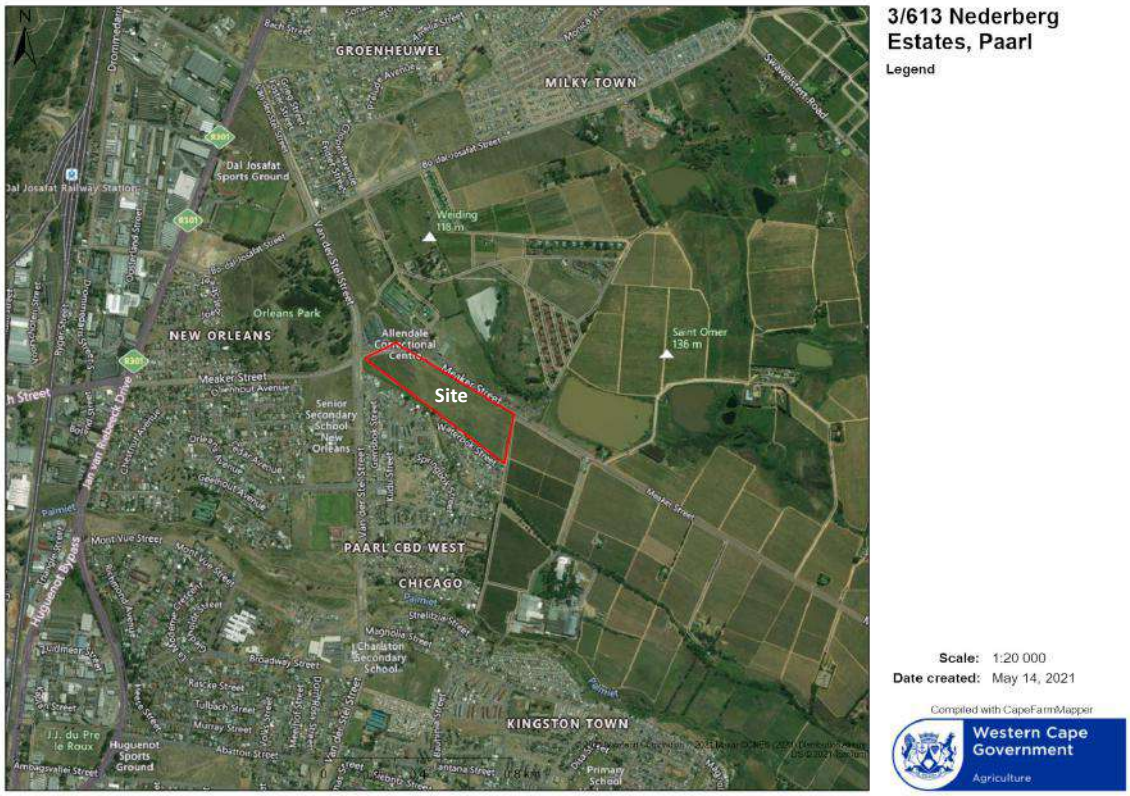
2.3 Project Proposal

2.3.1 Location

The development occurs on Portion 3 of the farm Nederburg Estates No. 613, Paarl (see Figure 2-1). The site is located along Sonstraal Road aka Meaker Street near the intersection and Van der Stel Street just west of historic Nederburg Wine Estate.

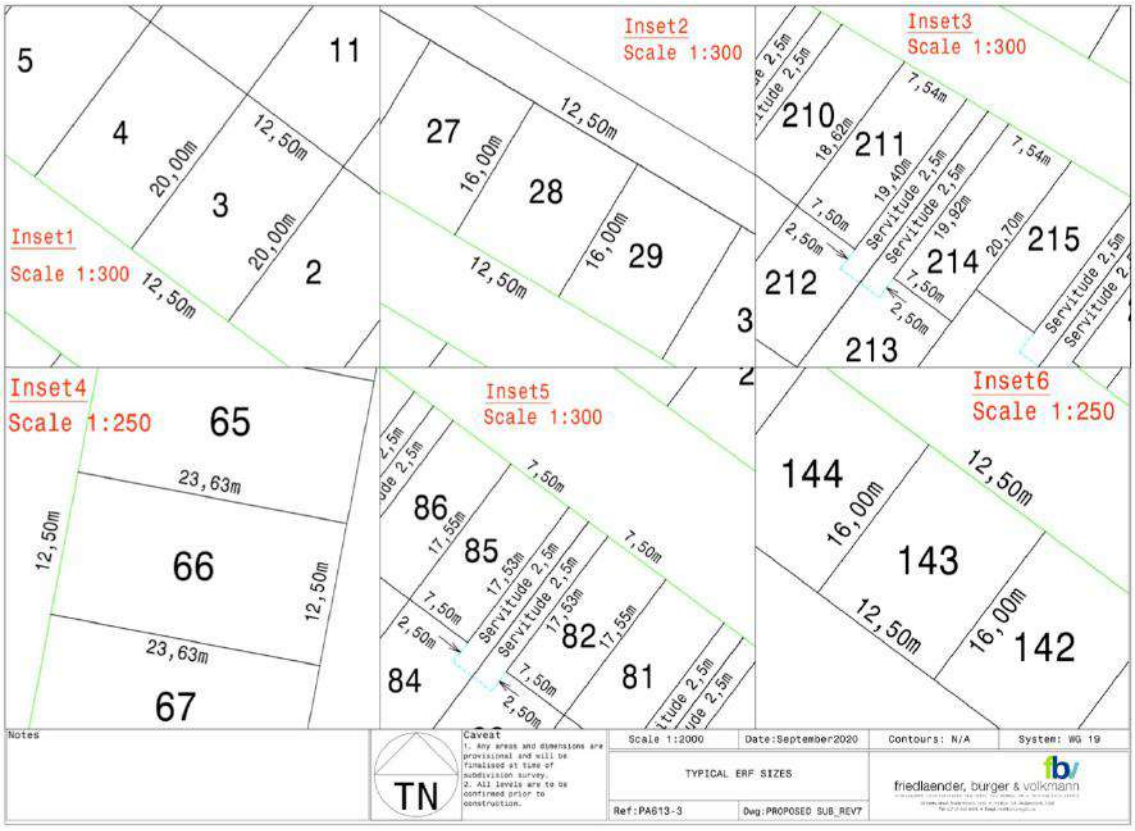
2.3.2 Planning Application

The applicant wishes subdivide Portion 3 of the farm Nederburg Estates No. 613, Paarl for the purpose of developing a housing area. This application is a revision of an earlier development proposal of 2014.



Source: Cape Farm Mapper | New World Associates.

Figure 2-1: Location of the Proposed Development.



Source: Virdus Works (Pty) Ltd.

Figure 2-2: Typical Erf Sizes (September 2020).

Source: Virdus Works (Pty) Ltd.

Figure 2-3: Proposed Subdivision (September 2020).

2.3.3 Site Development Plan (see Appendix A)

The Site Development Plan (see Figure 2-2) shows a largely linear arrangement of erwen in this long plot of land between the town edge and Sonstraal/Meaker Road (see Figure 2-3). Erf sizes vary (see Figure 2-2) and while not labelled on the plan, have been calculated as 250, 200, 145, 295, 131 and 200sqm respectively for the various insets.

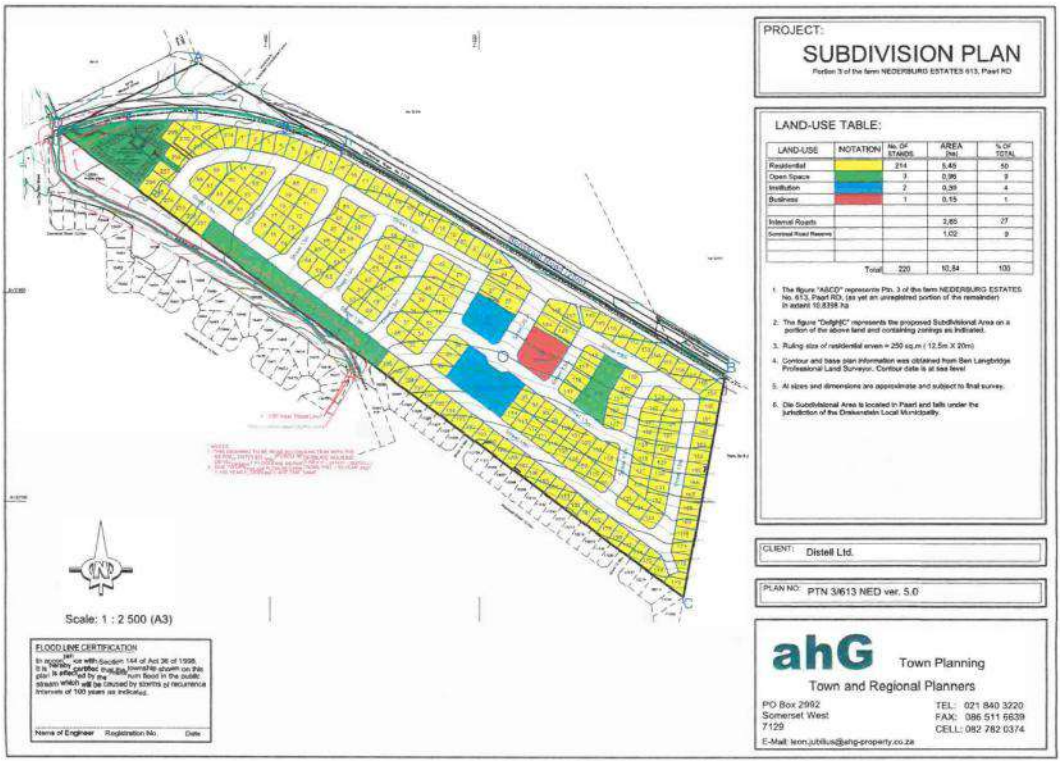
See Appendix A on page 61 for full size plans.

2.3.4 Landscape and Environment

The Site Development Plan shows various open spaces, 5 in number, amounting to 1 hectare or 9% of the total area, while 305 residential stands amount to 6.45 hectares or 59% of the total area. Roads account for 29% of the area at 3.2 hectares and there is 0.22 hectares of Institution at 2% of the site area. The open spaces comprise leftover corner stands on the east of the site, a corner more central stand to the west, a linear stretch to the south and a detention pond area to the west.

2.4 Alternatives

At this stage there are no alternatives under consideration beyond the original 2014 plan (see Figure 2-4). The current plan has been developed to improve the viability of the scheme.



Source: Virdus Works (Pty) Ltd.

Figure 2-4: Subdivision Plan of 3/613 Nederburg Estates, Paarl (2014).

3 Legal and Administrative Requirements

3.1 Summary

Provision is made for scenic, visual and aesthetic protection in the NHRA (1999), WC Provincial Urban Edge Guideline (2005), WC Provincial SDF (2014) and the Swartland SDF (2017-2022) inter alia. The Provincial Government of the Western Cape *Guideline for Visual and Aesthetic Specialists in EIA processes* defines the scope and preparation of VIAs. VIA is integral to assessing environmental and heritage impact in scenic heritage areas like the Winelands. The site lies within the Urban Edge and is a designated urban infill zone slated for row housing. It lies at the start of the rural Scenic Route on Sonstraal Street.

3.2 Introduction

This chapter provides the important and necessary policy, legal and administrative background for the visual impact study. A general overview of the relevant documents with specific reference to those applicable to visual planning is included. Particular mention is made of local planning guidelines that have the most direct bearing on the project such as the Spatial Development Framework (SDF) for the given area.

3.2.1 Background

The policy, legal and administrative framework for conservation, EIA and development in South Africa has long roots. Visual Impact Assessment (VIA) is mentioned in the national requirements for EIA under the National Environmental Management Act (NEMA) and the Environmental Conservation Act. Furthermore, the provincial government now endorsed its own guidelines for various EIA processes including VIA (PGWC, November 2005). Specific requirements for VIA may also included in local Spatial Development Frameworks (SDF) and Integrated development Plans (IDP).

3.4 Legal Framework

This review of current documentation is made with specific reference to requirements for VIA in the Law and by National Guidelines.

3.4.1 National Environmental Management Act No. 107 of 1998 (NEMA)

This Act is "To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith."

Chapter 5: Integrated Environmental Management has among its general objectives: **(b) "identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2" (p 34).**

3.4.2 South African National Heritage Resources Act, 1999 (NHRA)

NHRA regulations cover the protection of **historic sites, objects, buildings and landscapes.** It covers (ii) "archaeological items," namely, "material remains resulting from human activity… older than 100 years;" rock art, wrecks and "features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found (2 Definitions). **The Definitions also include the term "(vi) 'cultural significance' [which] means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance."**

The NHRA makes provision for two forms of protection, formal and informal, and sets up a three tier system of formal protection as:

1. Grade 1 or National Heritage Sites managed by SAHRA.
2. Grade 2 or Provincial Heritage Sites managed by HWC.
3. Grade 3 or Local Heritage Sites manage by the Local Authority.

3.4.4 PGWC Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (Edition 1, June 2005)

This long since endorsed guideline (November 2005) is the most relevant document that now guides VIA in the Western Cape.[1] It is a highly useful document and has been used to guide this report. While lacking a definition of VIA, it states in the Introduction: "This visual guideline

[1] Oberholzer, B (2005) by CSIR Environmentek. *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes: Edition 1.* CSIR Report No. ENV-S-C 2005 053 F. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

document is therefore an attempt to develop a 'best practice' approach for visual specialists, EIA practitioners and authorities involved in the EIA process.

The term **'visual and aesthetic'** is intended to cover the broad range of visual, scenic, cultural, and spiritual aspects of the landscape; however, for the purpose of brevity, the term **'visual'** is used in the text' (p 1).

Thus it includes aspects of "the area's sense of place, ... natural and cultural landscapes, ... the identification of all scenic resources, protected areas and sites of special interest, together with their relative importance in the region, ... the need to include both *quantitative* criteria, such as 'visibility', and *qualitative* criteria, such as landscape or townscape 'character' (pp 1-2).

3.4.5 PGWC Guideline for Involving Heritage Specialists in EIA Processes (Edition 1, June 2005)

Continuing on from the NHRA (1999), this now legally adopted Provincial Guideline further records (p 3): "Types of heritage resources as defined in the relevant legislation may include the following:

- Places, buildings, structures and equipment of cultural significance
- Places to which oral traditions are attached or are associated with living heritage
- Historical settlements or townscapes
- Landscape and natural features of cultural significance
- Geological sites of scientific or cultural importance
- Archaeological and palaeontological sites
- Graves and burial grounds
- Sites related to the history of slavery (NHRA)."

These are the so-called "tangibles" of the heritage concept (p 5). Thus the "cultural landscape" is seen as having a range from Archaeology to Palaeontology to Historical Architecture to Social History to Public Memory and Natural Landscape (p 6). Two categories of heritage significance/sensitivity are used: **Category 1:** Formally protected heritage sites and **Category 2:** Landscapes of recognised or potential significance or sensitivity (not yet formally protected) (p 18).

This extensive list of sites include Grade I-III, National and Provincial Heritage Sites and Protected Areas, as well as Provisionally Protected Sites, Urban Conservation Areas, Nature Reserves, proclaimed Scenic Routes, etc as well as World Heritage Sites e.g. Robben Island and Cradle of Humankind (Sterkfontein). A very large list of landscapes is also included starting with **Scenic/Historical Routes or Landscapes, Pristine Natural Areas e.g. Cedarberg and many**

other types of landscapes including Historic Farm *Werf*s e.g. *Boschendal, Morgenster, Alphen,* and historical farmlands e.g. Winelands, Swartland, Karoolands, and many more.

This long list has been ordered into twelve types of Heritage Context in Table 1 (pp 21-27), namely:

1. Palaeontological Landscape
2. Archaeological Landscape
3. Historical Built Urban Landscape
4. Historical Farmland
5. Historical Rural Town
6. Pristine/Natural Landscape
7. Relic Landscape
8. Burial Ground and Grave Site
9. Associated Landscape
10. Historical Farm Werf
11. Historical Institutional Landscape
12. Scenic/Visual Amenity Landscape.

Many of these could be grouped under the broad term Regional Cultural Landscapes (p 31). Thus various types of landscape form a vital part or domain of Heritage Resources. As a visual resource, landscape is very much seen and perceived in every human sense.

3.5 Administrative Framework

3.5.1 Western Cape Provincial Urban Edge Guideline (DEA&DP December 2005)

This document notes the following on visual impact that has special reference to this and all similar types of development, bold added (p 30):

> **"Visual impact. The value of the environment is often under-estimated from a visual perspective. It is the visual quality of the environment that, to a large degree, generates the attraction for the tourism industry and draws people to certain areas as desired locations for living a lifestyle outside of the large cities and densely developed urban areas. The visual resources of rural areas, such as scenic landscapes and the cultural streetscapes and farmsteads, and environments such as the Garden Route, constitute major tourist attractions.** Visual qualities of the environment also forms the backdrop to most other tourist activities, such as 4 x 4 routes, hiking trails, camping and recreational activities and even sporting facilities that sustain local economic activity. The growth of golf resorts in the Garden Route serve as examples of the attraction of the environment and more particularly the visual environment for interest in sporting facilities. Added thereto, the experience of reserves and resorts in the Cedarberg and Karoo are as much in the visual quality of the environment as it is in the attraction of the facilities.
>
> **Each area has its own unique visual character and atmosphere,** which plays an important role in the quality of any tourist experience. The diversity of the landscapes makes it essential to consider all development **and more particularly the expansion of urban areas, an issue that requires special consideration.** The intention is to manage urban development in such a way that no development would detract from the visual quality of the environment **and that all development conforms to a characteristic style and urban form that suits the character of the area."**

This implies that edge development should not only be limited to certain areas through inclusion or exclusion, **but that edge development should also be subject to urban design guidelines, architectural consideration and general aesthetic treatment.** The visual quality of the environment is not limited to the natural environment. **The built environment has as much of an effect on the aesthetic appeal of an area as has the natural environment."**

3.5.2 Drakenstein SDF (2015-2035)

The following extracts have been derived from the official report: *Drakenstein Spatial Development Framework: A Spatial Vision 2015 – 2035, Annual Review 2017/2018*.

(3.3) The 6 SDF Themes

There are 6 SDF themes of which the following is the most relevant (page 40):

THEME 3: HERITAGE AND THE CULTURAL LANDSCAPE

Recognising and protecting the scenic and rural landscape of the Drakenstein region and the historical fabric of the urban and rural settlements, whilst at the same time acknowledging the potential for growing the contribution that these resources make to the local economy.

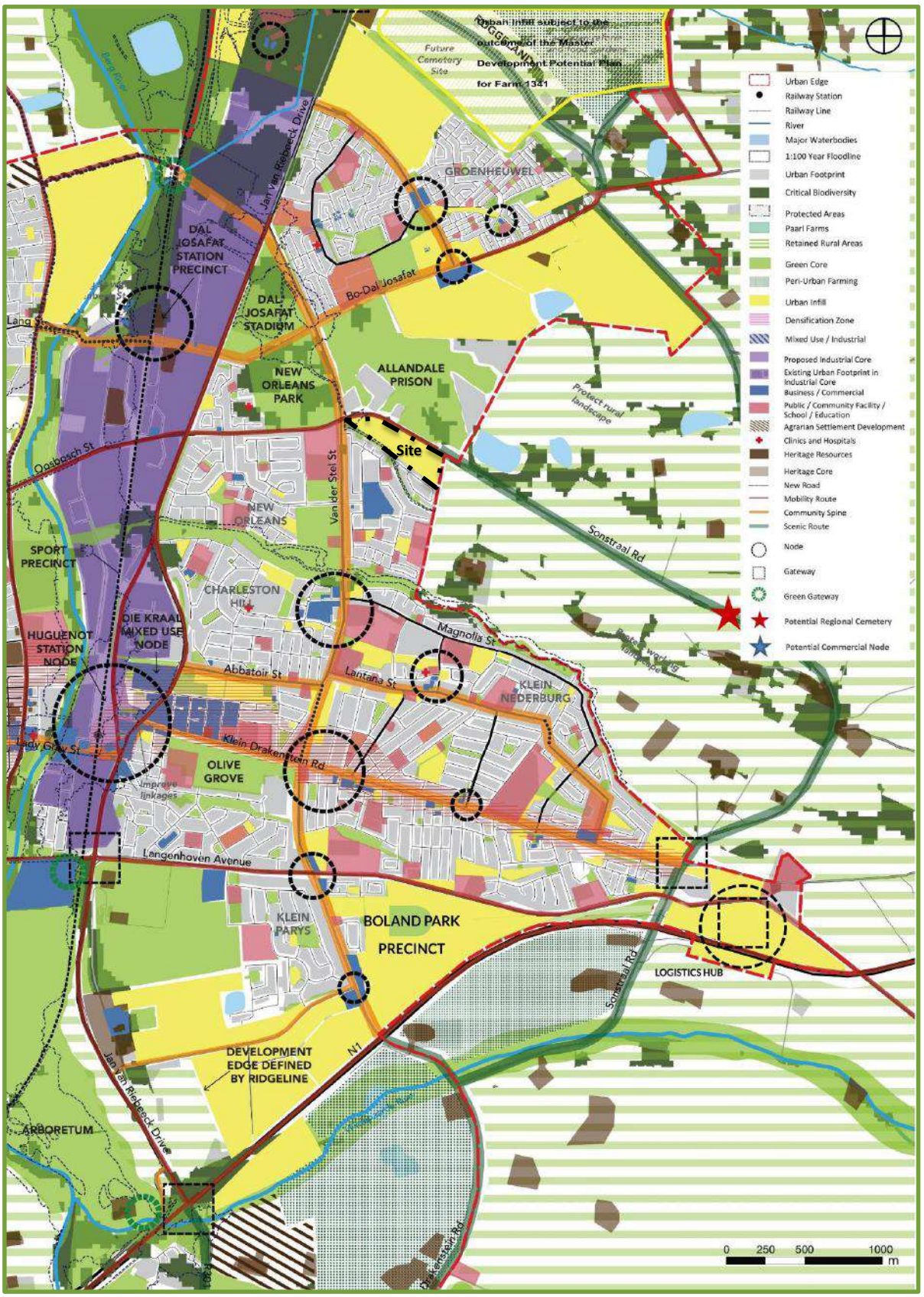
(3.4.11) Scenic Routes[2]

Land use management for scenic routes should be aimed at retaining the sense of place and important vistas from these routes. The focus is thus largely on managing development adjacent to these routes. It is suggested that this managed through the introduction of an overlay zone in the LUMS. Aspects to be addressed in such a zone, include the extent of the zone, the nature, scale and placement of development, landscaping and lighting, services and additional studies to inform development proposals such as visual impact studies.

(6.3) Focus Area 2: Paarl East[3]

Paarl East accommodates a significant portion of Drakenstein population. This area still suffers from the low level of investment during the apartheid era, as is evident in dysfunctional public housing schemes. A key legacy of apartheid to be addressed is the physical barriers between Paarl East and Paarl West where there are historically more socio-economic opportunities. Interventions in this area should thus focus on creating opportunities for investment and improving the public realm and living conditions of residents. Key projects would include completing and/or improving east-west and north-south road linkages, upgrading public facilities such as Boland Park and the Dal Josafat Stadium and providing incentives/opportunities for the establishment of vibrant activity corridors along important routes such as Klein Drakenstein Road.

[2] Ibid, page 63.
[3] Ibid, page 71.



Source: Drakenstein SDF (2018), page 70.

Figure 3-1: FA2 Paarl East: Spatial Concept.

The site is noted as an area of Urban Infill and lies below/south of Allandale Prison (see Figure 3-1). The land has been set aside for Row Housing.[4]

Theme 3: Heritage and the Cultural Landscape

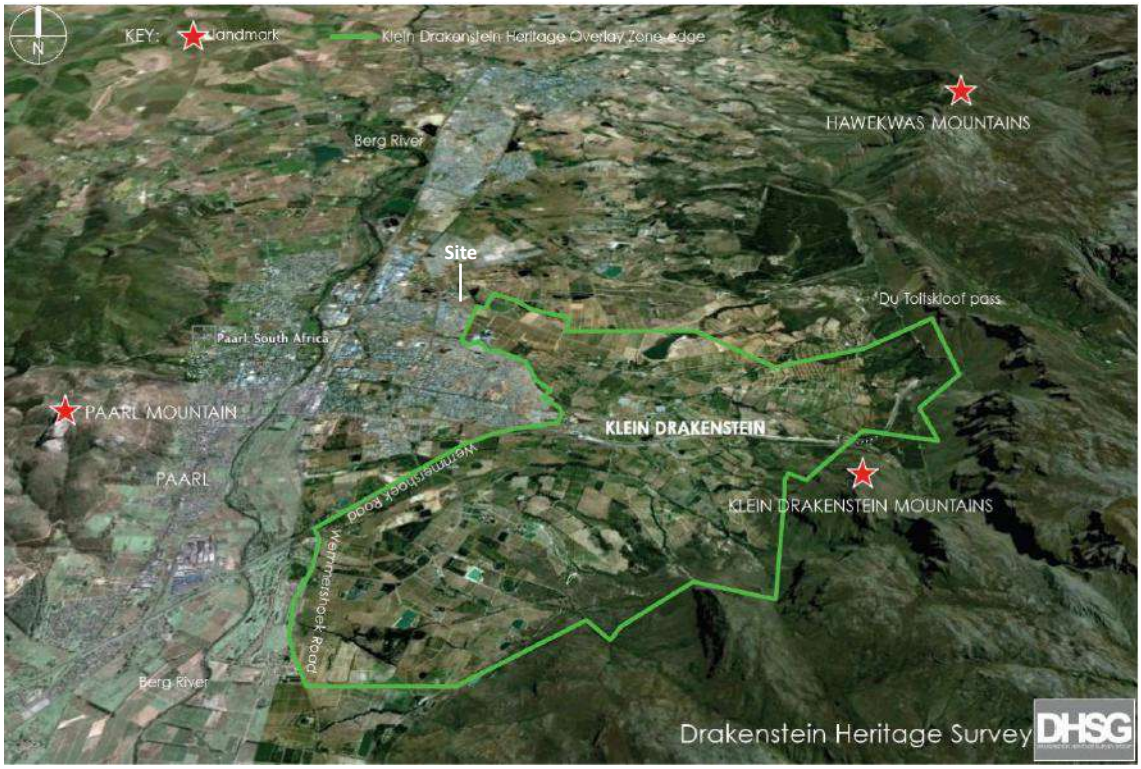
3.1 Protect and celebrate the unique scenic and cultural assets of the community such as the Costa's olive grove.

Scenic routes are defined as follows:[5]

Scenic routes refer to routes that provide vistas over scenic landscapes and the experience of a sense of place.

The site occurs on Sonstraal Road that is a designated Scenic Route that stops at the boundary of the Urban Edge. The site occurs within the urban edge so is not on the Scenic Route as such.

3.5.3 The Drakenstein Heritage Survey (2012)



Source: Drakenstein Heritage Survey (2012), Figure 41, page 96.

Figure 3-2: Klein Drakenstein Heritage Overlay Zone.

[4] Ibid, figure on page 72
[5] Ibid, figure on page 72.

The Drakenstein Heritage Survey (2012) identified 3,200 heritage sites in the wider landscape describing the area as one of considerable heritage significance.[6] The site falls in the Lower Berg River Valley Landscape Character Zones, one of three identified in the valley.[7] As the *Volume II: Map Book* is not available after 9 years from the municipality, we could not study any maps. However, the site falls outside the KLEIN DRAKENSTEIN HERITAGE OVERLAY ZONE with nearby Nederburg lying in its nearest corner (see Figure 3-2).[8]

3.6 Strategic Issues

3.6.1 Strategic Assessment

One of the difficulties of assessing visual impact at present is the lack of strategic Provincial or Municipal EIA, VIA or HIA studies which provide guidance on how the individual project fits into the overall context of development in any region. While an individual project seems to have an acceptable level of mitigatable impact, when viewed collectively, their sum total can well exceed the sum of the parts. That is, the impact of a single scheme such as this development may seem to be minimal when considered in isolation; however, when seen collectively with other developments also proposed in the area or region but as unknown to the assessor, or as not considered over the long term, the overall impact can become unsustainable. These are cumulative impacts.

There are no strategic visual studies done of the area that we are aware of. Therefore, it is not possible to consider strategic issues in detail at the project level as the information is generally not available and it is outside the scope of project assessments to do so.

3.7 Conclusion

The proposed development is in line with the spatial planning of the area that is earmarked for infill row housing. Its location within and on the urban edge, at the start/end of a scenic route, gives it gateway status in a way that will come to further characterise this entrance to Paarl.

NWA

[6] DHSG (Drakenstein Heritage Survey Group). *Drakenstein Heritage Survey Volume I: Heritage Survey Report* (October 2012), pages 70, 52.

[7] Ibid, Figure 24, page 61.

[8] Ibid, Figure 32, page 75.

4 Visual Environment Description

4.1 Summary

The site is in clean condition covered with degraded grassland vegetation. The back of New Orleans suburb lies on the southern boundary of the site. The vineyards and scenic wine route on Sonstraal Road lies to the east of the site. Historic Nederburg Estate and homestead lies on the eastern boundary, while over the road is the Allandale Prison. The character of the area is periurban open space with low density development bordering on-to vineyards in the east. There is one visual link with New Orleans around a drain. Some large gums and pines are landmarks in New Orleans providing height in an otherwise flat, single storey landscape.

4.2 Introduction

Combined with Section 2, this chapter presents the relevant visual data required to develop a Visual Impact Assessment. This is a strongly visual chapter well illustrated with site and regional photographs. Visual impact is all about what can we see and how this affects us. This chapter shows us what we can see.

4.2.1 Background

The description of the environment is undertaken with a view to presenting basic data for the VIA. A full presentation is made of the visual information collected and analysed as required for a Level 3 VIA.

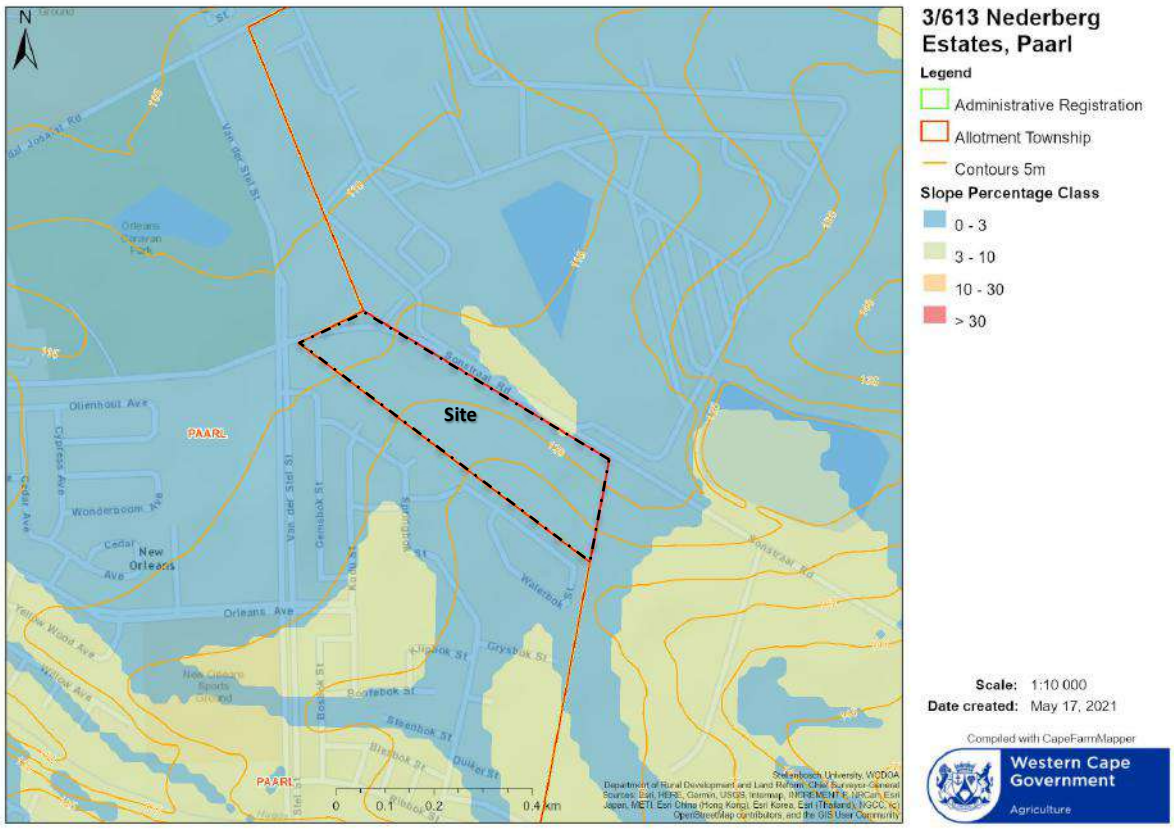
4.2.2 Key Issues

1. The site lies just outside the commencement of the Scenic Drive Sonstraal Road that runs past Nederburg Estate.
2. The area is on but within the urban edge of Paarl and is a long open field running along Sonstraal Road in the New Orleans suburb.
3. A suburb with scattered large gums bounds the site to the south while on the north side of Sonstraal Road is Allandale Prison.

4.3 Natural Environment

4.3.1 Landform

The topography of the general area is **relatively flat at <3%** (see Figure 4-1). There are areas in the suburb to the south that are **gently sloping 3-10%** but this is also imperceptible. Steeper area comprising **hilly slopes >10%** are found much further away in the surrounding mountains of the Paarl–Wellington Valley.



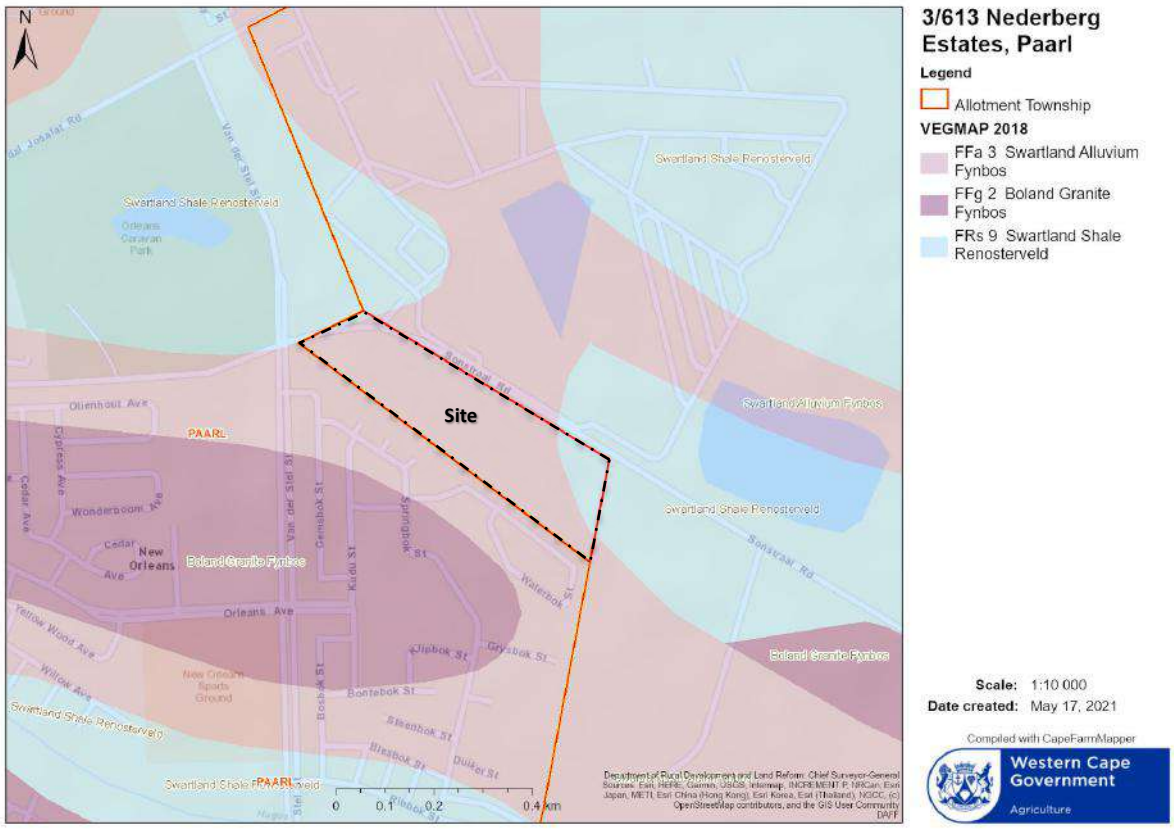
Source: Cape Farm Mapper | New World Associates.

Figure 4-1: Slope Classes Map of the Area.

4.3.2 Vegetation

The area is degraded grassland today although generally clean and in good condition. The site was originally covered in **Swartland Alluvium Fynbos** with some **Swartland Shale Renosterveld** to the east (see Figure 4-2). Today alien *Rooikrans* largely invades the site. **Boland Granite Fynbos** would have occurred to the south.

The conservation status of the natural vegetation is provided below in order to inform the site's landscape value with respect to the significance of the vegetation. Sometimes a site is covered with exotic aliens and these too have a significant impact on the visual and aesthetic value of a site. It also informs the landscaping and planting mitigation recommendations.



Source: VegMap 2018 on Cape Farm Mapper (CFM/SANBI, 2006–) | New World Associates.

Figure 4-2: Vegetation Map of the Area.

Conservation and Management[6]

Most of the Site's area's vegetation type would have been **Swartland Alluvium Fynbos,** which is ranked as **Critically Endangered.**

- **FFa 3 Swartland Alluvium Fynbos** is ranked as **Critically Endangered.**[7]
- **FRs 9 Swartland Shale Renosterveld** is ranked as **Critically Endangered.**[8]
- **FFg 2 Boland Granite Fynbos** is ranked as **Endangered.**[9]

[6] South African National Biodiversity Institute (2006–). *The Vegetation Map of South Africa, Lesotho and Swaziland*, Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors), online http://bgis.sanbi.org/SpatialDataset/Detail/18, Version 2012.

[7] **Conservation: *Critically endangered.*** Target 30%. Nearly 10% conserved in the Waterval Nature Reserve, Winterhoek (mountain catchment area) and private reserves such as Elandsberg, Langerug and Wiesenhof Wildpark. More than 75% already transformed for vineyards, olive orchards, pine plantations, urban settlements and by building of the Voëlvlei and Wemmershoek Dams. Alien *Acacia saligna* and *Hakea sericea* are prominent in places. Erosion moderate and very low.

[8] **Conservation:** This is a ***critically endangered*** vegetation unit. Target 26%, but since 90% of the area has been totally transformed (mainly for cropland), the target remains unattainable. The remnants are found in isolated pockets, usually on steeper ground. So far only a few patches have been included in conservation schemes (e.g. Elandsberg, Paardenberg). Aliens include *Acacia saligna* (very scattered over 65%), *A. mearnsii* (very scattered over 62%) as well as several species of *Prosopis* and *Eucalyptus*. Alien annual grasses of the genera *Avena*, *Briza*, *Bromus*, *Lolium*, *Phalaris* and *Vulpia* are a primary problem in remnant patches. Other serious aliens include herbs such as *Erodium cicutarium*, *E. moschatum*, *Echium plantagineum* and *Petrorhagia prolifera*. Erosion very low and low.

[9] **Conservation: *Endangered.*** Target 30%. Some 14% statutorily conserved in the Hawequas, Hottentots Holland and Paarl Mountain Nature Reserves, with a further 34% found in Hawequas, Hottentots Holland mountain catchment areas and Helderberg and Paardenberg Nature Reserves. More than half of the area has been transformed for vineyards, olive groves and pine plantations. Most common woody aliens include *Pinus pinaster, Hakea sericea* and *Acacia saligna*. Erosion very low and moderate.

4.4 Cultural Environment

4.4.1 History

The Paarl Valley was originally inhabited by San and later Khoekhoe people who arrived in the SW Cape about two thousand years ago. The Peninsulares and the Cochoqua inhabited the district separated by the Berg River Valley.[10]

> The Cochaqua were cattle-herding people and among the richest of the Khoi tribes. They had between 16,000-18,000 members and originally called Paarl Mountain *!hom !nāb/s* which means Tortoise Mountain.

While Paarl was founded in 1690, five years after Stellenbosch, its earliest colonial history dates to 1657 when Abraham Gabbema entered the valley. The site of the whaleback granite domes wet with dew or rain led him to name them *Peerl* and *Diamandt*. This gave rise to the town's original name De Paarl (The Pearl). The first farms were allocated in the valley in 1687 where after in the following year, Huguenot farmers were also settled there. A railway reached the town in 1859 by which time the town was known for the making of wagons and carts. The local granite was also used for tombstones and building construction.[11]

The valley provided good horticultural conditions for gardening and farming with the Mediterranean type climate giving rise to the development of fruit and grape farming and the industries of wine and fruit production. A church congregation was founded in 1875 that constructed what became the *Toring Kerk* (Tower Church) completed in 1905 using materials from London and Egypt.[12]

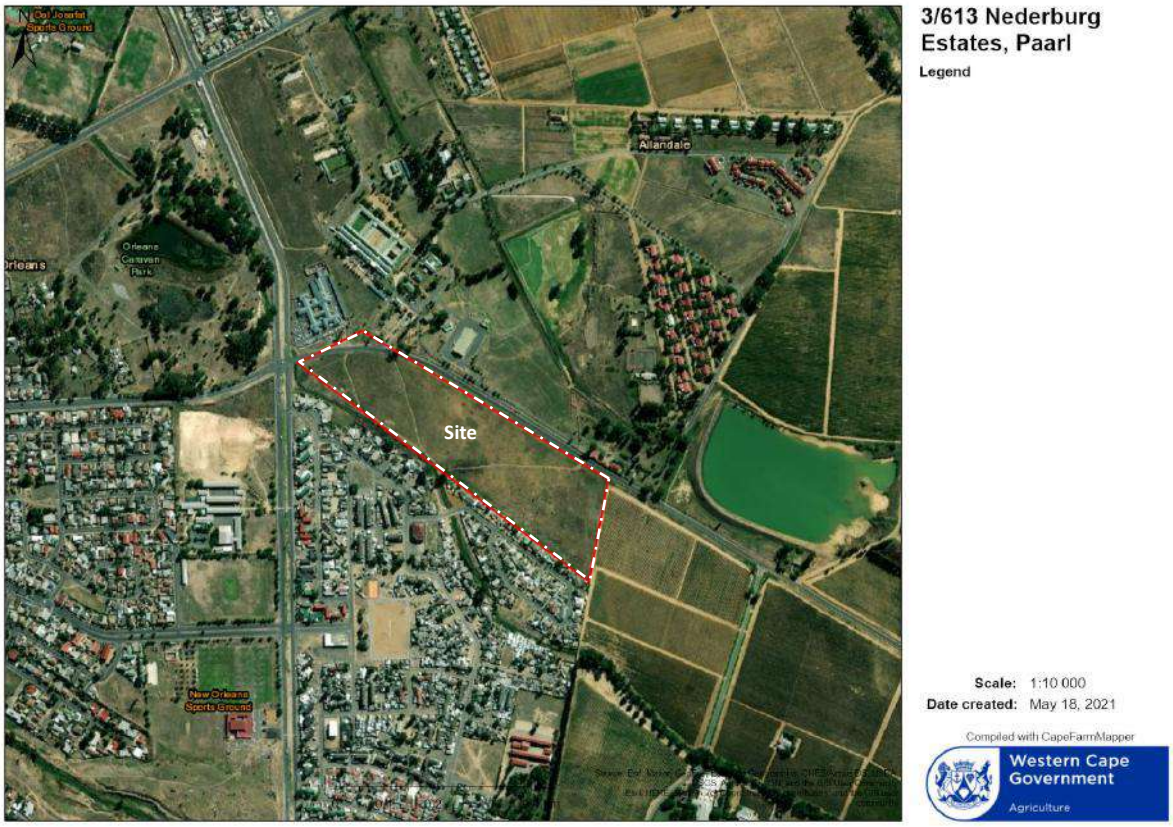
4.4.2 Heritage

Paarl and Stellenbosch lie in the heart of the world famous Winelands. There are some 28 wine estates on the Paarl red wine route including, most notably, *Nederburg* which lies on the eastern boundary of the site. The Afrikaans Language Movement began in Paarl in 1875 with the (Afrikaans) Language Monument (*Taal Monument*) unveiled on Paarlberg a century later in 1975. The (Afrikaans) Language Museum aka the Gideon Malherbe Museum was also opened in 1975. The Oude Pastorie Museum aka the Huguenot Museum, the Huguenot Church (*Strooidakkerk*), and the KWV are amongst various famous heritage sites and institutions in Paarl, including the historic houses and buildings of Paarl's Main Street and surrounds.[13]

[10] https://en.wikipedia.org/wiki/Paarl accessed 17 May 2021.
[11] Erasmus, page 30.
[12] Wikipedia ibid.
[13] Erasmus, page 30.

4.4.3 Land Use

As noted earlier (see Figure 3-1), the site is zoned Urban Infill within the Urban Edge of Paarl. It will form an extension of the surrounding New Orleans suburb. There are remnants of various open space sites still on this edge of Paarl such as the Orleans Caravan Park, the New Orleans Sports Ground and the Allandale Prison on the north side of Sonstraal Road. The wine-lands of the Paarl valley occur to the east of the site with the famous Nederburg Estate being the nearest neighbour from which this site is subdivided.



Source: Cape Farm Mapper | New World Associates.

Figure 4-3: Satellite Image of the site and surrounds.

4.4.4 Urban Edge

The site occurs on and within the Urban Edge on as-yet undeveloped land. It will close part of the open-space connection of New Orleans area by residential development on the site.

4.4.5 Aesthetics

The area's aesthetic is typical of an urban edge condition with the juxtaposition of housing and other developments and rural land, in this case, winelands (see Figure 4-3). The wider land-scape of the urban area of Paarl is a rural area contained between the mountains of the Hotten-tot Hollands to the east and the Paarlberg to the west (see Figure 4-4). As part of the urban expe-rience, the site will form a natural continuation of New Orleans while filling and firming up a gap on the urban edge.

Source: Cape Farm Mapper | New World Associates.

Figure 4-4: Satellite Image of the wider area.

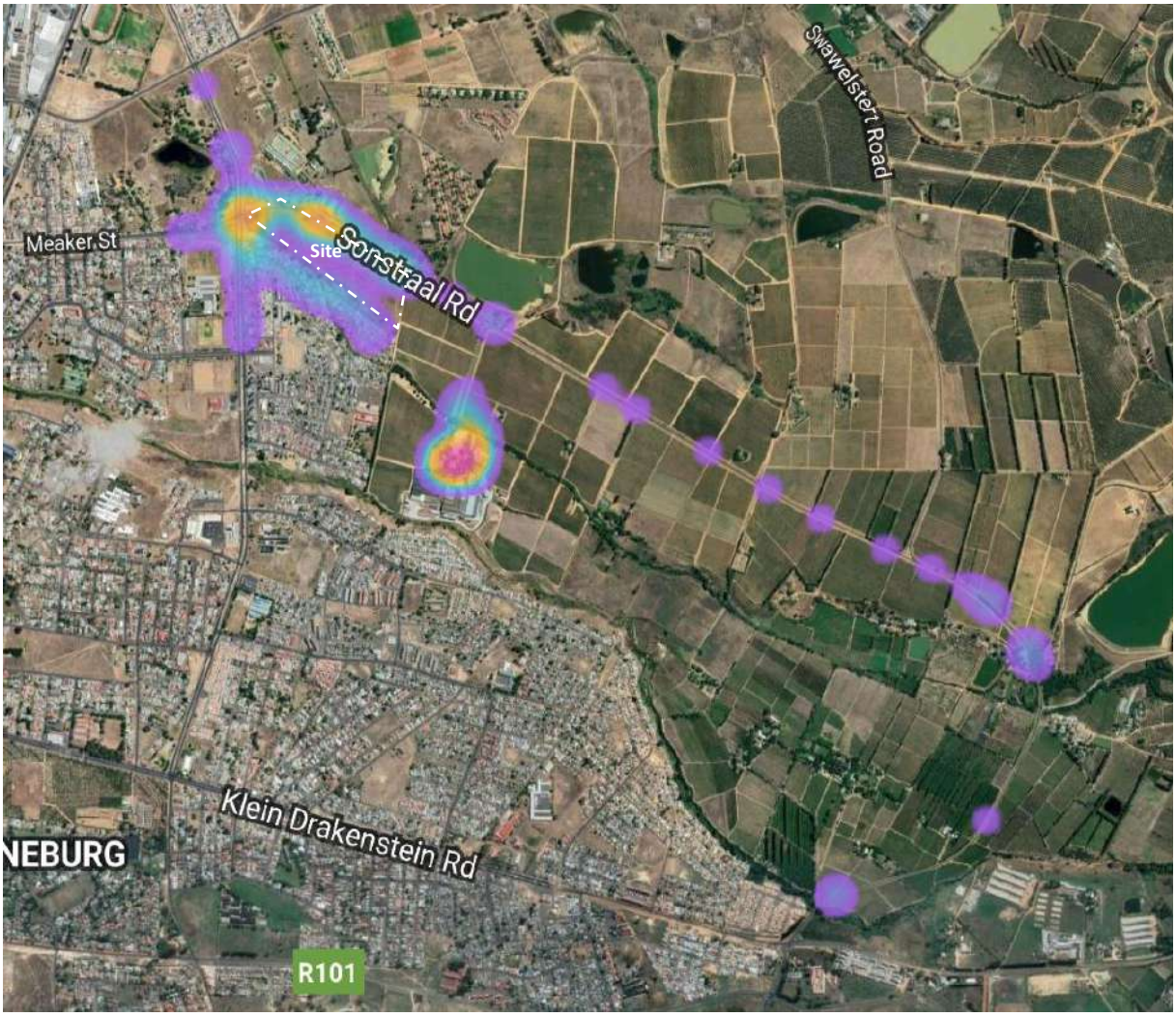
4.5 Visual Environment

4.5.1 Visual

The site has been the subject of a photographic survey that looks at the site itself, the local area and views from local roads (Figure 4-5). The bulk of the visual description is to be found in the photographs that are self explanatory and accompanied by descriptions.

According to the PGWC Guidelines "the term 'visual and aesthetic' is intended to cover the broad range of visual, scenic, cultural and spiritual aspects of the landscape; however, for the purpose of brevity, the term 'visual' is used in the text" (p 1). Thus it is within the technical gambit of VIA to comment on all the varied aspects that make up the visual environment which is the aim of this study.

The photographic survey is presented as if one were to visit the site for the first time, covering views from the approach road, scenic routes, local roads, views of and from the site then views from the neighbourhood.



Source: Google Photos | New World Associates.

Figure 4-5: Site and photographic locations on satellite image.

Source: All photographs in this report by Bruce Eitzen © 2021

Photograph 4-1: Panorama of the site from its northeast corner on Sonstraal Road.

The following photographs were taken on 12 May 2021 during autumn. The site is only visible at ground level from the surrounding roads and adjacent properties due to the flat nature of the area.

4.5.2 Views from the Road

Views from Sonstraal Road Scenic Route Portions

The following view sequence is taken travelling east on Sonstraal Road towards the site from the N1.

Photograph 4-2: Sonstraal Road westbound on the curve through wooded estates.

Photograph 4-3: Sonstraal Road westbound through wooded estates before the farms open up.

Photograph 4-4: Sonstraal Road westbound through more open vineyards.

Photograph 4-5: Sonstraal Road westbound approaching the site then its corner (R).

Views from Sonstraal Road Non-Scenic Route Portions Westbound

The following view sequence is taken travelling east on Sonstraal Road after Nederburg.

Photograph 4-6: Sonstraal Road westbound adjacent to site (L) and Allandale Prison (R).

Photograph 4-7: Sonstraal Road looking across the site towards New Orleans backing onto it.

Photograph 4-8: Sonstraal Road view back to boundary with Nederburg Estates vineyards.

Photograph 4-9: Sonstraal Road westbound looking across to New Orleans near the site centre.

Photograph 4-10: Sonstraal Road looking back towards Nederburg from the site centre.

Photograph 4-11: Sonstraal Road westbound near west end (L) and Allandale Prison (R).

Photograph 4-12: Sonstraal Road looking into Allandale Prison from the site centre.

Photograph 4-13: Sonstraal Road panorama looking across to New Orleans near the site centre.

As can be seen, the site is a long flat grassy field that runs along Sonstraal Road. There are some prominent gum and pine trees in the neighbouring New Orleans suburb. The site connects to the winelands and Nederburg to the east.

Views from Sonstraal Road Non-Scenic Route Portions Eastbound

The following view sequence is taken travelling east on Sonstraal Road after Nederburg.

Photograph 4-14: Sonstraal Road eastbound near Van der Stel Street intersection, site (R).

Photograph 4-15: Sonstraal Road eastbound at Van der Stel Street intersection.

Photograph 4-16: Sonstraal Road eastbound passing the west end of the site to the right.

Photograph 4-17: Sonstraal Road eastbound across site east towards New Orleans houses.

Photograph 4-18: Sonstraal Road eastbound approaching the east end of the site.

Views from Van der Stel Street Southbound

There is very little visual connection is Van der Stel Street as only the narrow western tip of the site meets Van der Stel Street.


Photograph 4-19: Van der Stel Street Southbound passing Allandale Prison (L).


Photograph 4-20: Van der Stel Street Southbound at Sonstraal Intersection.


Photograph 4-21: Van der Stel Street Southbound passing colourful flats of New Orleans (L).

Views from Van der Stel Street Northbound

There is very little visual connection is Van der Stel Street as only the narrow western tip of the site meets Van der Stel Street.

Photograph 4-22: Van der Stel Street Northbound passing the colourful flats of New Orleans (R).

Photograph 4-23: Van der Stel Street Northbound approaching the Sonstraal Road intersection.

Photograph 4-24: Van der Stel Street Northbound at the Sonstraal Intersection (L) and passing Allandale Prison (R).

4.5.3 Views from Neighbouring Areas

Views from New Orleans

The following views are taken from the adjacent suburb of New Orleans that runs south of the site. The New Orleans area wraps right around this area. There are very few visual links between this area of New Orleans and the site as their back fences face onto the site and their houses orient towards the street in the opposite direction.


Photograph 4-25: View from New Orleans adjacent/south of the site eastbound.


Photograph 4-26: View from New Orleans adjacent/south of the site eastbound.


Photograph 4-27: View from New Orleans adjacent/south of the site eastbound.

Photograph 4-28: View from New Orleans at the only physical/visual site connection.


Photograph 4-29: View from New Orleans adjacent/south of the site eastbound.


Photograph 4-30: View from New Orleans adjacent/south of the site eastbound.

This portion of New Orleans is generally in good condition, neat and tidy, a well established and cared for suburb. We only saw one area here that was dumped on.

4.5.4 Views from Heritage Sites

There is no view from neighbouring Nederburg Estate's central homestead area due to boundary Casuarina trees. There are no other nearby heritage sites of significance that have a close view of the site.

4.5.5 Conclusion

The site is well exposed along Sonstraal Road but otherwise has few visual connections to the wider area. It lies adjacent and terminates the scenic route into Paarl bounding onto the famous Nederburg Estate. The area is generally well cared for with low-density developments that are mostly residential and recreational nearby but including the Allandale Prison with its long fence. The few old gums and pines are important place and scale-making features adding height and interest to an otherwise flat suburban landscape.

This concludes the visual description of the study area. A visual assessment of the site follows in the next chapter.

5 Visual Impact Assessment

5.1 Summary

VISUAL IMPACT: The proposed development will have a moderate impact on the landscape causing noticeable change to the visual environment. VISIBILITY: The development has low visual exposure; moderate visual absorption capacity; medium compatibility; and high visibility in a narrow area. NATURE OF IMPACT: The development's visual impact has local extent, long-term duration, medium intensity, definite probability, and medium significance on the landscape. Recommendations are made around the need for a landscape plan using with endemic/fynbos species, uniform scheme fencing, a friendly residential colour scheme and ongoing landscape maintenance.

5.2 Introduction

This chapter uses the information collected in the previous chapters in an analysis that identifies and then describes the preliminary visual and aesthetic impacts of the project on the environment presented in tabular form due to the extent of the project.

DEFINITION: "Visual impact is defined as a change in the appearance of the landscape as a result of development which can be positive (improvement) or negative (detraction)" (IEA and the Landscape Institute, 1995).

5.2.1 Key Issues

1. The site falls within but on the urban edge and is most exposed along the non-scenic portion of Sonstraal Road.
2. The site is flat and surrounding structures are mostly single storey with the nearby New Orleans suburb facing away from the open field.
3. The flat nature of the valley floor causes surrounding structures to block ground level views of the site in most directions.
4. The site terminates/starts a scenic route that runs past Nederburg and other heritage sites on Sonstraal Road.

5.3 Methodology

A table is being used to scope the issues relating to visual and aesthetic impact of the wind turbines on the landscape.

5.3.1 The Visual Assessment

The visual environment can be structured into the following components:

1. **Natural Environment:** comprising the *Geomorphology* (geology, soil, land form), *Climate* (atmosphere and water), and *Nature* (vegetation and wildlife).
2. **Cultural Environment:** comprising *Land Use* (urban, rural, agricultural, recreational, etc), the *Structures* (architecture, engineering, lighting, services), and *History* (ancient, colonial, modern, contemporary).
3. **Visual Environment:** comprising *Views* (aesthetics, visibility), *Routes* (scenic, transport), and *Landscapes* (town, country, cultural, natural, mountainous, coastal, etc).

5.3.2 Triggers for Visual Assessment

These have been extracted from the PGWC (November 2005) list of triggers (p 9) with potential aspects relevant to this project noted in **bold:**

The nature of the receiving environment:[14]

1. Areas with protection status, such as national parks or nature reserves;
2. **Areas with proclaimed heritage sites or scenic routes;**
3. Areas with intact wilderness qualities, or pristine ecosystems;
4. Areas with intact or outstanding rural or townscape qualities;
5. Areas with a recognized special character or sense of place;
6. Areas lying outside a defined urban edge line;
7. **Areas with sites of cultural or religious significance;**
8. **Areas of important tourism or recreation value;**
9. **Areas with important vistas or scenic corridors;**
10. Areas with visually prominent ridgelines or skylines.

[14] The bold items have been marked as the site occurs next to such areas but not actually in them.

The nature of the project:

1. High intensity type projects including large-scale infrastructure;
2. **A change in land use from the prevailing use;**
3. A use that is in conflict with an adopted plan or vision for the area;
4. **A significant change to the fabric and character of the area;**
5. **A significant change to the townscape or streetscape;**
6. **Possible visual intrusion in the landscape;**
7. **Obstruction of views of others in the area.**

As can be seen, the various sites could be described as falling within at least 4 of the 10 listed receiving environments (40%), and 5 out of 7 project types (71%) that may cause visual impact giving a combined total of 56%; the receiving environment has *moderate* sensitivity while the project character has *high* impact. **Thus the factors triggering potential impact suggest that impact will be moderate-high.** Regarding "the nature of the receiving environment," categories apply to both the site and the area generally.

5.3.3 Key Issues Requiring Specialist Input

The following table helps identify the likely level of impact:

TYPE OF ENVIRONMENT: High to Low Sensitivity	TYPE OF DEVELOPMENT: Low to High Intensity				
	Category 1 development	**Category 2 development**	**Category 3 development**	**Category 4 development**	**Category 5 development**
Protected/wild areas of international, national, or regional significance	Moderate visual impact expected	**High visual impact expected**	**High visual impact expected**	**Very high visual impact expected**	**Very high visual impact expected**
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	**High visual impact expected**	**High visual impact expected**	**Very high visual impact expected**
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	**High visual impact expected**	**High visual impact expected**
Areas or routes of low scenic, cultural, historical significance / disturbed	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	**High visual impact expected**
Disturbed or degraded sites / run-down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

Figure 5-1: Table of Visual Impacts ex DEA&DP Guidelines.

Furthermore, the PGWC "Categorisation of issues to be addressed by the visual assessment" (Table 1, p 6) identifies the project as **Category 5 development:** high density residential.

Terms are defined as follows (p 7):[15] *Low density development* – generally single or double-storey domestic structures, usually with more than 50% of the area retained as natural (undisturbed) open space.[16] In the list of "Type of environment" this would be defined as a mix of **"areas or routes of *low/medium* scenic, cultural, historical significance."** This would result in a theoretical possible outcome: ***high* visual impact** expected. When considering the following descriptions, we find that the visual impact is at least described as **Moderate**:

"High visual impact expected:

1. Potential intrusion on protected landscapes or scenic resources;
2. Noticeable change in visual character of the area;
3. Establishes a new precedent for development in the area.

"Moderate visual impact expected:

1. **Potentially some affect on protected landscapes or scenic resources;**
2. **Some change in the visual character of the area;**
3. **Introduces new development or adds to existing development in the area.**

"Minimal visual impact expected:

1. Potentially low level of intrusion on landscapes or scenic resources;
2. Limited change in the visual character of the area;
3. Low-key development, similar in nature to existing development."

"Little or no visual impact expected:

1. Potentially little influence on scenic resources or visual character of the area;
2. Generally compatible with existing development in the area;
3. Possible scope for enhancement of the area."

---

[15] **Category 1 development:** e.g. nature reserves, nature-related recreation, camping, picnicking, trails and minimal visitor facilities.

Category 2 development: e.g. low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development: e.g. low density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development: e.g. medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development e.g. high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large-scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

[16] *Low-key development* – generally small-scale, single-storey domestic structures, usually with more than 75% of the area retained as natural (undisturbed) open space.

Low density development – generally single or double-storey domestic structures, usually with more than 50% of the area retained as natural (undisturbed) open space.

Medium density development – generally 1 to 3-storey structures, including cluster development, usually with more than 25% of the area retained as green open space.

High density development – generally multi-storey structures, or low-rise high density residential development.

The following terms are used in the above assessments (p 8):

1. *Fundamental change* – dominates the view frame and experience of the receptor;
2. ***Noticeable change* – clearly visible within the view frame and experience of the receptor;**
3. *Some change* – recognisable feature within the view frame and experience of the receptor;
4. *Limited change* – not particularly noticeable within the view frame and experience of the receptor;
5. *Generally compatible* – Practically not visible, or blends in with the surroundings."

SUMMARY ASSESSMENT—VISUAL IMPACT: The proposed development will have a moderate impact on the landscape causing noticeable change to the visual environment.

This assessment of the impact is confirmed by the following descriptions of the categories of issues:

5.3.4 Level of Assessment

PGWC (November 2005) defines the selection of the appropriate approach to VIA for a moderate visual impact expected as a **Level 3** Visual Assessment (p 13). This is defined as follows:

Approach Type A Assessment*: which are relatively large in extent, and involve natural or rural landscapes.*

Visual impact assessment report by visual specialist qualified in landscape architecture or environmental planning; preferably affiliated to SACLAP.

Method:

1. Identification of issues raised in scoping phase, and site visit;
2. Description of the receiving environment and the proposed project;
3. Establishment of view catchment area, view corridors, viewpoints and receptors;
4. Indication of potential visual impacts using established criteria;
5. Inclusion of potential lighting impacts at night;
6. Description of alternatives, mitigation measures and monitoring programmes;
7. Review by independent, experienced visual specialist (if required);

A Level 4 VIA for High Impact requires "Complete 3D modelling and simulations, with and without mitigation" in addition to the above.[17]

[17] This is not always possible depending on the planning information available or necessary where development types are known.

5.4 Visual Analysis

5.4.1 Visual Mapping

This has been mapped in Figure 5-2 and shows the site's visibility as defined by its Viewshed, Zones of Visual Influence and Viewpoint Analysis. Visual Absorption Capacity (or Visual Sensitivity) is not mapped but discussed below. The mapping technique is a traditional, *reflective* mapping or viewshed mapping, which shows where, and to what extent, the site is visible from its surroundings. *Projective* mapping, that is, from viewpoints within the site (inside out) is not required but site views can be seen in the photographs.

5.4.2 Key to the Visual Analysis Map

The Visual Catchment is shown as thick brown lines and approximately follows the ridgelines of the mountains and hills (see Figure 5-2). Areas *theoretically* visible to the site (Zone of Visual Influence or ZVI) are indicated in **yellow** overlain on a radiating circle centred on the site graded from **solid blue** on the site being most visible to no shading beyond 5km visibility. Combined with the yellow ZVI this produces a **green** to **yellow** colour where the site is visible. Areas with no yellow colouring are those where the site is not visible (the view shadow).

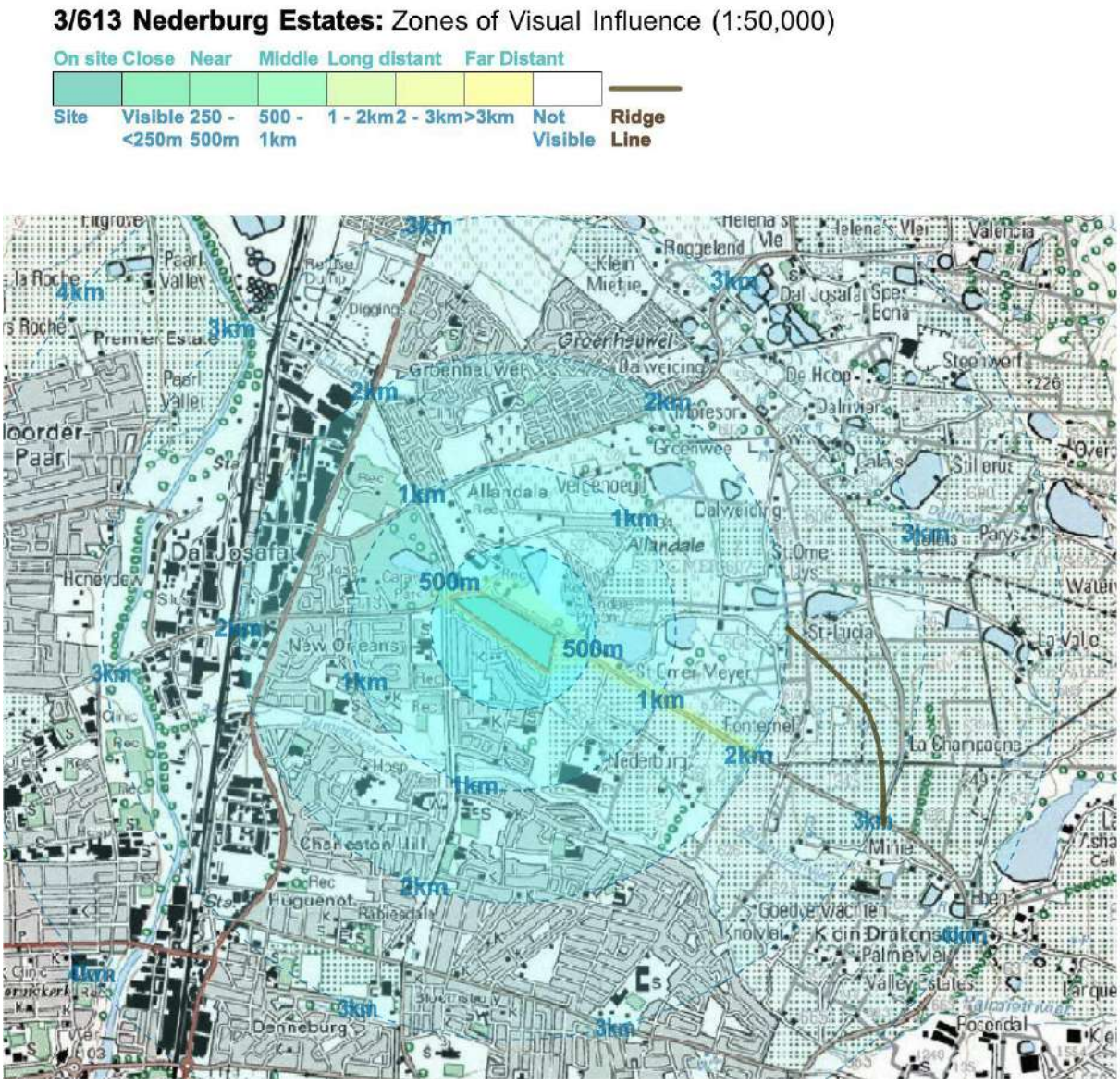
It should be noted that the term *theoretically* is significant as it is neither possible nor necessary to physically check all these locations. However, strategic views have been checked according to site inspection and analysis. Some views that would theoretically be possible are not possible due to ground level screening and the hilly terrain. Urban and suburban buildings and orientation are also important factors in visibility. Radiating circles of concentric rings encompass the site at 1km intervals but including a 250m and 500m circle.

5.4.3 Viewshed

The **viewshed** is indicated by the edge of the yellow zones on the map and either is terminated by **ridgelines** shown in brown or diminishes with distance (see Figure 5-2). The viewshed of the site is contained mostly by local structures and vegetation rather than topography.

5.4.4 Zone of Visual Influence

The **Zone of Visual Influence (ZVI)** is shown in various shades of **green** and has a particularly small ZVI relative to the site (see Figure 5-2). The flat terrain means that the site is not easily visible from afar and only in a narrow cone along Sonstraal Road. The site is mostly only visible in the immediate environs and soon falls out of sight except on Sonstraal Road and surrounding properties where open views are possible.



Source: New World Associates.

Figure 5-2: Zone of Visual Influence.
Portion of a 1:50,000 map of South Africa (ex Cape Farm Mapper) showing the approximate Zone of Visual Influence (ZVI).

5.4.5 Visual Absorption Capacity

The Visual Absorption Capacity (VAC) of the landscape is typically defined by landform, land use and vegetation. In this case, landuse applies primarily while local vegetation such as tree planting is also a factor.

VAC of the Land Form

Landform is not a significant in constraining the ZVI.

VAC of the Land Use

Land Use VAC is always a factor in urban areas with ground level structures usually blocking off views near buildings and walls. In this case, it is the primary factor limiting the ZVI.

VAC of the Vegetation

The site also has partial vegetation VAC due to tree planting in the open spaces around the site.

5.4.6 Visual Sensitivity

The area has moderate to low sensitivity as it occurs in a periurban area that lacks any outstanding qualities besides the relatively high open space surrounding the site to the north. The open clean nature of the site being changed to residential will reduce the open space sensitivity of the land.

5.4.7 VIA Criteria and Assessment

The PGWC Guideline (June 2005, pp 18-19) defines Visual Impact Assessment Criteria as outlined following. We have included our assessment of the visual impact here along with the assessment criteria for ease of relating to the complex of terminology:

Specific Criteria for VIAs[18]—Visibility

The following analysis presents the specific criteria findings in bold for the project.

Visual exposure of the area: the geographic area from which the project will be visible, or view catchment area.

1. *High visual exposure* – covers a large area (e.g. several square kilometres).
2. *Moderate visual exposure* – covers an intermediate area (e.g. several hectares).
3. ***Low visual exposure* – covers a small area around the project site.**

Visual absorption capacity (VAC): the potential of the landscape to conceal the proposed project, i.e.

1. *High VAC* – e.g. effective screening by topography and vegetation;
2. ***Moderate VAC* – e.g. partial screening by topography (and vegetation);**
3. *Low VAC* – e.g. little screening by topography (or vegetation).

Landscape integrity: the compatibility or congruence of the project with the qualities of the existing landscape or townscape, or the 'sense of place.'

1. *Low compatibility* – visually intrudes, or is discordant with the surroundings;
2. ***Medium compatibility* – partially fits into the surroundings, but clearly noticeable;**
3. *High compatibility* – blends in well with the surroundings.

[18] *Note 1:* These, as well as any additional criteria, need to be customised for different project assessments. *Note 2:* Various components of the project, such as the structures, lighting or power lines, may have to be rated separately, as one component may have fewer visual impacts than another. This could have implications when formulating alternatives and mitigations.

Visibility of the project: based on distance from the project to selected viewpoints i.e.:

1. ***Highly visible* – dominant or clearly noticeable (e.g. 0 to 1km);**
2. *Moderately visible* – recognisable to the viewer (e.g. 1 to 2km);
3. *Marginally visible* – not particularly noticeable to the viewer (e.g. 2km+).

SUMMARY ASSESSMENT—VISIBILITY: The development has low visual exposure; moderate visual absorption capacity; medium compatibility; and high visibility in a narrow area.

The PGWC Guideline further notes: "To aid decision-making, the assessment and reporting of possible impacts requires consistency in the interpretation of impact assessment criteria. Various criteria are defined in the EIA Regulations, such as 'nature', 'extent', 'duration', etc. The interpretation of these criteria for visual assessments is given in Box 11" repeated below:

Criteria Used for the Assessment of Visual Impacts—Visual Impact Assessment

The following analysis presents the specific criteria findings in bold for the project.

Nature of the impact: an appraisal of the visual effect the activity would have on the receiving environment. This description should include visual and scenic resources that are affected, and the manner in which they are affected, (both positive and negative effects).

Extent: the spatial or geographic area of influence of the visual impact, i.e.:

1. *site-related:* extending only as far as the activity;
2. ***local:* limited to the immediate surroundings;**
3. *district:* affecting a smaller urban/rural area;
4. *regional:* affecting a larger metropolitan or regional area;
5. *national:* affecting large parts of the country;
6. *international:* affecting areas across international boundaries.

Duration: the predicted life-span of the visual impact:

1. *short term,* (e.g. duration of the construction phase);
2. *medium term,* (e.g. duration for screening vegetation to mature);
3. ***long term,* (e.g. lifespan of the project);**
4. *permanent,* where time will not mitigate the visual impact.

Intensity: the magnitude of the impact on views, scenic or cultural resources.

1. *low,* where visual and scenic resources are not affected;
2. ***medium,* where visual and scenic resources are affected to a limited extent;**
3. *high,* where scenic and cultural resources are significantly affected.

Probability: the degree of possibility of the visual impact occurring:

1. *improbable*, where the possibility of the impact occurring is very low;
2. *probable*, where there is a distinct possibility that the impact will occur;
3. *highly probable*, where it is most likely that the impact will occur; or
4. ***definite*, where the impact will occur regardless of any prevention measures.**

Significance: The significance of impacts can be determined through a synthesis of the aspects produced in terms of their nature, extent, duration, intensity and probability, and be described as:

1. *low*, where it will not have an influence on the decision;
2. ***medium*, where it should have an influence on the decision unless it is mitigated; or**
3. *high*, where it would influence the decision regardless of any possible mitigation.

SUMMARY ASSESSMENT—NATURE OF IMPACT: The development's visual impact has local extent, long-term duration, medium intensity, definite probability, and medium significance on the landscape.

	Site
VISUAL IMPACT	
Impact	Medium
Change	Med-High
VISIBILITY	
Visual Exposure	Low
Visual Absorption Capacity	Medium
Compatibility	Medium
Visibility	High
NATURE OF IMPACT	
Extent	Local
Duration	Long Term
Intensity	Medium
Probability	Definite
Significance	Medium

Figure 5-3: Table of Site Assessment.

Plomp Methodology

Visual impact assessment using the Plomp (2004) methodology (see Appendix A for key):

Activity	Impact	Phase	Probability		Duration		Scale		Magnitude / Severity		Significance[19]		
			Score	Magni-tude	Score	Magni-tude	Score	Magni-tude	Score	Magni-tude	Score	WOM	WM
Visual Significance Score Calculation = Probability x (Duration + Scale + Magnitude) = 5 x (4 + 2 + 6) = 5 x 12 = 60													
Construction activities, operational infrastructure and lighting, decommis-sioning of infrastructure	Visual impact of develop-ment on surrounding landscape	Construc-tion, opera-tions and closure	5	Definite	4	Long-term	2	Local	6	Medium	60	Moder-ate	Mod-erate

Figure 5-4: Plomp Methodology Assessment.

5.4.8 Distribution of Impacts

"Beneficiaries and losers"[20] (PGWC, p 21) of the project's visual impacts are mainly local as the development will only have high visual impact to the local environment.

The people most affected by the development will be the immediate neighbours at New Orleans.

5.4.9 Photomontages

Photomontages were not prepared, as the level of impact does not warrant it. Our knowledge of the development types suffices in understanding the proposed development and how to mitigate the likely impacts.

5.5 Analysis of Alternatives

At this time there are no significant alternatives to consider beyond the minor revisions shown previously.

5.6 Planning Phase Impacts

This is potentially the most significant phase of a Project as it is here that crucial planning and design decisions are taken. **Critical Mitigation Recommendations are noted in bold.**

5.6.1 Planning and Design

While there is a conflict between the need to densify urban areas within the urban edge at the same time as maintaining rural character along the urban edge, there is a similar conflict in rural areas in the need to locate industrial type activities that are often unsightly. This has to be managed and mitigated.

[19] **Significance:** Score calculation = Probability x (Duration + Scale + Magnitude); WOM Without Mitigation; WM With Mitigation.

[20] Possible better designations are "winners and losers" or "beneficiaries and adversaries" as, so often objectors become opponents in environmental and visual impact.

As the WC Provincial Urban Edge Guideline has referred to the need **"to manage urban development in such a way that no development would detract from the visual quality of the environment and that all development conform to a characteristic style and urban form that suits the character of the area,"** further stating that **"this implies that edge development should not only be limited to certain areas through inclusion or exclusion, but that edge development should also be subject to urban design guidelines, architectural consideration and general aesthetic treatment" for both natural and built environment** (see section 3.5.1).

Furthermore, the WC Provincial SDF noted *inter alia* the following:

- It also proposes "to ensure effective management of all municipal functions and facets to ensure equitable and affordable services and amenities and a safe **and aesthetically pleasing urban environment….".**
- **Cultural resources acknowledged and protected as the fundamental link with the historical past and a basis for planning and shaping of future urban and rural environments.**
- **A safe, healthy and aesthetically pleasing urban environment, with the architectural and spatial character depicting the historical and cultural background of the habitat community.**

Many of these components such as the mountains, farms and historical structures are irreplaceable national assets and accentuate the region's unique character. For this reason, policy guidelines and actions must be formulated to emphasize, protect and promote these components. **The character, the detail of the towns and any planned changes should thus be carefully considered."**

It is the guidelines resulting from the visual-aesthetic-landscape analysis that will achieve the balance as best as possible along with their implementation.

Site Development Plan Assessment

The revised layout of the development has aimed to optimise efficiency and make the development more viable financially. The net result is a higher number of units on a variety of stand sizes. These are comparable with the area. Open space has been allowed for in the scheme although increasing density always decreases open space on individual stands making greening of the scheme and tree planting more difficult and less likely. No landscaping plan has been included although open spaces have been indicated.

Mitigation Recommendations

1. **Landscape Plan:** A Landscape Plan should be prepared for the scheme showing how the open spaces will be landscaped, the treatment of the riverine park and detention ponds on the southern boundary, the provision of play equipment, and the layout of street tree planting.
2. **Planting:** landscape planting should be done with endemic species occurring in the area where possible, otherwise trees and plants occurring in the fynbos region more generally. The inclusion of some large tree specimens in the open spaces will add greatly to the character of the scheme even as they have in the neighbouring New Orleans.
3. **Fencing:** uniform fencing of the scheme should be provided by the developers as the edge condition of lower cost housing areas is often very untidy and unsightly, lowering the character of the area and development as residents are unable to pay for fencing themselves. As the site is on a significant scenic entrance to the town, untidy fencing here is undesirable.
4. **Structures:** a friendly residential colour scheme should be developed that will help to create scheme character. Monotonous colour schemes should not be employed.
5. **Maintenance:** Planting maintenance of the proposed landscaping needs to be included in the development budget and a plan for the ongoing maintenance of the scheme landscaping should be prepared and budgeted for.

5.7 Construction Phase Impacts

Construction Phase visual impacts are no more than normal for an urban site although they will be extensive.

5.7.1 Construction

Construction inevitably gives rise to noise, disruption and dust, amongst others. These are well covered by Municipal Bylaws. Site destruction and damage is also coincident with quarrying especially to water, soil and vegetation. Changes to the water table by excavations can also have a heavy impact on the trees with deaths occurring a few years later.

Mitigation Recommendation: Construction

1. **Damage Control:** All parties must make every effort to control the destruction of soils and vegetation on site, especially any remnants of natural vegetation. These must not be damaged under any circumstances.
2. **Pollution:** Chemical damage by cement mixing directly on the ground and by diesel, etc spills must also be prevented at all costs, as should vandalism of the plants and accidental damage to limbs by workers and machinery. Fires must be prevented also at all costs in all areas. Penalties and incentives should be implemented as can fencing off areas.

3. **Monitoring:** Monitoring of the landscape, soils and vegetation during construction is very important and must be attended to regularly. Damage to some is all too inevitable and often irreversible. Adequate indigenous (preferably endemic) vegetation must be planted.

5.8 Operation Phase Impacts

Lighting, landscape maintenance and conservation management are discussed.

5.8.1 Lighting

The Architectural and Landscape Guidelines need to consider lighting in their specific guidelines. Security lighting, while necessary, can be handled with care.

Mitigation Recommendation: Lighting

1. **Lighting:** Lighting should be minimised and carefully controlled as part of the project's management plan. The use of green energy fittings and concepts should be encouraged and lighting developed with sensitivity to the rural landscape.

5.8.1 Conservation Management and Landscape Maintenance

Waterwise landscaping should be used wherever possible and green star building practices.

Mitigation Recommendation: Conservation Management and Landscape Maintenance

1. **Landscape Maintenance:** must be carried out at all times in line with these recommendations to help keep the scheme green and encouraging local biodiversity.

5.9 Decommissioning Phase Impacts

On-going landscape maintenance and conservation management remains necessary.

5.9.1 Refurbishment and Resale

This is a continuing aspect of the property ownership cycle.

Mitigation Recommendation: Refurbishment and Resale

1. **Refurbishment and Resale:** The previous recommendations regarding Planning, Construction and Operation all apply to this process. The entire site can be dismantled and rehabilitated if no longer needed and restored to an appropriate land use.

This concludes the analysis of impacts and detailed recommendations for their mitigation. The chapter, Visual Management and Monitoring Plan follows. It gives recommendations for the management and monitoring of the environment and the given VIA recommendations.

6 Visual Management and Monitoring Plan

Sound Visual Management is the ultimate aim of the VIA process. The Mitigation Recommendations developed in the report need to be implemented. This process of implementation will occur throughout the lifetime of the project, hence, the need for a Monitoring Plan. Institutions, individuals and organisations referred in the Monitoring Plan must develop a means of achieving the monitoring otherwise this report serves no purpose. Once the VIA Report has been approved, the Developers must seek the implementation of the recommendations as soon as possible.

6.1 Introduction

This chapter uses the information developed in the previous section. It sets out a basic plan for the implementation of both site management and the VIA recommendations.

6.1.1 Background

Site management in this case refers to that aspect of project management needed to control visual impact. The tools for visual management developed in the VIA Report are the *Mitigation Recommendations.* Their implementation also needs to be managed as part of the on-going site and impact management. A particular aspect of site management is monitoring. Monitoring is the routine inspection, recording and reporting of visual issues pertaining to visual impact aimed at mitigating impact by timely correction of problems as they arise.

6.1.2 Key Issues

1. Monitoring is typically routine inspection with physical analysis and recommendation, or routine reporting by various combinations of parties as outlined. The on-going monitoring of various aspects of the project are critical to its success. Long term management of visual issues is a more challenging issue that comes down to what individuals do over time as allowed to by their local authority.

2. With the identification of monitoring method, analysis and reporting, is the identification of the responsible party as indicated in Figure 6-1: Visual Monitoring Plan. This figure is crucial in the successful implementation of the Mitigation Recommendations and consequently, a visually-friendly (or visually responsible) project. The key parties referred to in the Monitoring Plan are largely the Developers/Owners, the Designers, and the Planning Authorities.
3. **Once the VIA Report has been approved, the Developer/s must seek the implementation of the recommendations as soon as possible. The Developer/s and Designers need to take this document and embody it in their day-to-day operations and long-term plans. Mitigation Recommendations are all written specifically around the subject of project and site management for impact mitigation; it is their incorporation into overall project management policy and practice that is required.**

6.2 Visual Management

6.2.1 Project and Site Management

The management of the project and site with particular reference to visual concerns is the subject of the Mitigation Recommendations and, indeed, the whole VIA study. As the Mitigation Recommendations are all written specifically around the subject of project and site management for impact mitigation; it is their incorporation into overall project management policy and practice that is required. The information contained in the VIA Report effectively provides the necessary information for the project management to implement their project in a visually responsible manner.

6.2.2 Implementing the VIA Recommendations

The Mitigation Recommendations have been written as broad guidelines to identify principles for minimising visual impact. The recommendations are by no means specifications. **There is a tendency in the construction industry to damage and repair later, which, while possible in construction, is not always possible in the environment. A need for care towards the environment should be developed by the Contractors.** The Development Team needs to take this document and embody it in their planning and design, day-to-day operations and long-term plans.

6.3 Environmental Monitoring

6.3.1 Monitoring Methodology

The framework for administering the implementation of mitigation guidelines is presented in the monitoring plan on the following page (see Figure 6-1: Visual Monitoring Plan). The table comprises the list of project activities numbered in the same sequence as those in the Miti-

gation Plan. For each project activity, recommendations are made from the following standardised monitoring activities:

6.3.2 Monitoring

The following types and timing of monitoring are suggested:

1. **Inspection:** site inspection (random, at completion), routine inspection (possibly annually), clean-up inspection (after completion of clean up of the accident incident).
2. **Monitoring:** observation (and photography).
3. **Review:** review of reports, plans and design.

6.3.3 Monitoring Plan

The Monitoring Plan has been tabulated for easy reference in the figure below.

Item	Project Component and Activity	Monitoring	Investigation	Reporting	Responsible Party
5.6	**PLANNING PHASE**				
5.6.0	VIA Report	Review	Physical and Recommendation	Recommendation	Planning Authorities
5.6.1	Planning and Design	Review	Physical and Recommendation	Recommendation	Authorities, Developers and Designers
5.7	**CONSTRUCTION PHASE**				
5.7.1	Construction	Site and Routine Inspection	Physical and Recommendation	Recommendation	ALL
5.8	**OPERATION PHASE**				
5.8.1	Lighting	Routine Inspection	Physical and Recommendation	Routine, *Ad hoc* Meeting	Owners, Authorities
5.8.2	Conservation Management and Landscape Maintenance	Routine Inspection	Physical and Recommendation	Routine, *Ad hoc* Meeting	Owners, Authorities
5.9	**DECOMMISSIONING**				
5.9.1	Refurbishment	Site Inspection	Physical and Recommendation	Routine, *Ad hoc*	Owner, Authorities

Figure 6-1: Visual Monitoring Plan.

6.3.4 Analysis

The following types of analyses are recommended:

1. **Physical:** on site and by photography.
2. **Recommendation:** check against VIA recommendation.

6.3.5 Reporting

The following methods of recording and reporting are recommended:

1. **Recommendation:** report or design recommendation.
2. **Routine:** log (daily, monthly, activity), report (quarterly), certificate, minutes.
3. ***Ad hoc:*** report (incident, closing).
4. **Meetings:** routine meeting (weekly), follow-up (incident), pro-active meeting (*ad hoc*).

6.3.6 Responsible Party

The following principal responsible parties have been identified as key during the monitoring process:

1. The Planning Authorities
2. The Developers and Owners
3. The Designers: Architects and Landscape Architects
4. The Contractors.

The above monitoring plan identifies who is conducting the prescribed monitoring activities. In cases where certification for compliance or approval are indicated the responsible certifying or approving authority is noted. Many building activities are strictly controlled by local by-laws.

NWA

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NWA

Appendices

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Appendix A Plomp Assessment Methodology

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need.

Probability	**This describes the likelihood of the impact actually occurring.**
Improbable	The possibility of the impact occurring is very low, due to the circumstances, design or experience.
Probable	There is a probability that the impact will occur to the extent that provision must be made therefore.
Highly Probable	It is most likely that the impact will occur at some stage of the development.
Definite	The impact will take place regardless of any prevention plans, and there can only be relied on mitigatory actions or contingency plans to contain the effect.
Duration	**The lifetime of the impact.**
Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.
Medium term	The impact will last up to the end of the phases, where after it will be negated.
Long term	The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.
Permanent	Impact that will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.
Scale	**The physical and spatial size of the impact.**
Local	The impacted area extends only as far as the activity, e.g. footprint.
Site	The impact could affect the whole, or a measurable portion of the above-mentioned properties.
Regional	The impact could affect the area including the neighbouring residential areas.
Magnitude/ Severity	Does the impact destroy the environment, or alter its function.
Low	The impact alters the affected environment in such a way that natural processes are not affected.
Medium	The affected environment is altered, but functions and processes continue in a modified way.
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
Significance	**This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.**
Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.
Low	The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.
Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

Figure A-1: Impact Significance Criteria.

The significance of the aspects/impacts of the process was rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process.[21] These matrices use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significances of the impacts were determined through a synthesis of the criteria below in Figure A-1 above.

The following weights were assigned to each attribute:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude) x Probability	
	Negligible	<20
	Low	<40
	Moderate	<60
	High	>60

Figure A-2: Attribute Weighting.

The significance of each activity is rated without mitigation measures and with mitigation measures for both construction and operational phases of the development.

[21] Plomp, H. (2004). *A Process for Assessing and Evaluating Environmental Management Risk and Significance in a Gold Mining Company*. Conference Papers – Annual National Conference of the International Association for Impact Assessment: South African Affiliate.

Appendix B Project Plans

NWA

APPENDIX D: Traffic Impact Assessment

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urban development solutions

Date: 26 May 2021

Our Ref: UDS353/Reports/TIA

Asla Devco
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ATTENTION: Ms K Siebrits

Dear Madam,

APPLICATION FOR SUBDIVISION AND REZONING OF FARM 613 PORTION 3, PAARL: TRAFFIC IMPACT ASSESSMENT

This company was appointed by *Asla Devco* to prepare a Traffic Impact Assessment (TIA) for the proposed development on Farm 613/3, Paarl.

1. BACKGROUND AND LOCALITY

The subject property is bordered by Sonstraal Road (Divisional Road 1118) to the north and the existing Charleston Hill residential area to the south/south west, to the east of Van der Stel Road and to the west of Nederburg Wine Farm, Paarl. See the attached ***Locality Plan***.

Correspondence (*12 December 2014, Job 22779*) from Western Cape Government (WCG): *Road Network Management* was previously received for a development proposal on the subject property. The said proposal was for the rezoning of the property to accommodate 196 residential erven, 1 business erf (1 500 m^2) and 2 institutional erven (1 400 m^2). The letter from WCG concluded that:

- *With the subdivision of* the subject property, *Divisional Road 1118 between km1,05 and ±km1,68 will automatically become a municipal street and loose the status of proclaimed provincial road;*
- *Divisional Road 1118 will then start at the eastern boundary of the subject property;* and
- *As a result of Divisional Road 1118 becoming a municipal street* WCG *will have no input on the relevant section of the road thus* the commenting Branch *offers no objection to the development.*

This TIA accompanies the Application for Subdivision and Rezoning of Farm 613/3, Paarl.

2. PROPOSED DEVELOPMENT

2.1 Proposed Development

The proposed development will consist of residential erven, similar to those to the south of the subject property. A total of 305 erven are proposed, ± 200 m^2 in size on average. According to the project team, the target market is the lower income group, and possibly the subsidy housing market.

An institutional area is also indicated upon entering the site from Sonstraal Road. According to the project team, it is the intention to provide a crèche for the residents of the proposed residential development.

See the proposed layout on the attached ***Proposed Subdivision (Rev 7)*** prepared by *Friedlaender, Burger & Volkmann*.

2.2 Access to the Property

Access to the subject property is currently, informally, obtained from Sonstraal Road from the north, as well as an extension of Waterbok Street from the south. From aerial photos, it seems that the majority of the desire lines currently traversing the property between Sonstraal Road and the area to the south are pedestrian routes. Access to the development is proposed from Sonstraal Road opposite the existing Correctional Services-access. See ***Diagram 1*** below. Detail on access will be further discussed in *paragraph 4* below.

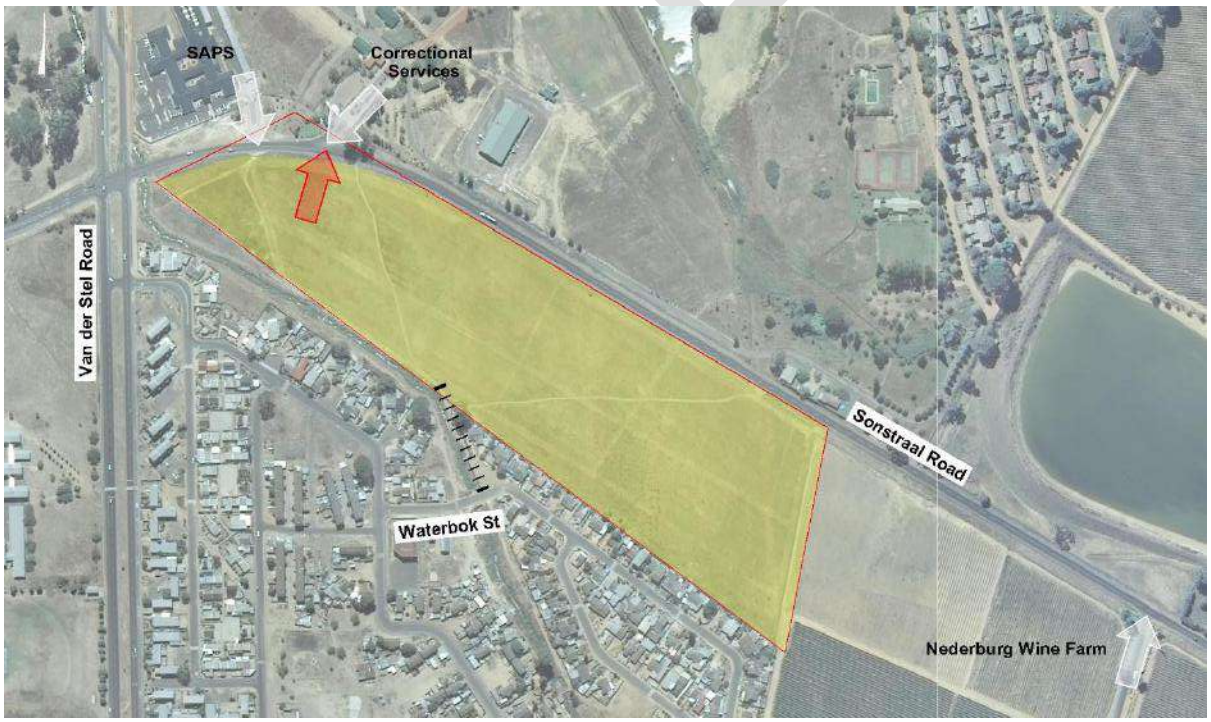


Diagram 1 : Access to proposed development

3. TRAFFIC

3.1 Existing Traffic

Although a form of lockdown conditions under the National State of Disaster: COVID-19, declared in 2020, is still in effect, traffic counts were conducted at the Jan van Riebeeck Drive/Van der Stel Road- and Van der Stel Road/Sonstraal Road intersections, as discussed with/agreed on with Drakenstein Municipality's, mr Carel Lotz. The said counts were conducted on Thursday, 18 February 2021 (after the new school term commenced).

The peak hour volumes derived from the said counts are indicated in ***Figure 1*** attached.

The 2021 traffic volumes are not necessarily representative of 'normal' weekday traffic, however, as it is not yet known to what extent weekday traffic patterns will return to 'normal' once lockdown conditions are completely lifted, these volumes were used as a form of baseline for the purpose of traffic analyses.

3.2 Traffic Growth

Traffic counts previously conducted along Sonstraal Road in the vicinity of the proposed access (at the Nederburg Wine Farm-access) were consulted to obtain an idea of the traffic growth, if any. The said counts were conducted in February 2019 during harvest. The total two-way traffic counts of February 2019 and that of February 2021 along Sonstraal Road between the Nederburg Wine Farm-access and the access to the proposed development, are very similar.

The 2014-information contained in the previous TIA were also consulted. Based on the February 2021 traffic counts conducted at the Van der Stel Road/Sonstraal Road intersection and the August 2014 traffic counts previously conducted at the said intersection, an average growth rate of approximately 2% per annum was calculated.

The *Road Network Information System* (RNIS) of Western Cape Government (WCG) was also consulted. RNIS contains total two-way peak hour volumes for 2018, 2015, 2009, 2004, 2002 and 2000. The growth rate suggested, based on the last five available AADT volumes, is 3,47% per annum, whilst the recalculated (based on selected volumes) growth rate suggested is 0,83% per annum.

Based on all of the above, a slightly below average growth rate of 2% per annum will be applied. To assess a five-year projection, the existing 2021 peak hour volumes were increased by 2% per annum for five (5) years to obtain estimated 2026 peak hour volumes. These estimated/background peak hour volumes are indicated in ***Figure 2*** attached.

Updated traffic counts were not conducted at the position of the proposed access-intersection along Sonstraal Road, however, it was assumed that the 2014-counts conducted at the SAPS- and Correctional Services-approaches remained applicable. This is included in the traffic indicated in ***Figure 2*** attached.

3.3 Traffic Generation

Based on the location and the aimed target market of the proposed residential erven, the trip generation rate for low income housing as contained in the *South African Trip Generation Rates Manual* (SATGR) was applied. The said rate is suggested as 0,5 trips per dwelling unit, with a 35/65 in/out split during the AM peak hour and vice versa during the PM peak hour. Based on this, the proposed 305 erven will have the potential to generate 152 peak hour trips (53 in, 99 out during the AM peak hour and vice versa during the PM peak hour).

As previously mentioned, the institutional erf is intended to be a crèche for the residents of this development. It was therefore assumed that the crèche would not generate external traffic with regard to parents transporting children. However, an additional 10 trips were added to account for staff members to the crèche travelling from surrounding areas (10 in during the AM peak hour and 10 out during the PM peak hour).

Based on the above, a total of 162 peak hour trips are expected (63 in, 99 out during the AM peak hour and vice versa during the PM peak hour). These potential peak hour trips are not expected to have more of an impact on the surrounding road network than the previously approved proposal (including a business erf and two institutional erven) referenced in *paragraph 1* above.

3.4 Traffic Distribution

Based on the location and land uses of the proposed development, the peak hour traffic that can potentially be generated were not distributed to Sonstraal Road based on the existing directional split in traffic along the road, but it was rather assumed that approximately 85% of the generated traffic would travel to/from the west, with the remaining 15% to/from the east.

At the intersections analysed (as mentioned in the previous paragraphs), the abovementioned peak hour trips were distributed based on the existing directional split at the relevant intersections.

The distributed peak hour trips are indicated in ***Figure 3*** attached. These trips were added to the background traffic to obtain the expected peak hour volumes as indicated in ***Figure 4*** attached.

3.5 Traffic Analysis

Traffic analyses of the intersections were done by means of the Sidra Intersection 9.0 software. Service levels A to D are considered acceptable, with D the critical. In congested areas, service level E has previously been considered as the critical.

The intersections analysed consist of lane layouts as follows:

Jan van Riebeeck Drive/Van der Stel Road intersection

This intersection is currently signalised, with dedicated right-turn lanes along the south eastern Van der Stel Road- and northern Jan van Riebeeck Drive-approaches, with a yield-controlled left-slip lane along the said Van der Stel Road approach, and dedicated left-turn lane along the northern Jan van Riebeeck Road-approach. Shared through-turning lanes exist along the other two approaches. The lane layout is indicated below.

Photo 1 : Existing Jan van Riebeeck Drive/Van der Stel Road intersection lane layout

Van der Stel Road/Sonstraal Road intersection

This intersection is currently signalised with dedicated right-turn lanes along the northern Van der Stel Road- and Meaker Street-approaches, and shared through-turning lanes along the other two approaches. The lane layout is indicated below.

Photo 2 : Existing Van der Stel Road/Sonstraal Road intersection lane layout

Sonstraal Road/Access intersection

This is currently a T-intersection ('correctional services'), with free-flow conditions along Sonstraal Road and stop-control on the existing approach. The proposed development-access will be situated opposite this intersection. Intersection control with the addition of the proposed development-approach will be discussed hereafter. The existing lane layout is indicated below.

Photo 3 : Existing Sonstraal Road/Access intersection lane layout

3.5.1 Analysis of Existing and Estimated Peak Hour Volumes (excluding proposed development)

Jan van Riebeeck Drive/Van der Stel Road intersection

According to the Sidra analyses, acceptable service levels C and above are experienced on most movements during the existing peak hours, with service level D experienced on some of the right-turn movements, which is considered critical, but acceptable.

During the estimated peak hours, some of the service levels C currently experienced can be expected to change to service level D.

With further annual increase in the left-turning movement along Jan van Riebeeck Drive towards Sonstraal Road southeastbound, it could in future be considered to change the existing dedicated left-turn lane to a continuous slip-lane.

It can thus be concluded that to accommodate the background traffic at the Jan van Riebeeck Drive/Van der Stel Road intersection, no upgrades are yet suggested.

Van der Stel Road/Sonstraal Road intersection

According to the Sidra analyses, acceptable service levels B and C are currently experienced on all movements to this intersection during the existing peak hours.

During the estimated peak hours, these acceptable service levels are expected to remain, with marginal increase in queuing.

It can thus be concluded that no upgrades to the Van der Stel Road/Sonstraal Road intersection is considered necessary to accommodate the background traffic.

Sonstraal Road/Access intersection

Acceptable service levels A are expected on all movements, based on the estimated peak hour traffic at this T-intersection.

It can thus be concluded that no upgrades to the Sonstraal Road/Access intersection is considered necessary to accommodate the background traffic.

3.5.2 Analysis of Expected Peak Hour Volumes (including proposed development)

The traffic that can potentially be generated by the proposed development (***Figure 3***) was added to the estimated 2026 peak hour volumes, i.e. background traffic (***Figure 2***), to obtain the expected 2026 peak hour volumes (***Figure 4***).

Jan van Riebeeck Drive/Van der Stel Road intersection

During the expected peak hours, the service levels as discussed with the background volumes can be expected to remain, with marginal increase in queuing.

Although the right-turning traffic along the Van der Stel Road-approach (towards Jan van Riebeeck Drive northbound) is large (795 vehicles), the traffic along the opposite approach is relatively low. It can be expected that these low volumes would increase in future, when the road is extended across the railway line/river – at that stage an additional right-turn lane might become required along the south eastern Van der Stel Road-approach to accommodate the said large volumes.

It can thus be concluded that no upgrades to the Jan van Riebeeck Drive/Van der Stel Road intersection is considered necessary to accommodate the proposed development traffic.

Van der Stel Road/Sonstraal Road intersection

With the addition of the proposed development traffic, the service levels C previously experienced on the Sonstraal Road- and southern Van der Stel Road-approaches can be expected to change to service level D during the expected AM peak hour. During the expected PM peak hour, the service levels B and C previously experienced can be expected to remain, with marginal increase in queuing.

It can thus be concluded that no upgrades to the Van der Stel Road/Sonstraal Road intersection is considered necessary to accommodate the proposed development traffic.

Sonstraal Road/Access intersection

With traffic along Sonstraal Road increasing annually, it can be expected that vehicles on the priority-controlled side-streets/accesses would struggle to enter Sonstraal Road during peak times. To accommodate the proposed development traffic, it is suggested that a roundabout be provided at the

access to Sonstraal Road. Acceptable service levels A can be expected on all movements to this intersection as a roundabout.

As previously mentioned, the SAPS- and Correctional Services-accesses are spaced relatively close to one another – by providing a roundabout at this intersection (correctional services/proposed development), vehicles traveling from the SAPS-access and struggling to turn right, could turn left and make a u-turn at the roundabout.

The roundabout would furthermore provide some traffic calming along Sonstraal Road, especially vehicles approaching from the east.

Based on the said factors, a roundabout is considered the appropriate form of intersection control.

It can thus be concluded that a roundabout is suggested at the Sonstraal Road/Access intersection to accommodate the proposed development.

4. GEOMETRY

As previously mentioned, access is obtained from Sonstraal Road. According to RNIS, the said road is classified as a Class 4-road.

As discussed in *paragraph 3.5.2* above, a roundabout with one circulating lane is proposed at the access-intersection. The size of the roundabout (36 metre inscribed diameter) is proposed to accommodate turning movements of vehicles up to and including the size of WB-15, i.e. large vehicles should be able to make a u-turn at the roundabout should a wrong turn have been made and a u-turn along Sonstraal Road is required. See a schematic layout below:

Diagram 2 : Proposed roundabout at Sonstraal Road/Access intersection

The SAPS-access T-intersection is situated ± 75 metres west of the proposed development access-intersection. As the development access is proposed opposite an existing intersection, the existing spacing of these intersections will remain. With the provision of the proposed roundabout, vehicles exiting from the SAPS-access via right-turn movement will have the option of turning left and making a u-turn at the roundabout should the right-turn movement outbound become too difficult.

The proposed development will not be gated, i.e. no security controlled booms or gates. Stacking at the access is thus not considered to become problematic.

Internal road reserves are minimum 10 metres, with the access section 16 metres and the 'main' route measuring 13 metres, which are considered acceptable. Internal streets will be 5,5 to 6,0 metres wide, with the access section 6,8 metres (blacktop widths). All bellmouth radii will be 6,0 metres, which is considered acceptable.

Refuse removal will be handled by way of Municipal kerbside collection along the internal streets. The internal street widths and bellmouths are considered sufficient to accommodate the anticipated refuse vehicles.

5. PARKING

Parking layouts are not yet available. However, it is expected that parking will be provided on the individual erven in the form of garages/driveways/carports. It should thus be ensured that 1,0 bay per dwelling unit is provided in accordance with *Drakenstein Municipality Zoning Scheme*.

As mentioned above, the minimum internal road reserves are 10 metres wide. Sufficient space will thus be available to accommodate isle widths required behind parking bays (7,5 metres) between the individual erf boundary and the opposite edge of the internal street.

6. PUBLIC- AND NON-MOTORISED TRANSPORT

6.1 Public Transport

As far as could be established, no formal public transport facilities exist in the immediate vicinity of the subject property. With the construction of the roundabout at the access, it is suggested that public transport embayments be provided along Sonstraal Road, at the outbound legs of the access-intersection.

6.2 Non-Motorised Transport (NMT)

No formal NMT-facilities exist in the immediate vicinity of the subject property. It is suggested that sidewalks be provided in the vicinity of the abovementioned proposed public transport embayments, and that accommodation for pedestrians be made across Sonstraal Road at the roundabout.

7. CONCLUSIONS

The following can be concluded from the report:

1) That this TIA accompanies the application for subdivision and rezoning of Farm 613/3, bordered by Sonstraal Road to the north and the existing Charleston Hill residential area to the south, to the east of Van der Stel Road and west of Nederburg Wine Farm, Paarl;
2) That the proposed development consists of 305 residential erven, similar to the existing residential area to the south of the subject property, with an accompanying institutional site intended to be a crèche for the residents of the proposed development;
3) That access to the proposed development is proposed to/from Sonstraal Road opposite the existing T-intersection providing access to the correctional services;
4) That the proposed development has the potential to generate 162 peak hour trips (63 in, 99 out during the AM peak hour and vice versa during the PM peak hour);
5) That to accommodate the proposed development-traffic, a roundabout is suggested at the Sonstraal Road/Access intersection, the size of which is proposed to accommodate turning movements of large vehicles;
6) That internal road reserves are minimum 10 metres, with the access section 16 metres and the 'main' route 13 metres, whilst the internal streets are 5,5 to 6,0 metres and the access section 6,8 metres (blacktop widths) and bellmouth radii 6,0 metres;
7) That refuse removal will be handled by way of Municipal kerbside collection, for which the internal streets will be designed;
8) That parking will be provided on the individual erven in line with Drakenstein Municipal requirements, with sufficient available isle width between the erven and the opposite edge of the internal streets; and
9) That it is suggested that public transport embayments be provided along the Sonstraal Road outbound legs of the access-intersection, with accompanying sidewalks in the vicinity of the said embayments.

8. RECOMMENDATIONS

From the above, it is recommended that the proposed development be considered for approval from a traffic point of view, with a roundabout (single circulating lane, 36 metre inscribed diameter) at the Sonstraal Road/Access intersection accompanied by public transport embayments along the Sonstraal Road-outbound legs, sidewalks in the vicinity of the roundabout and accommodation for pedestrians across Sonstraal Road at the roundabout.

We trust that the Traffic Impact Assessment will be to your satisfaction and will gladly provide any additional information required on request.

Yours faithfully,

_____ _____

Compiled by: Yolandi Obermeyer (B Eng) **Piet van Blerk** Pr Eng

UDS AFRICA

Attachments:

Locality Plan

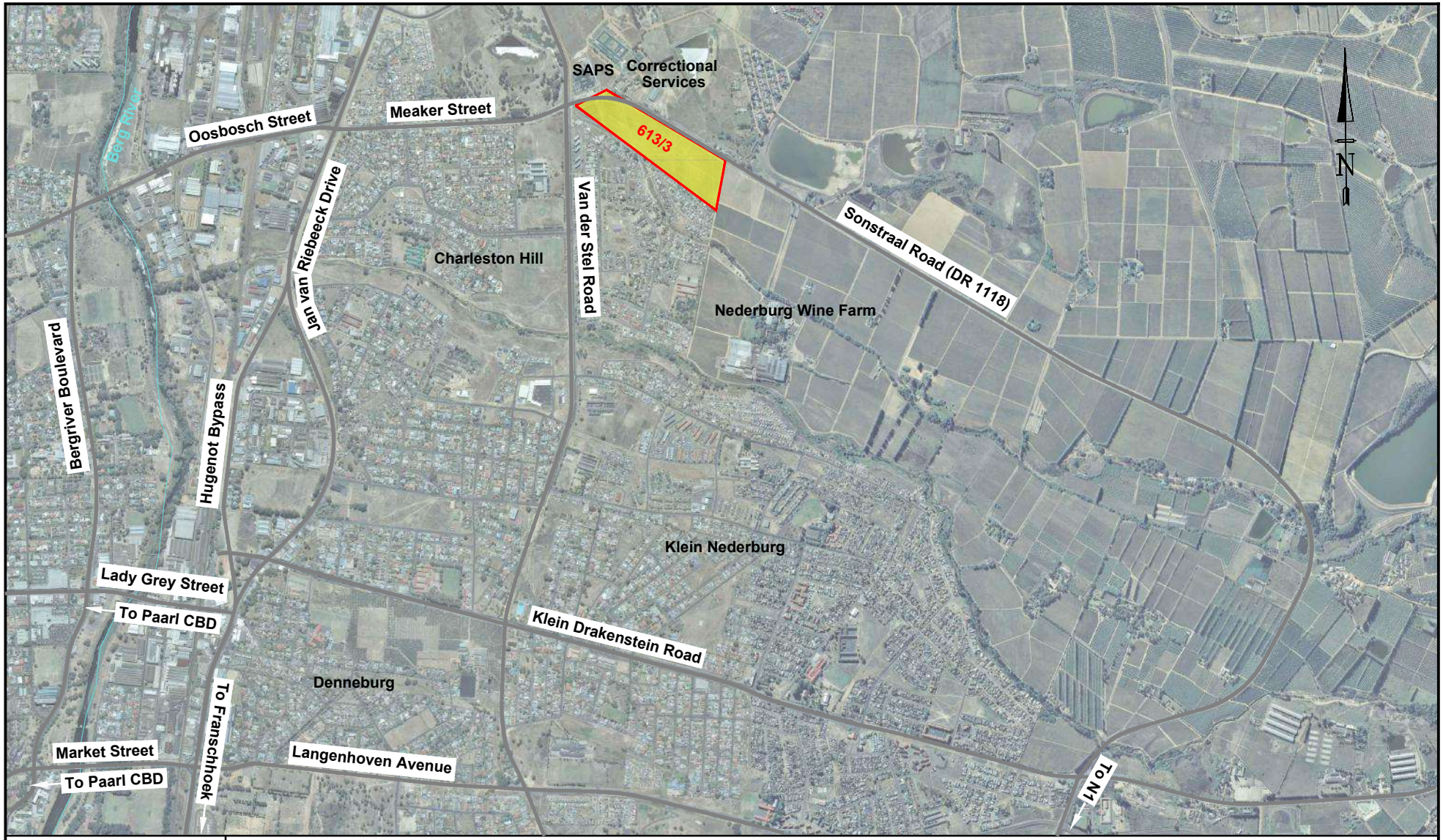
Proposed Subdivision (Rev 7) (*Friedlaender, Burger & Volkmann*)

Figure 1 Available AM/PM Peak Hour Traffic Volumes

Figure 2 Estimated 2026 AM/PM Peak Hour Traffic Volumes

Figure 3 Distribution of Traffic Generated by Proposed Development

Figure 4 Expected 2026 AM/PM Peak Hour Traffic Volumes



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Locality Plan

LAND-USE TABLE:

LAND-USE	NOTATION	No. OF STANDS	AREA (ha)	% OF TOTAL
Residential		305	6.45	59
Open Space		5	1.01	9
Institution		1	0.22	2
Business		0	0.00	0
Internal Roads			2.20	20
Sonstraal Road Reserve			1.02	9
	Total	311	10.90	100

8/527

7/527

RE/613

Sonstraal Road (25m)

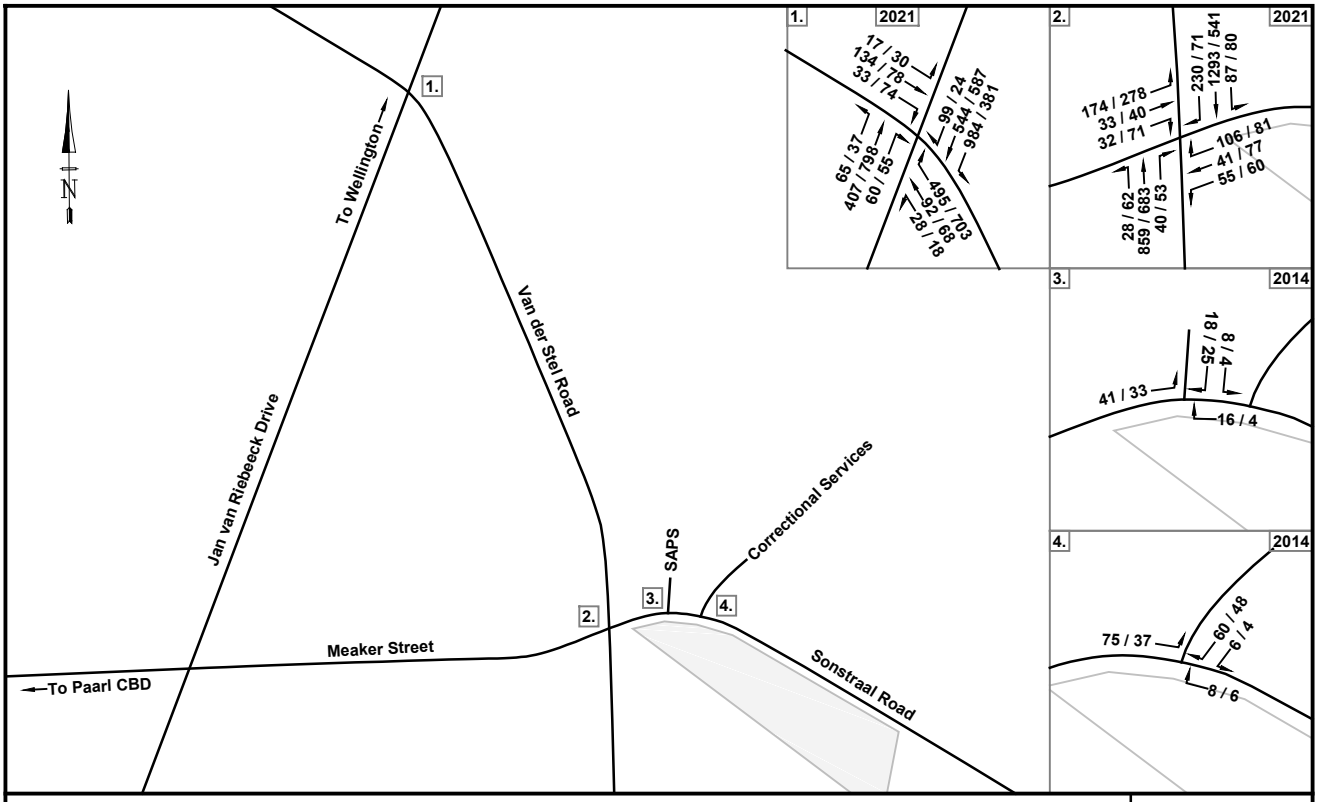
Remainder Road

Street 10m

Street 13m

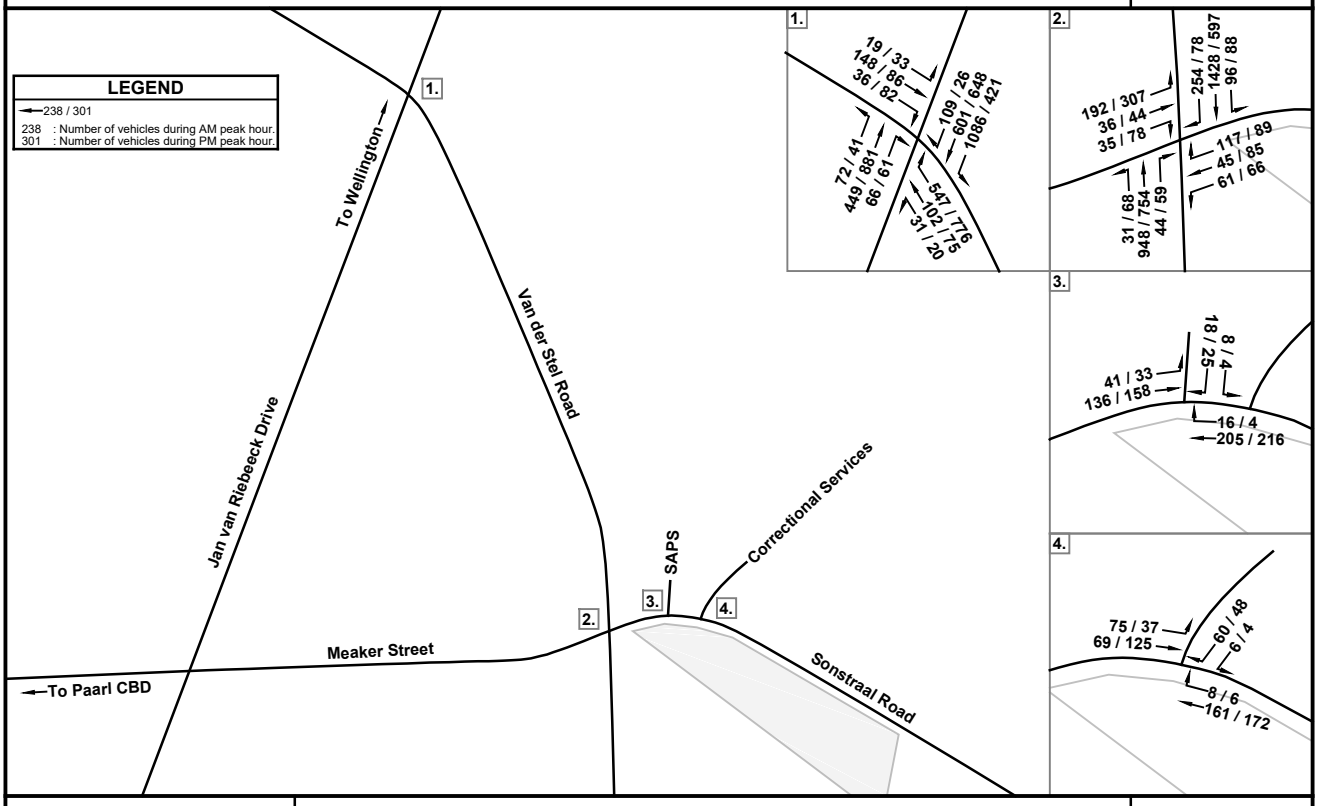
Stormwater Servitude

Notes		Caveat	Scale 1:2000	Date:September2020	Contours: N/A	System: WG 19
	TN	1. Any areas and dimensions are provisional and will be finalised at time of subdivision survey. 2. All levels are to be confirmed prior to construction.	PROPOSED SUBDIVISION PORTION 3 OF THE FARM NEDERBURG ESTATES No. 613 PAARL			
			Ref:PA613-3	Dwg:PROPOSED SUB_REV7		



Available AM/PM Peak Hour Traffic Volumes
(Thursday, 18 February 2021 ; Tuesday, 26 August 2014)

Figure 1



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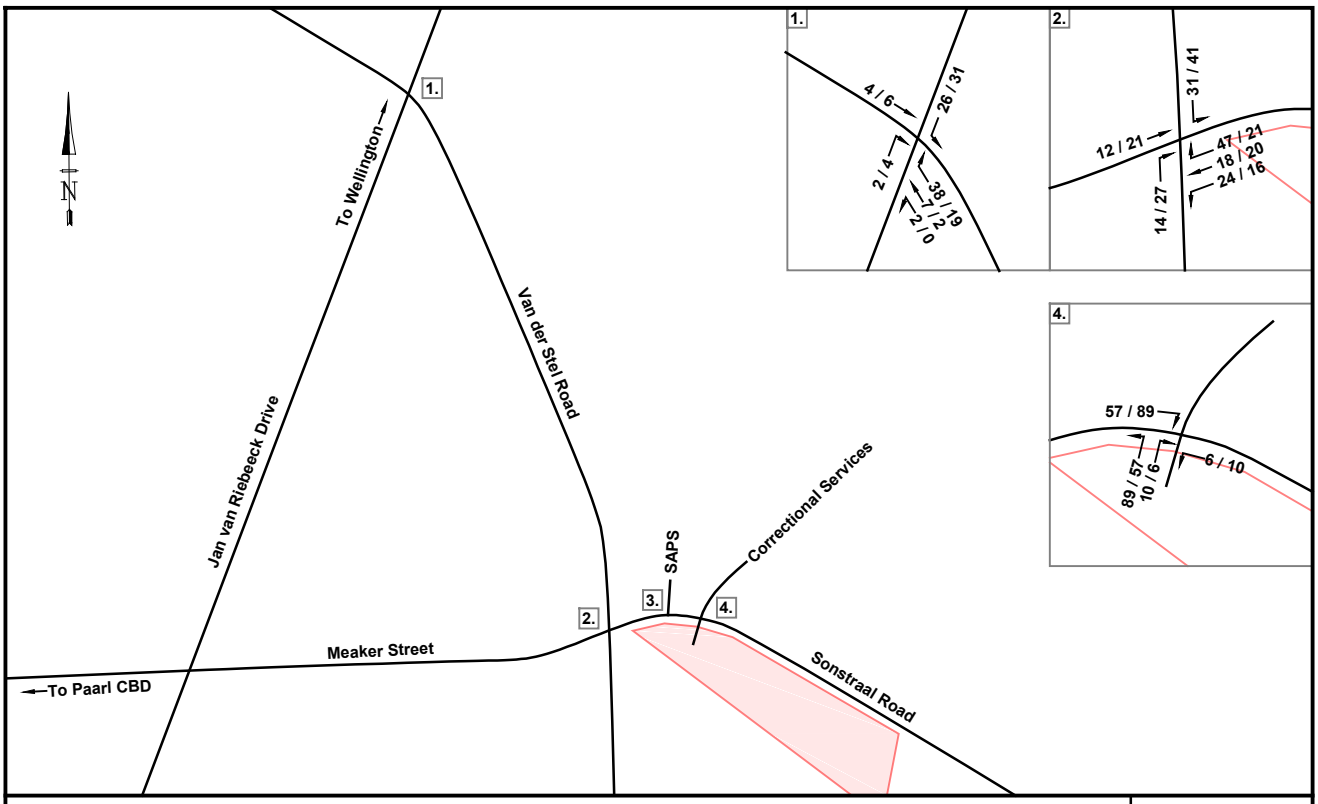
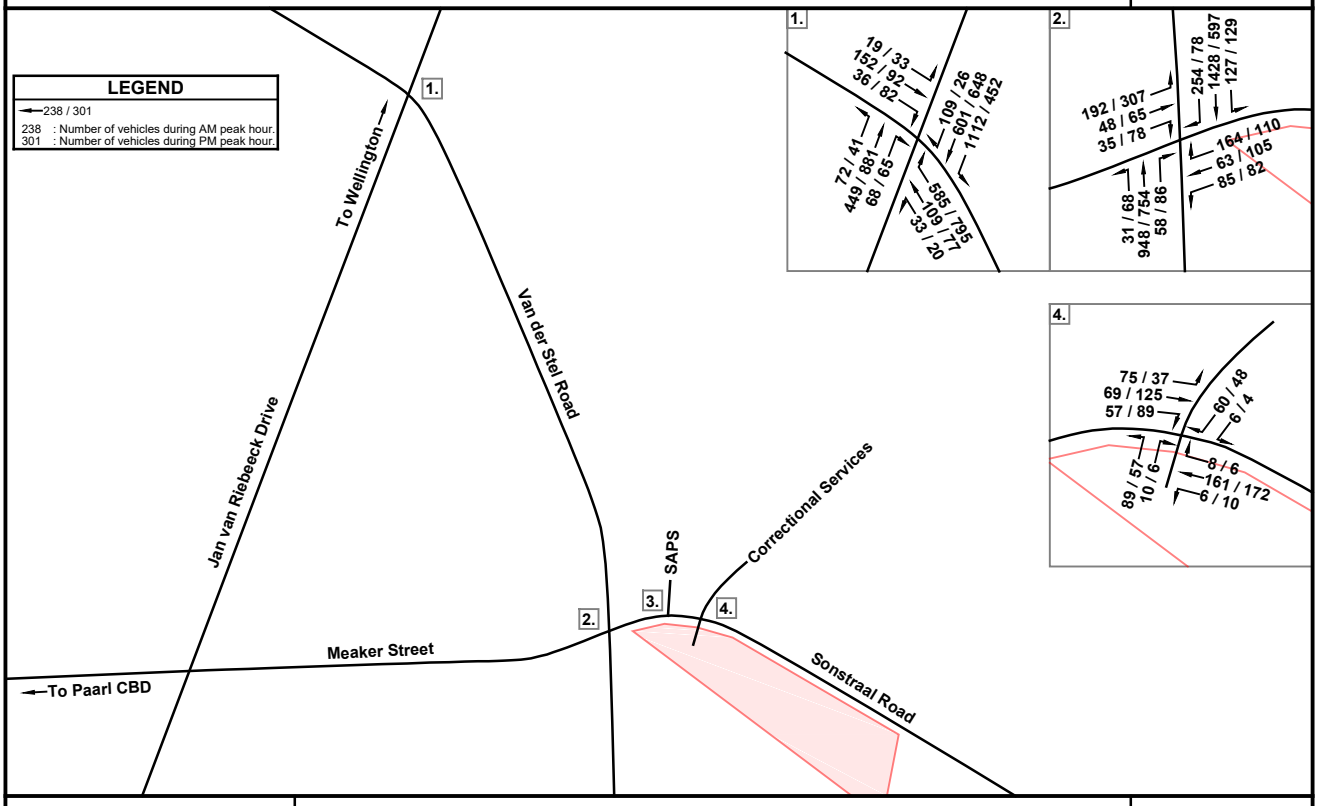
Estimated 2026 AM/PM Peak Hour Traffic Volumes
(including 2% per annum traffic growth)

Figure 2



Distribution of Traffic Generated by Proposed Development

Figure 3



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Expected 2026 AM/PM Peak Hour Traffic Volumes (including traffic growth and proposed development)

Figure 4

APPENDIX E: Engineering Services Report

NEDERBURG HOUSING DEVELOPMENT

FARM NEDERBURG ESTATES 613 PORTION 3
WITHIN THE DRAKENSTEIN MUNICIPAL AREA, PAARL, WESTERN CAPE

CIVIL ENGINEERING SERVICES REPORT

REVISION 0

MARCH 2021

ASLA DEVCO

PO BOX 118

Gordons Bay

7151

UDS Africa

9 Electron Road

Techno Park

Stellenbosch, 7600

Contents

Date: 19 March 2021

Our Ref: uds353/reports/services

ASLA DEVCO
PO BOX 118
Gordons Bay
7151

ATTENTION: Me K. Siebrits

Dear Madam,

ENGINEERING SERVICES REPORT FOR THE PROPOSED NEDERBURG HOUSING DEVELOPMENT, FARM NEDERBURG ESTATES 613 PORTION 3, WITHIN THE DRAKENSTEIN MUNICIPAL AREA

1. Background

UDS Africa was appointed by ASLA DEVCO to compile a services report in support of the development application for the Nederburg Housing Development, Farm Nederburg Estates 613 Portion 3. The site covers an area of 10.84 ha and is currently undeveloped. The site is currently used for agricultural purposes.

The purpose of this report is to address the requirements of Drakenstein Municipality with regard to the provision of engineering services for the proposed development. The infrastructure design of the development is based on the technical requirements and guidelines as stated in the Guidelines for Human Settlements Planning and Design (Red Book: 2019) and to the requirements and standards of Drakenstein Municipality.

2. Locality

The site is located in Paarl, within the Drakenstein municipal area. The site is bordered to the north by Sonstraal Road, to the east by agricultural land, to the south by a residential development and to the west by van der Stel Road. Below is a locality plan for reference (area highlighted in yellow).

Figure 1: Locality plan for Farm 613 Portion 3

3. The development

The proposed development will be largely residential in nature, with a small business and institutional component. Please refer to **Annexure A** for a copy of the subdivision plan produced by AHG Town Planning. Below is a summary of the land uses to from part of the proposed development:

USE	AREA	NO
Residential	5.450 ha	213 units (39 units/ ha)
Open Space	0.960 ha	
Institutional	0,390 ha	
Business	0,150 ha	
Roads	3,870 ha	

Table 1: Summary of land uses

4. Water Demand

4.1 Water demand for proposed development

The water demand for the proposed development is calculated (in accordance with the Guidelines for Human Settlement Planning and Design) as follows:

WATER DEMAND						
DEVELOPMENT	**Units**	**GLA (m^2)**	**l/ unit/ day**	**l/ 100m^2**	**TOTAL (l/d)**	**TOTAL (l/s)**
Residential	213		500		106 500	1.233
Institutional (50% coverage, bulk factor of 2)		3 900		600	23 400	0.271
Business (50% coverage, bulk factor of 2)		1500		400	6 000	0.069
TOTAL					**135 900**	**1.573**
Annual Average Daily Demand (AADD)	135 900 l/d 1.573 l/s					
Peak factor (Residential)	4.6					
Peak factor (Business)	3.3					
Peak factor (Combined)	4.32					
Peak demand	586 920 l/d 6.793 l/s					

Table 2: Water demand calculation

The internal water reticulation network of the proposed development to comply with the minimum specifications as indicated in the “Red Book - Guidelines for Human Settlement Planning and Design” and the municipal standards from Drakenstein Municipality.

4.2 Availability of water reticulation services

GLS was appointed to conduct an investigation into the availability of spare capacity on the existing water network in order to accommodate the development. Please refer to **Annexure B** for the complete report.

It is proposed that the development connects to the existing 200mm pipeline located west of the site in Van Der Stel Road.

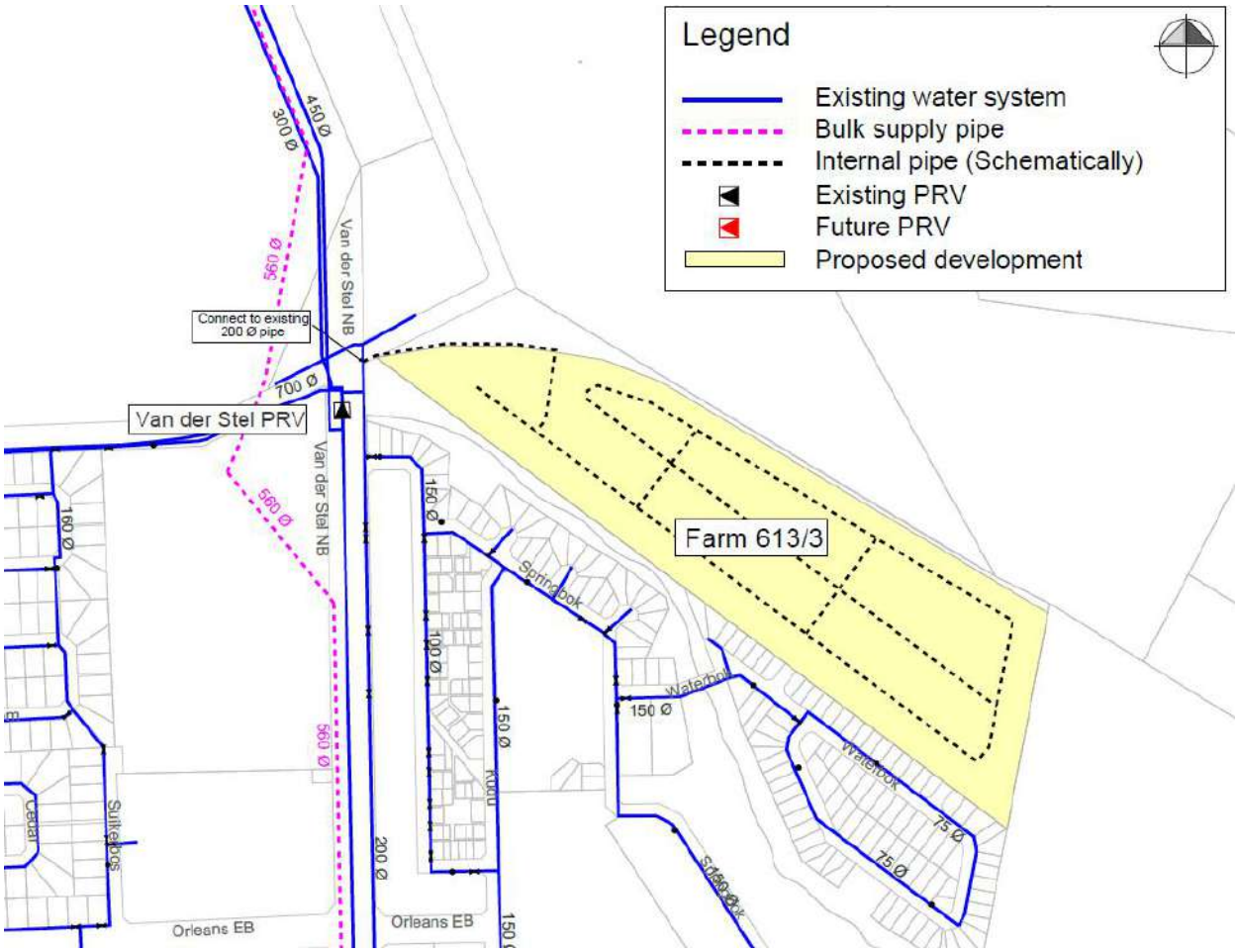

Figure 2: Existing water reticulation services

According to the findings of the GLS report, there is currently insufficient capacity in order to accommodate the development. It is proposed that masterplan items DPW 3.21 & DPW 3.22 are installed in order to provide adequate capacity to support the development (refer to figure 3).

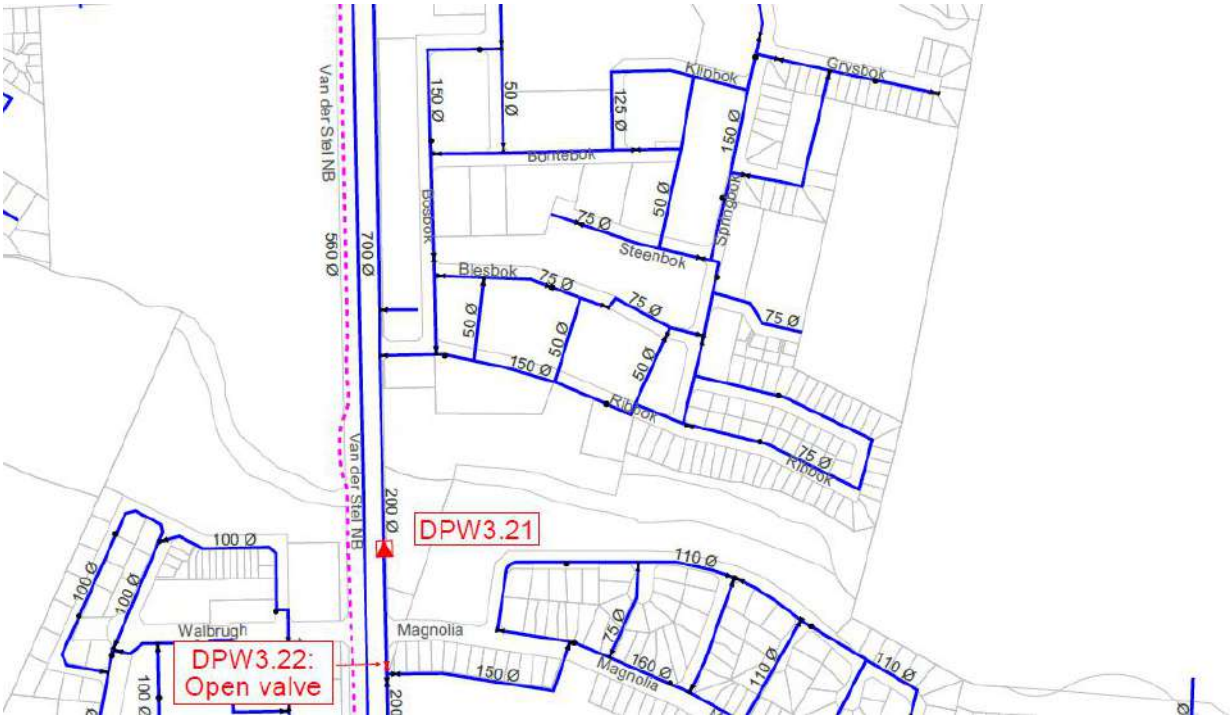

Figure 3: Water reticulation masterplan

5. Sewerage

5.1 Sewer demand for proposed development

The sewerage flow for the proposed development is calculated (in accordance with the Guidelines for Human Settlement Planning and Design) as follows:

SEWER FLOW	
Average Dry Weather Flow (ADWF) (90% of annual average daily water demand)	122 310 l/d (1.416 l/s)
Peak Factor	3.25
Peak Dry Weather Flow (PDWF)	4.600 l/s
Peak Wet Weather Flow (PWWF)	5.291 l/s

Table 3: Sewer demand calculation

The internal sewer reticulation network of the proposed development to comply with the minimum specification as given in the “Red Book - Guidelines for Human Settlement Planning and Design” and the municipal standards from Drakenstein Municipality.

5.2 Availability of capacity on sewer reticulation network

GLS was appointed to conduct an investigation into the availability of spare capacity on the existing sewer network in order to accommodate the development. Please refer to **Annexure B** for the complete report.

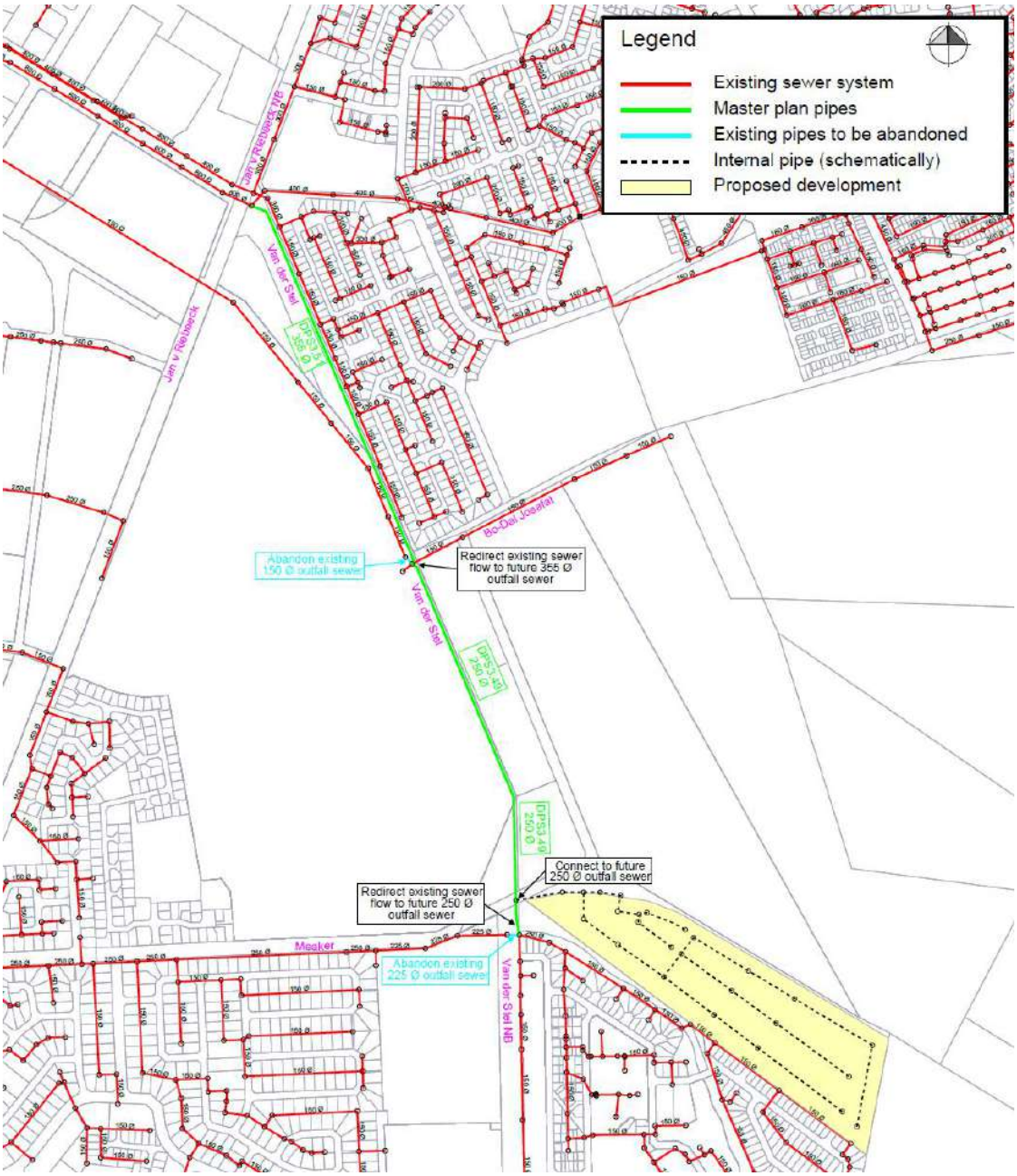

Figure 4: Sewer reticulation masterplan

According to the findings of the GLS report, there is currently insufficient capacity in order to accommodate the development. It is proposed that masterplan items DPS 3.49 & DPS 3.51 are installed in order to provide adequate capacity to support the development (refer to figure 4).

The proposed connection point for the development will be on the new 250mm outfall sewer to be located west of the site in Van Der Stel Road.

6. Stormwater system

The site has a gentle and uniform fall from contour level 110m in the southeast corner of the site to the 95m contour level in the northwest corner. The average slope over the site is 2.1%.

A full stormwater management plan has been prepared for the proposed housing development, this will be submitted as a separate report to the engineering services report. An attenuation facility needs to be provided on site to accommodate the 1:50 year flood and only allow the 1:2 year pre-development run-off to exit the site as per the requirement set by Drakenstein Municipality.

7. Road Network

Access to the site is proposed from Sontraal Road. A full traffic impact assessment was completed by UDS Africa to model the impact of the development on the existing road network. This will be submitted as a separate report to the engineering services report.

All internal roads to the proposed development must comply with the minimum specification as given in the “Red Book - Guidelines for Human Settlement Planning and Design” and the municipal standards from Drakenstein Municipality.

8. Conclusion

From the abovementioned information provided, it is concluded that the site can be serviced from an engineering perspective. We trust that the information provided will be sufficient for the purposes of the application.

All aspects of this report will be confirmed in the detail design stage of the project.

Please do not hesitate to contact the undersigned should you require any additional information.

Yours faithfully,

Compiled by:

Ruaan Siebrits (Pr Tech Eng)

Attachments:

Annexure A – Proposed subdivision
Annexure B – GLS Report

ANNEXURE A

* NOTES :
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE REPORT ENTITLED "PROPOSED NEDERBURG HOUSING DEVELOPMENT FLOODLINE REPORT REV 1" (107471 - DISTELL).
2. DUE TO UPSTREAM FLOW RESTRICTIONS THE 1:50 YEAR AND 1:100 YEAR FLOODLINES ARE THE SAME

Scale: 1 : 2 500 (A3)

FLOOD LINE CERTIFICATION

In accordance with Section 144 of Act 36 of 1998, it is hereby certified that the township shown on this plan is affected by the maximum flood in the public stream which will be caused by storms of recurrence intervals of 100 years as indicated.

.....
Name of Engineer Registration No. Date

PROJECT:

SUBDIVISION PLAN

Portion 3 of the farm NEDERBURG ESTATES 613, Paarl RD

LAND-USE TABLE:

LAND-USE	NOTATION	No. OF STANDS	AREA (ha)	% OF TOTAL
Residential		213	5,45	50
Open Space		3	0,96	9
Institution		2	0,39	4
Business		1	0,15	1
Internal Roads			2,85	27
Sonstraal Road Reserve			1,02	9
Total		219	10,84	100

1. The figure "ABCD" represents Ptn. 3 of the farm NEDERBURG ESTATES No. 613, Paarl RD, (as yet an unregistred portion of the remainder) in extent 10,8398 ha
2. The figure "DefghjC" represents the proposed Subdivisional Area on a portion of the above land and containing zonings as indicated.
3. Ruling size of residential erven = 250 sq.m (12,5m X 20m)
4. Contour and base plan information was obtained from Ben Langbridge Professional Land Surveyor. Contour date is at sea level
5. Al sizes and dimensions are approximate and subject to final survey.
6. Die Subdivisional Area is located in Paarl and falls under the jurisdiction of the Drakenstein Local Municipality.

CLIENT: Distell Ltd.

PLAN NO: PTN 3/613 NED ver. 4.0

ahG Town Planning

Town and Regional Planners

PO Box 2992
Somerset West
7129

TEL: 021 840 3220
FAX: 086 511 6639
CELL: 082 782 0374

E-Mail: leon.jubilius@ahg-property.co.za

ANNEXURE B

14 December 2020

The Manager : Civil Engineering Services
Drakenstein Municipality
P. O. Box 1
PAARL
7620

Attention: Mr Louis Pienaar

Dear Sir

DEVELOPMENT OF PORTION 3 OF FARM 613 (NEDERBURG ESTATE), PAARL: CAPACITY ANALYSIS OF THE BULK WATER & SEWER SERVICES

This report replaces the previous bulk water and sewer capacity report for development on Farm 613/3, dated February 2015.

The request by Mr Tian Koch of UDS Africa regarding comments on the bulk water and sewer supply to the proposed development (Nederburg housing project on portion 3 of Farm 613, Paarl), refers.

This document should inter alia be read in conjunction with the Water Master Plan (performed for the Drakenstein Municipality) dated June 2020 and the Sewer Master Plan dated June 2020.

Future development area PF6, which includes the proposed development, was conceptually taken into consideration for the recently completed master plans for the water and sewer networks.

1. WATER DISTRIBUTION SYSTEM

1.1 *Distribution zone*

The master planning indicated that development on portion 3 of Farm 613 in Paarl should be accommodated in the existing Central PRV zone. The connection to the existing system should be done on the 200 mm diameter pipe in Van der Stel Street, as shown on Figure 1 attached.

The development is situated inside the water priority area.

1.2 *Water demand*

The water analysis for the June 2020 master plan was performed with a total annual average daily demand (AADD) for development on portion 3 of Farm 613 (future development area PF6 in the water master plan) of 122,6 kL/d.

For this re-analysis, the AADD and fire flows for the proposed development were calculated as follows:

• 305 Residential erven @ 500 L/day/unit		=	152,5 kL/d
• 0,22 ha Institutional area @ 20 kL/day/ha		=	4,4 kL/d
	Total	=	156,9 kL/d
• Fire flow criteria (Low risk)		=	15 L/s @ 7 m

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13 Elektron Street, Techno Park, Stellenbosch, 7600 | PO Box 814, Stellenbosch, 7599
Reg no: 2007/003039/07
www.gls.co.za

Directors: MS Mokgosi, AG Hingeston, JJ Streicher, HA Baartman

1.3. *Present situation*

There is insufficient capacity in the existing water reticulation system to accommodate the proposed development to comply with the pressure and fire flow criteria as set out in the master plan.

1.4. *Implementation of the master plan*

The following network upgrades are proposed in the water master plan in order to improve bulk water supply to the Chicago suburb to the south of the proposed development. When these upgrades are implemented the existing system will have sufficient capacity to accommodate the proposed development of Farm 613/3.

Network upgrade

• DPW3.21	: Install new PRV on existing 200 mm Ø pipe		R	233 000 *
• DPW3.22	: Open existing zone valve		R	0 *
		Total	R	233 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2020/21 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

2. SEWER NETWORK

2.1 *Drainage area*

The development falls within the existing Paarl gravity drainage area. The recommended position for the sewer connection for the proposed development is at the future 250 mm diameter outfall sewer (master plan item DPS3.49) at the western boundary of the development, as shown on Figure 2 attached.

The development is inside the sewer priority area.

2.2 *Sewer flow*

In the June 2020 sewer master plan, the peak day dry weather flow (PDDWF) for development on portion 3 of Farm 613 (future development area PF6 in the sewer master plan) was calculated at 98,0 kL/d.

For this re-analysis, the PDDWF for the proposed development was calculated as 154,4 kL/d.

2.3 *Present situation*

There is insufficient capacity in the existing 250 mm diameter outfall sewer in Meaker Street to accommodate the proposed development. It is proposed in the sewer master plan for Paarl that the development (as well as the existing erven east of Van der Stel Street) is diverted through new sewer infrastructure to the existing 600 mm diameter outfall sewer (with sufficient capacity) on the corner of Jan van Riebeeck Street and Van der Stel Street (as shown on Figure 2).

2.4 *Implementation of the master plan*

The following new outfall sewer will be required to connect the proposed development to the existing 150 mm diameter outfall sewer on the corner of Bo-Dal Josafat Street and Van der Stel Street:

Network upgrade

- DPS3.49 : 685 m x 250 mm Ø new outfall sewer = R 3 650 000 *

The existing 150 mm diameter outfall sewer in Van der Stel Street (between Bo-Dal Josafat Street and Jan van Riebeeck Street) does not have sufficient spare capacity in order to accommodate the proposed development. The following new outfall sewer is proposed to reinforce the existing sewer system in order to accommodate the proposed development together with other potential future development areas:

Network upgrade

- DPS3.51 : 695 m x 355 mm Ø new outfall sewer = R 4 250 000 *

Notes:

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2020/21 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

The routes of the proposed pipelines are schematically shown on Figure 2, but have to be finalised subsequent to detail pipeline route investigations.

Provision should be made for a pipeline servitude (in favour of Drakenstein Municipality) to accommodate master plan item DPS3.49 above.

2.5 *Minimum items required*

The minimum requirements to accommodate the proposed development in the existing sewer system are master plan items DPS3.49 (required to connect the proposed development to the existing sewer system in Bo-Dal Josafat Street) & DPS3.51 (required to reinforce the existing sewer system between Bo-Dal Josafat Street and Jan van Riebeeck Street).

3. CONCLUSION

The developer of the proposed Nederburg residential development on portion 3 of Farm 613 may be liable for the payment of a Development Contribution (as calculated by the Drakenstein Municipality) for bulk water and sewer infrastructure as per Council Policy.

There is insufficient capacity in the existing water and sewer systems to accommodate the proposed development.

The minimum requirements to accommodate the proposed development in the existing water system are master plan items DPW2.21 & DPW2.22 in order to improve network conveyance and redundancy to the existing Chicago suburb to the south of the development area (development of Farm 613/3 in the existing system will have a negative impact on water supply to this area).

The minimum requirements to accommodate the proposed development in the existing sewer system are master plan items DPS3.49 (required to connect the proposed development to the existing sewer system in Bo-Dal Josafat Street) & DPS3.51 (required to reinforce the existing sewer system between Bo-Dal Josafat Street and Jan van Riebeeck Street).

Also find attached hereto Appendix A which includes general notes from Drakenstein Municipality regarding development approvals and conditions.

Yours sincerely

GLS CONSULTING (PTY) LTD
REG. NO.: 2007/003039/07

Per: PC DU PLESSIS

cc. USD Africa
Suite 5 USD House
22 Gardner William Avenue
Paardevlei
7130

Attention: Mr Tian Koch

APPENDIX A **December 2020**

GENERAL NOTES FROM DRAKENSTEIN MUNICIPALITY ATTACHED TO GLS SERVICES REPORT

1. The GLS report is a services capacity report and the costs estimated in this report are only approximate values applicable at the time of the study.

2. The approval of the development by Council will be linked to certain development conditions. These conditions will be the official conditions applicable to the project and will take precedence over this report. Once approval is granted Council will enter into a formal services agreement with the developer.

3. Costs for network upgrades, bulk infrastructure contribution levies (BICL) etc. as mentioned in the GLS report could change from time to time due to escalation, new tariff structures, additional requirements etc.

4. The BICL monies are payable on the total amount of single residential erven developed for a subdivision application. In the case of any other land use developments which place an additional burden on the existing water and sewer networks, a calculation to determine the equivalent amount of residential erven will be performed based on a unit water demand of 750 L/day/erf for a single residential erf.

5. The final BICL monies are calculated according to the approved council's tariffs at the time of payment.

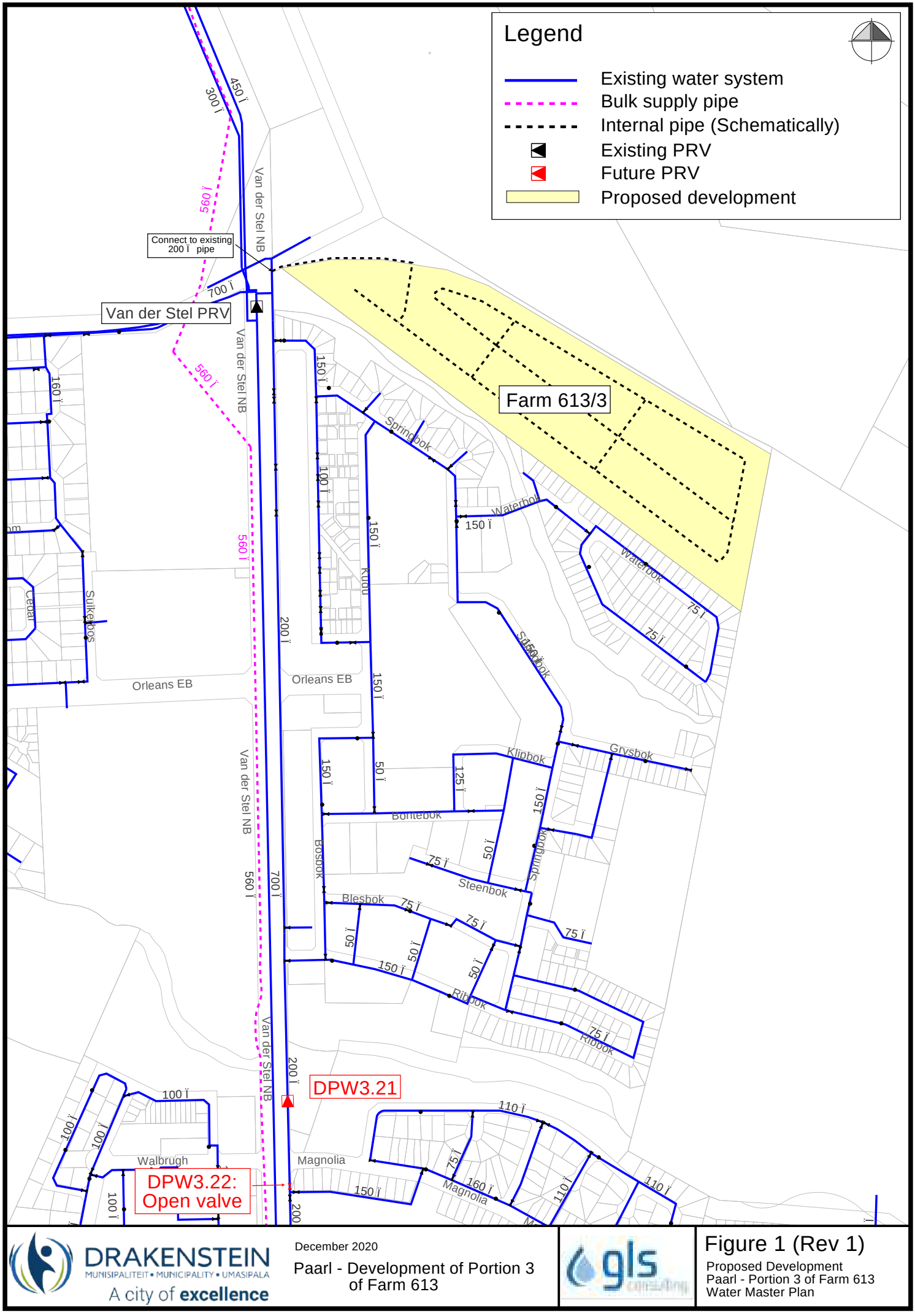
6. The BICL monies are payable before the approval of the building plan certificate or final approval of the subdivision for the transfer of units will be issued, as applicable for the type of development.

7. Where servitudes are required, all the costs and arrangements therefore will be for the developer's account.

8. The developer will be solely responsible for the cost of the link services as identified in the GLS report. The developer will also be responsible for the costs of upgrading to the minimum requirements of the services as identified in the GLS report. These costs may however be off-set against the BICL monies payable.

9. If the developer is requested to provide bridging finance for the development, the outstanding amount will be repaid within a five year period at an interest rate determined by the Head: Finance of Drakenstein Municipality.

10. The above conditions are subject to any approved council policies, which may be amended from time to time.



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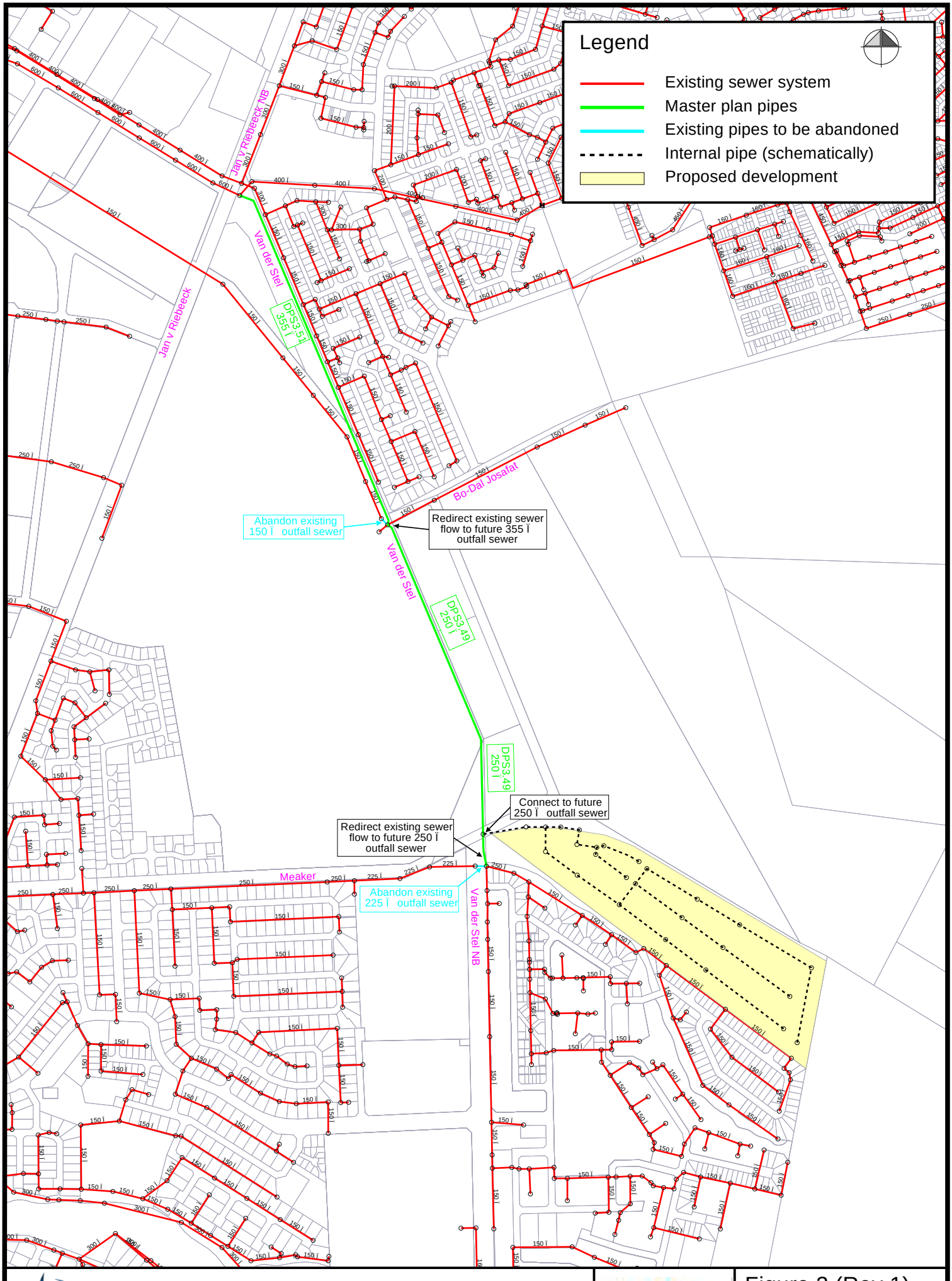
December 2020

Paarl - Development of Portion 3 of Farm 613

gls consulting

Figure 1 (Rev 1)

Proposed Development
Paarl - Portion 3 of Farm 613
Water Master Plan



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December 2020

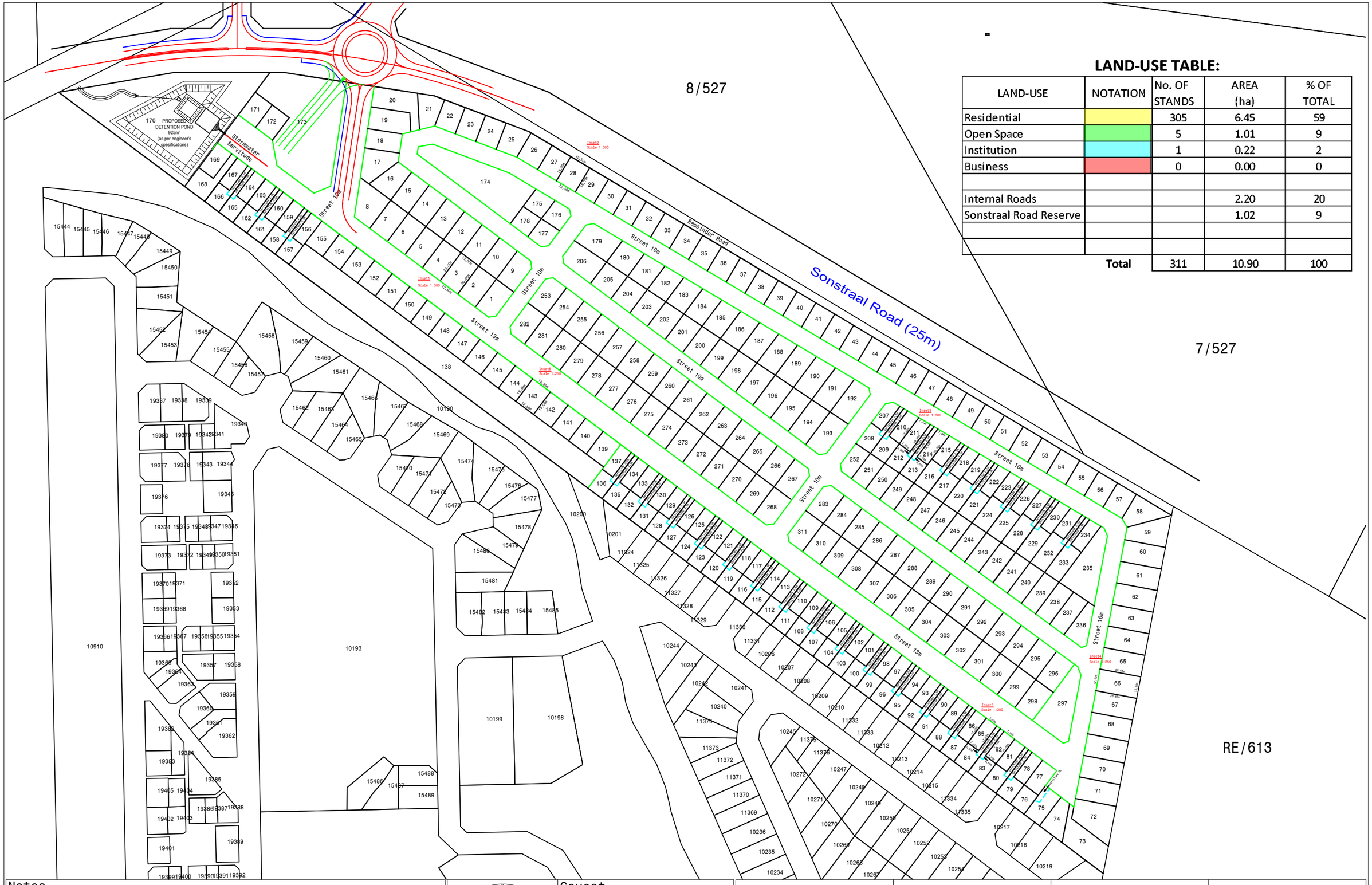
Paarl - Development of Portion 3 of Farm 613

gls consulting

Figure 2 (Rev 1)

Proposed Development
Paarl - Portion 3 of Farm 613
Sewer Master Plan

APPENDIX F: Proposed Subdivision Layout



LAND-USE TABLE:

LAND-USE	NOTATION	No. OF STANDS	AREA (ha)	% OF TOTAL
Residential		305	6.45	59
Open Space		5	1.01	9
Institution		1	0.22	2
Business		0	0.00	0
Internal Roads			2.20	20
Sonstraal Road Reserve			1.02	9
	Total	311	10.90	100

Notes

TN

Caveat

1. Any areas and dimensions are provisional and will be finalised at time of subdivision survey.
2. All levels are to be confirmed prior to construction.

Scale 1:2000	Date:September2020	Contours: N/A	System: WG 19

PROPOSED SUBDIVISION PORTION 3 OF THE FARM NEDERBURG ESTATES No. 613 PAARL

Ref:PA613-3 | Dwg:PROPOSED SUB_REV7

friedlaender, burger & volkmann
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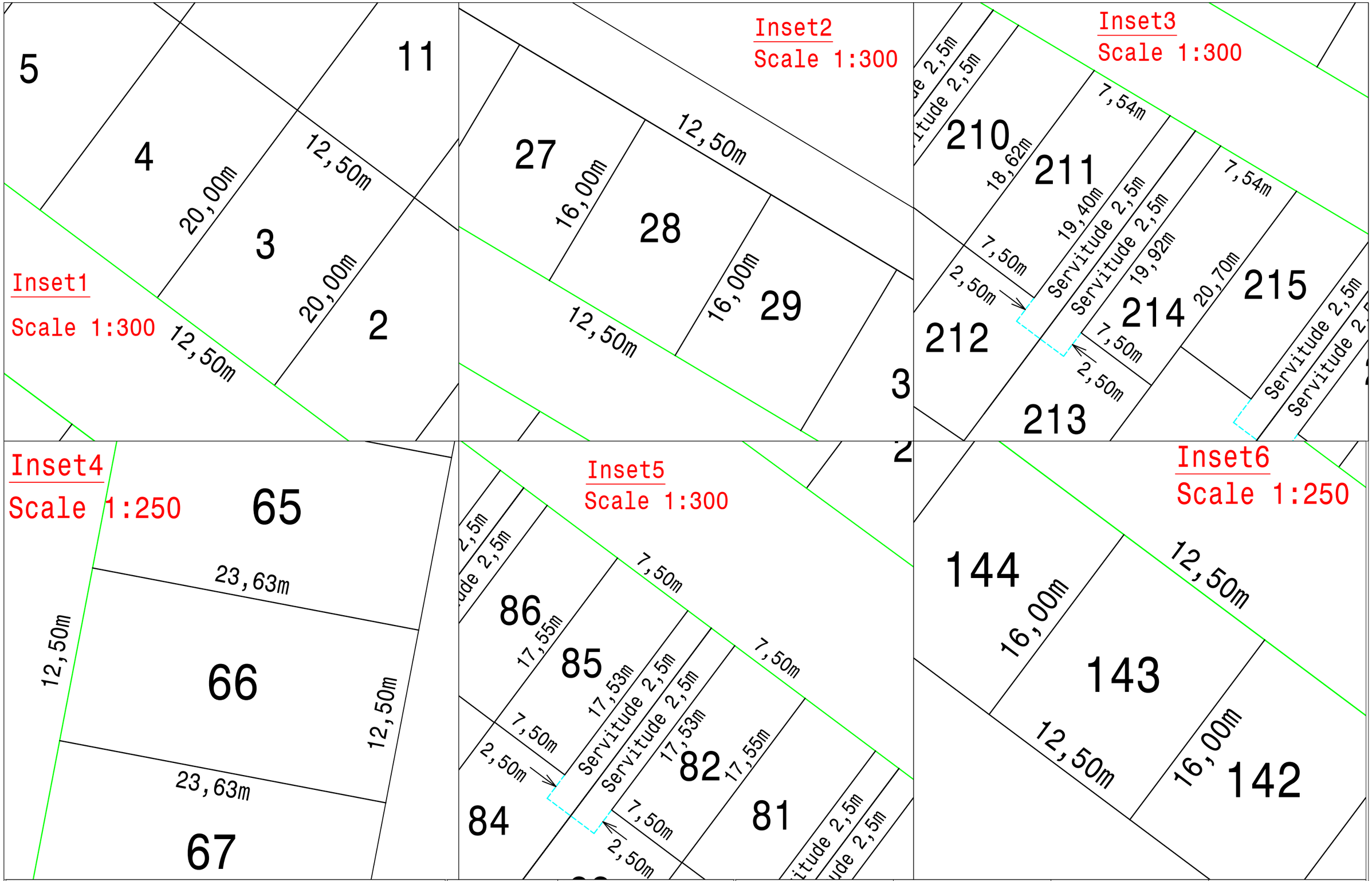

Notes

TN

Caveat
1. Any areas and dimensions are provisional and will be finalised at time of subdivision survey.
2. All levels are to be confirmed prior to construction.

Scale 1:2000	Date:September2020	Contours: N/A	System: WG 19

TYPICAL ERF SIZES

Ref:PA613-3 | Dwg:PROPOSED SUB_REV7

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39 Herte Street, Stellenbosch, 7600 • PO Box 154, Stellenbosch, 7599
Tel +27 21 886 4004 • Email info@fbvsurvey.co.za

APPENDIX G: Amended EMPr for the proposed mixed-use development.

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

for

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG ESTATE NO. 613, PAARL, WESTERN CAPE

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for: ASLA Devco (Pty) Ltd

Prepared by: Ludwig van der Merwe
Author Email: ludwig.vdmerwe@virdus.com

Department Reference: 16/3/3/5/B3/28/1069/20 (Old: 16/3/l/1/B3/28/1120/14)

Case Officer: Bernadette Oosthuizen

Date: October 2021

DISCLAIMER

The already approved Environmental Management Programme (EMPr) for the project was done by Prism EMS cc. Virdus Works Environmental (Pty) Ltd. was appointed to submit an amendment application at DEA&DP. As per Regulation 32(1) of the NEMA Act, Act no. 107 of 1988 (as amended), this involves the submission of a Draft Amendment Assessment Report, which among other must contain a EMPr which reflects the changes made to the project. As such the author has no choice to reproduce some of the content, findings, and recommendations of the previous EMPr. And although the EMPr was paid for by the client, Virdus Works Environmental (Pty) Ltd. wishes to acknowledge and disclose the contribution of Prism EMS cc. to the compiling of the "Draft Environmental Management Programme for the Amendment of the Environmental authorisation for the proposed Mixed-use Development on Portion 3 of Farm Nederburg Estate No. 613, Paarl, Western Cape".

INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and Virdus Works Environmental (Pty) Ltd. reserve the right to modify aspects of the report including recommendations if and when new information becomes available form ongoing research or further work in this field or pertaining to this investigation.

Although Virdus Works Environmental (Pty) Ltd. exercises due care and diligence in rendering services and preparing documents, Virdus Works Environmental (Pty) Ltd., and the client, by receiving this document, indemnifies Virdus Works Environmental (Pty) Ltd. and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by Virdus Works Environmental (Pty) Ltd. and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must refer to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

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GLOSSARY, DEFINITIONS AND TERMS

Affected environment - Those parts of the socio-economic and biophysical environment affected by the development impacts.

Alien vegetation - All undesirable vegetation, defined as, but not limited to, all plants declared Category 1 and 2 invaders in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Alien and Invasive Species Lists, 2016 (as amended).

Applicant – The holder of the environmental authorisation issued for the development and the activities and responsible for implementation of the conditions of authorisation. The term includes reference to the client and/or the developer.

Authorities - The national, provincial or local authorities that have a decision-making role or interest in the activities, construction or development.

Audit - Regular inspection and verification of construction activities for implementation of the EMPr.

Batch plant - A concrete or plaster mixing facility and associated equipment and materials.

Building – As defined in the Drakenstein Municipality Zoning Scheme Bylaw 2018, (any structure, whether of a temporary or permanent nature irrespective of the materials used in the erection thereof;).

Bund – Impermeable enclosure under / around a storage facility for hazardous substance or potential pollutant or any place where these substances are used on site, to contain any spillage.

Contractor - The principal person / company undertaking any construction activity related to the environmental authorisation.

Construction site – The entire area where construction activity occurs, including all access roads and tracks.

Construction activity - Any action taken by the contractor, his subcontractors, suppliers, or personnel on the construction site, whether directly or indirectly related to the construction work.

Contaminated water – All water contaminated by the contractor's activities, e.g. concrete water, and runoff from plant / personnel wash areas.

CEMPr - Construction Phase Environmental Management Programme. A plan for managing the potential impacts of the construction process.

CN – Cape Nature administration of the Western Cape Nature Conservation Board (021 866-8000).

DEFF – Department of Environment, Forestry and Fisheries (086 111 2468).

DEA&DP - Department of Environmental Affairs and Development Planning (Cape Town Office, +27 (0)21 483 4091 / enquiries.eadp@westerncape.gov.za) – also "**Departmen**t".

DWS – Department of Water and Sanitation (021 950 7100).

Environmental Control Officer (ECO) - Designation reserved for suitably qualified person acting as the development environmental manager or officer. It is the person responsible to the client / applicant / holder of the EA, tasked with implementing and controlling the environmental requirements and EMPr for the project.

Environmental Site Manager (ESM) - Designation reserved for suitably qualified person acting as the site environmental manager for a contractor. It is the person responsible to the contractor, tasked with implementing and controlling the environmental requirements and EMPr for a specific construction site during the construction period. The ESM must report to the ECO in keeping with the requirements of the EMPr.

Environmental Authorisation (EA) - Authorisation issued to and in the name of the applicant by the competent authority in compliance with Regulation 25 of the Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998, Act 107 of 1998.

Environmental Awareness Training - An environmental education process for the contractor's management staff and labour force, which informs them of the requirements of the EMPr.

Engineer - A suitably qualified person who represents the applicant (holder of the EA) and is responsible for the design of construction activities and the technical and contractual implementation of the construction activity. An engineer will be responsible for each of the construction activities.

Environment - The biosphere in which people and other organisms live. It consists of:

- Renewable and non-renewable natural resources;
- Physical, infrastructural, social, economic, cultural, historical and political components of the area and the wider surroundings;
- Natural ecosystems and habitats; and
- Biological and natural surroundings whether modified by people or not.

Environmental impact - Any change to the environment, whether desirable or undesirable that would result directly or indirectly from any construction related activity.

Environmental incident - Any occurrence on or at a specific site and related to the activities on the site that could potentially have a negative effect on the environment, whether natural or man-made.

Erection – As defined in the applicable Zoning Scheme Bylaw (includes - the alteration, subdivision or conversion of, or addition to a building; and the re-erection or repair of a

building which has been completely or partially destroyed or demolished) and includes building construction.

Height of building – As defined in the applicable Zoning Scheme Bylaw.

Heritage Western Cape (HWC) – is the provincial heritage resources authority for the province, in the Department of Cultural Affairs and Sport (021 483 9695).

Impact - The positive or negative effects on human well-being and/or on the environment.

MMP- Maintenance Management Plan. Instructions on current and future maintenance activities relating to the affected watercourses as well as the maintenance of the associated structures.

Mitigate - The implementation of practical measures to reduce adverse impacts

Municipality - The Drakenstein Municipality, situate in Paarl (General contact, 021 807 4500).

"No-Go" Areas - Areas identified as being environmentally sensitive in some manner and delineated on plan and / or on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry of a "no go" area.

OEMPr - Operational Phase Environmental Management Programme. A plan for managing the potential impacts of the use of the development and/or the completed development.

Potentially hazardous substance - A substance that, in the reasonable opinion of the ECO and / or Engineer, could have a harmful effect on the environment.

Public authority - means a state department, a municipality or a department of the Provincial Government.

Reasonable - Unless the context indicates otherwise, the term reasonable refers to the opinion of the Engineer after consultation with the ECO and a person, not an employee of the applicant (holder of the EA), suitably experienced in "environmental implementation plans" and "environmental management plans" (as defined in the National Environmental Management Act, 1998, Act 107 of 1998).

ROD - Record of Decision by DEA&DP or any other authority when authorising the development and includes "**Environmental Authorisation"**.

SAHRA - South African Heritage Resources Agency.

Solid waste - All solid waste, including metal sections, construction debris, chemical waste, excess cement / concrete, wrapping materials, timber, tins, cans, drums, wire, nails, food and domestic waste, e.g. plastic packets and wrappers.

Significant/significance - Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is a concept that makes use of value judgements and science-based criteria (i.e. biophysical, social and economic). Value judgement reflects the social perception of impact assessment.

Vegetation rehabilitation - The re-establishment of endemic and/or indigenous vegetation with a similar species composition to that which naturally occurred on the site or in the area.

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LIST OF TABLES

ABBREVIATIONS

(That may have been used or referenced in the document)

BAR - Basic Assessment Report
BWI - Biodiversity And Wine Initiative
CE - Consulting Engineer
C - Contractor
CM - Construction Manager
DWS - Department Of Water And Sanitation
EA - Environmental Authorisation
EAP - Environmental Assessment Practitioner
ECO - Environmental Control Officer
EM - Environmental Manager
EMPr - Environmental Management Program
EO - Environmental Officer
IDP - Integrated Development Planning
IPW - Integrated Production of Wine
NEMA - National Environmental Management Act, 1998
NWA - National Water Act, 1998
OHSA - Occupational Health And Safety Act, 1993
OHS - Occupational Health and Safety
PHS - Provincial Heritage Site
PM - Project Manager
PPE - Personal Protective Equipment
REG - Regulation
SABS - South African Bureau Of Standards
SANS - South African National Standards
SAHRA - South African Heritage Resources Agency
SDF - Spatial Development Framework
WUL - Water Use License

LIST OF APPENDICES

Specialist Reports

- Freshwater Ecosystem impact assessment
- Visual impact assessment
- Traffic impact assessment

Note: Appendices to be attached to the EMPr for distribution once construction commences. For the purposes of review and authorisation by DEA&DP, appendices have been attached to the Draft Amendment Assessment Report, under the relevant sections.

INTRODUCTION

1.1 Purpose Of This Document

An Environmental Management Program (EMPr) is recognised as a tool that can provide assurance that the applicant / project proponent has made suitable provision for mitigation of any identified negative environmental impacts. The EMPr provides a description of the methods and procedures for mitigating and monitoring impacts. It also contains environmental objectives and targets which the applicant / project proponent or developer needs to achieve to reduce or eliminate negative impacts. The EMPr must be used throughout the project life cycle or at least for the period for which it is intended, e.g. construction phase and operations phase or in the very long term, decommissioning. The applicant and his agents should continuously update the EMPr to remain aligned with specific activities and the project as it progresses.

There is no universally accepted standard format for EMPr's. The format needs to fit the circumstances for which the EMPr is being developed and the requirements of the Provincial Government of the Western Cape as set out in the relevant guideline document by Lochner (2005) and in the Environmental Impact Assessment Regulations, 2014, as amended in 2017 (EIA Regs), made in terms of the National Environmental Management Act, 1998, Act 107 of 1998 (NEMA).

1.2 Project Background and Description

The owners of Nederburg Estate are Distell Ltd. through one of its subsidiaries Nederburg Wines Pty Ltd. Distell owns numerous agricultural properties in the Drakenstein and Stellenbosch Municipalities used for the primary production of wine and these farms house numerous families working for the company. The owner identified the need to provide housing for workers, who either retire, or cannot stay on the farms where they used to work, or who needs to be relocated from farms for whatever reason.

Distell therefore wished to establish a proposed Mixed-Use Development on Portion 3 of the Farm Nederburg Estate 613 in Paarl for current and retired employees of their subsidiary company, Nederburg Wines (Pty) Ltd. AHG Town Planning was mandated by the owner of the land to apply on their behalf for the rezoning and subdivision of the property in order to allow for a township development with approximately 219 erven. Prism EMS was mandated by the town planner to undertake the required environmental license applications relating to the proposed development.

The proposed development was approved by various governmental departments and a subsequent Environmental Authorisation ('EA") was granted by the Department of Environmental Affairs and Development Planning (DEA&DP) in June 2017.

The project has since been taken over by ASLA DEVCO (Pty) Ltd., who changed the scope of the project to improve the feasibility thereof. The new proposed subdivision includes 311 erven. Virdus Works Environmental (Pty) Ltd. was tasked to assess submit a Part 2 Amendment Application at DEA&DP, which includes the assessment of additional impacts associated with

the proposed changes made to the project. The original EMPr was therefore amended to reflect the proposed changes.

1.3 Project Location

The project is located within the jurisdiction of the Drakenstein Local Municipality and falls within the Berg River Water Management Area (G10C Quaternary Catchment). The site is located on the corner of Sonstraal Road and Van der Stel Street. The site is bordered by a small canal to the south (Boontjies River), followed by a row of single residential properties to the south of this canal in the New Orleans Township. The Nederburg Wine Estate is bordering the proposed development to the east. To the north and across Sonstraal Road, the Allandale Correctional Facility and Police station is located. The remainder is 62.5478 ha in extent, but Portion 3, the portion to which this application relates is 10,8398ha in extent.

Portion 3 of the farm Nederburg Estates No 613 is a registered portion of the Remainder of the farm Nederburg Estates No 613. It is held by virtue of Deed of Transfer T29706/2018. The property is registered in the name of Nederburg Wines (Pty) Ltd, a subsidiary of Distell Ltd.

The property is currently vacant. A key point is that the property is situated within the urban edge along Sonstraal Road in the urban / rural transitional zone.

In terms of the Section 8 Scheme Regulations, Portion 3 of the farm Nederburg Estates No 613 is currently zoned "Agricultural Zone I" and lies vacant at this stage The site has been successfully rezoned to sub-divisional area in the past, but since the rights, at that stage, was not exercised, the zoning lapsed and reverted back to "Agricultural Zone I" zoning.

Section 22 of the Land Use Planning Ordinance, 1985 (Ord. 15 of 1985) states that no application for subdivision, involving a change of zoning, can be considered, unless the land concerned has been zoned in a manner permitting of sub-division. For this reason, application is made in terms of Section 17(1), to rezone the property to "Sub-divisional Area", allowing the further subdivision of the property, into the properties depicted on the layout attached.

1.4 Project Scope

1.4.1 Development Layout

The proposed sub-divisional area will comprise 305 erven zoned "Residential Zone 1", one (1) erf zoned "Institutional Zone 1" and five (5) erven zoned "Open Space Zone 1".

Table 4: Subdivision of property

Number of Erven	Zoning	Size (ha)
305	Residential	6.45
5	Open Space	1.01
1	Institutional	0.22
1	Internal Street	2.20
1	Sontraal Road Reserve	1.02

"Residential Zone 1":
A total of 305 residential properties are proposed. The average size of the residential erven is around 200 m^2. The average dimensions are 12.5m X 16m which will provide for a decent size dwelling and open areas around the house.

"Institutional Zone 1":
Erf 173 is envisaged to be developed for a multipurpose community facility including a community hall for small gatherings and church services as well as possibly a crèche.

"Open Space Zone 1":
Five open space erven are proposed to accommodate the aquatic resource, being the canal and flood lines as delineated as well as a 15m buffer around these areas. These properties can still serve a recreational purpose and function as a green belt trough the development. One functional Open space is provided in the form of Erf 138, which is intended to be developed for recreational activities and play areas for children.

1.4.2 Services

Water Reticulation:
Calculations indicate that annual average daily water demand for the total development will be approximately1359 kl/ day.
A Water Master Plan was compiled for the Drakenstein Municipality, but this report has not been made available as yet. However, discussions with the Municipality's Engineer indicate that there should be a sufficient supply of water to this site. The water distribution system will follow a conventional 'Red book' approach with each erf having a metered water connection point on their site.

Sewer System:
A Sewer Master Plan was produced for the Drakenstein Municipality, but this report has not been made available as yet. From discussions with the Town Engineer, it was determined that the nearest connection point will be at the intersection of Van der Stel and Meaker streets approximately 1,3km from the development site.

Wastewater treatment:
The site development is not a tipping point for the upgrade of the treatment plant.

Access Road:
It is proposed to develop 305 residential units on Portion 3 of Farm Nederburg Estates 613 in Paarl. The SDP also makes provision for business and institutional land uses and for the purposes of this study it is assumed that these land uses will be primarily for internal use. Entrance is proposed off Sonstraal Road opposite the Allandale SAPS/ Correctional Services access.

A roundabout is suggested at the Sonstraal Road/Access intersection, the size of which is proposed to accommodate turning movements of large vehicles. The proposed development has the potential to generate 162 peak hour trips (63 in, 99 out) during the AM peak hour and vice versa during the PM peak hour). The study intersections will operate at acceptable levels-

of-service during both the a.m. and p.m. peak hours and the proposed development will have a low impact on the surrounding road network.

A relatively low vehicle ownership is expected, but it is recommended that the site layout should make provision to accommodate parking for at least one vehicle per dwelling. It is recommended that a hard surfaced sidewalk be provided along the site frontage with Sonstraal Road. As far as could be established, no formal public transport facilities exist in the immediate vicinity of the subject property. With the construction of the roundabout at the access, it is suggested that public transport embayments be provided along the Sonstraal Road, at the outbound legs of the access-intersection.

Proposed Road Network:
The proposed internal road reserves are minimum 10 metres, with the access section 16 metres and the 'main' route 13 metres, whilst the internal streets are 5,5 to 6,0 metres and the access section 6,8 metres (blacktop widths) and bellmouth radii 6,0 metres. These will be designed to Municipal requirements and approvals.

External to the housing development, the property is partially impacted by the current alignment of Sonstraal Road. After consultation with the traffic engineers, it was decided to provide for a 25m road reserve for Sonstraal road to accommodate some widening in the future. For now, it is proposed that the area taken up by the Sonstraal Road reserve be left outside of the development area and forms the remainder after subdivision. Sidewalks will be provided on both sides of the road.

In accordance with the geotechnical study recommendation, the road structural layers will be imported as the in-situ material is not suited for this. The roads will have an asphalt wearing course and possibly some feature brick paving at intersections.

Storm Water Management

Current Storm Water Management:
The general slope of the land is in a south to north direction. On the southern side of the proposed development is an existing residential area (New Orleans), which would divert stormwater away to the west rather than onto the development site. In addition to this, there is also a defined canal running east to west along about half of the development site's southern boundary, which again protects the site from upstream stormwater.

It may seem that the abovementioned culvert is somewhat undersized as floodwater sometimes backs up and causes flooding of the western area of the development site. This has given rise to the notion that there is a wetland in this area. A flood line study was undertaken some years ago and the development has been planned to be outside of the 1:50 year flood line. In addition to this, a wetland assessment was undertaken during July 2014. The findings of this study were also included into the layout of the facility. No wetland system is located onsite. A follow up Freshwater Impact Assessment was done in March 2021, which supported previous findings, and indicated that the proposed changes to the proposed development will not impact substantially on the storm water management.

Proposed Stormwater System:

The Stormwater Management Plan (SWMP) takes into account the new development's location, its position in the sub catchment and the location of the proposed attenuation structure and sizes the pond to cater for the run-offs envisaged from the new development proposal. It also ensures that the objectives of the current Drakenstein's Stormwater Policy are met regarding quality and quantity of runoff to the receiving waters. The stormwater run-off from the development site will be collected via a system of pipes in addition to overland (roads) and discharge into a constructed detention pond. This pond will be sized to accept the 1:50 year flood volume and release it in a controlled manner to limit the outflow volume to that of the pre-development flow rate. To meet the objectives for Quality control, an additional Best Management Practice option needs to be introduced. For this it is deemed appropriate to use a Wet Pond. The combination wet pond will satisfactorily treat and attenuate the run-off and will satisfy the Municipality's Policy objectives.

The components of the Stormwater Control Structure are:

- Fore bay * Primary settlement component * Approximately 5% of the permanent pond volume (Debo & Reese Ref 7) * Lined with 'Grassblock' for easy maintenance and to allow infiltration * Energy dissipaters are to be included at the inlet headwall * 'Reno-mattress' spillway to permanent pond allows filtration;
- Attenuated Volume * Volume controlled by a weir with a restricted outlet. (Restricted to pre-development Peak Flow levels) * Holds FPV for 50yr ARI storm * Higher order storms pass through structure over weir * Scour protection at weir structure using gabions and reno-mattress;
- Wet pond * Vegetated with plant species selected for nutrient absorption * Holds 25% of the WQV (Ref 6) * Base constructed of clayey material; and
- Outlet Structure * Scour protection for embankment and outlet channel * Grassblock lined channel to existing outlet.

Solid Waste Management:

Solid waste collection would fall under the control of the Drakenstein Local Municipality. The quantum of solid waste is estimated to be some 1,6 tons/day. The Municipal waste for the proposed development will be collected from a single point.

2. ENVIRONMENTAL APPLICATION

The following activities have been approved in terms of the National Environmental Management Act, 1998 (Act No. 107 0f 1998) (NEMA) and is covered in EA issued in June 2017.

Activity No.	**Basic Assessment Listed Activity,** in **Listing Notice 1 (GNR 327** of **20170407)**
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;
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development will occur outside an urban area
9 of Government Notice No. 544 (not similar listed in terms of the EIA Regulations, 2014, Listed Activities)	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or stormwater - (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughout of 120 litres per second or more, excluding where: a. such facilities or infrastructure are for bulk transportation of water, sewage, or stormwater or stormwater drainage inside a rood reserve; or b. where such construction will occur within urban areas but further than 32 metres, from a watercourse, measured from the edge of the watercourse.
11 of Government Notice No. 544 (not similar listed in terms of the EIA Regulations, 2014, Listed Activities	The construction of: (ii) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size: or (xi) Infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse measured from the edge of a watercourse. excluding where such construction will occur behind the development setback line.
	Basic Assessment Listed Activity, in **Listing Notice 3 (GNR 324** of **20170407)**
None	None
	Basic Assessment Listed Activity, in **Listing Notice 2 (GNR 325** of **20170407)**
None	None
Any other	**Any other as identified during the process after consultation with stakeholders**
None	None

In addition to the above, the application also made provision for application for water uses under the National Water At, 1998 (Act No. 36 of 1998) (NEMA) for uses under Section 21 (c) and (i).

2.1 Details of the Applicant

The applicant for this proposed project is ASLA Devco.

Name Of Applicant	ASLA DEVCO (PTY) Ltd.
Contact Person	Ms. Karen Siebrits
Postal Address	25 Jan Conradie Street, Strand, 7140
Telephone	(021) 845 8552
Email	karen@asla.co.za

2.2 Details of the EAP

The NEMA regulations require that the Environmental Assessment Practitioner (EAP) conducting the environmental authorisation application processes is independent, competent and complies with NEMA.

The Environmental Coordination and Application, which will involve the Public Participation Process (PPP), identification of specialists, application for Environmental Authorisation in terms of the NEMA, Basic assessment and Environmental Management Report in terms of NEMA, as well as the Water Use License Application (hereafter referred to as the WULA) will be undertaken by the appointed EAP, Virdus Works Environmental (Pty) Ltd.

Virdus Works Environmental was appointed as the independent EAP to undertake the required Environmental Authorisation Amendment Application processes in terms of the NEMA regulations and the National Water Act, 1998 (Act. No. 36 of 1998) for the proposed construction of the development.

Virdus Works Environmental is an independent multi-disciplinary Environmental Management consultancy, established in 2019. With a vision to find pragmatic solutions to complex environmental problems. Virdus Works Environmental combines expertise of various disciplines to provide holistic and sustainable environmental management solutions.

Virdus Works Environmental has no vested interest in the outcome of this environmental authorisation amendment application.

With the guidance of senior staff in the company, the responsible Environmental Assessment Practitioner (EAP) for the project is **Ludwig van der Merwe**. Ludwig holds a Master's Degree in Environmental Management and Development from the prestigious Australian National University (ANU) and a BSc degree with Honours in Conservation Ecology from the Stellenbosch University (SU). Ludwig is registered with EAPASA as a Candidate EAP and with SACNASP as a Candidate Natural Scientist, he is also a member with IAIAsa. Ludwig has research experience in invasive species management within riparian zones, sustainable development, and biodiversity management.

3. EMPr SCOPE

3.1 Content of the Report

The EMPr guideline, published by the Northern Cape Department of Environmental Affairs and Development Planning the EMPr should include the following:

- Definition of the environmental management objectives to be realized during the life of the project in order to enhance benefits and minimise adverse environmental impacts;
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring and to water target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval process;
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMPr;
- Description of the link between the EMPr and associated legislated requirements; and
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMPr.

3.2 Applicable Documents

The following documents should be read in conjunction with this EMPr as same is applicable to the project:

- The Assessment Report (BAR) and the Draft Amendment Assessment Report
- The Environmental Authorisation pertaining to the project, issued by the Department of Environmental Affairs and Development Planning (DEA&DP).

3.3 EMPr Administration

Copies of this EMPr must always be kept at the site office. Copies thereof must be distributed to all senior contract personnel. All senior personnel involved in the construction and operation of the Nederburg Mixed Land Use Development must familiarise themselves with the content of the EMPr and the conditions of the Environmental Authorisation.

A detailed induction protocol, incorporating the conditions of the EMPr and associated Environmental Authorisation, must be developed and all contractors and future permanent staff must be subjected to stringent training on these environmental (bio-physical and socio-economic) requirements and responsibilities.

It should also be noted that the EMPr will be updated if / when the Environmental Authorisation is released and should it contain additional mitigating measures.

4. LEGISLATIVE FRAMEWORK

The following legislation is applicable to the proposed project and as such the proposed development will need to comply with the provisions, of inter alia the following:

- The Constitution of South Africa, 1996 (Act No. 108 of 1996);

- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA); and
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

Other legislation, which has been considered in the assessment of the proposed project is:

- The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA);
- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004); and
- The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA).

4.1 Constitution of South Africa, 1996 (Act No. 108 of 1996)

The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (the Constitution) is the supreme law of the country of South Africa. This Act provides the legal foundation for the existence of the republic, sets out the rights and duties of its citizens, and defines the structure of the government. The Constitution compels all to ensure the fundamental rights of all citizens. Section 24 of the Act states the following:

"Everyone has the right:

a. To an environment that is not harmful to their health or wellbeing, and
b. To have an environment protected for the benefit of present and future generations through reasonable legislative and other measures that-
i. Prevent pollution and ecological degradation;
ii. Promote conservation; and
iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The environmental legislation promulgated since the Constitution have given legal effect to this section of the Constitution.

4.2 National Environmental Management Act, 1998 (Act No. 107 of 1998)

The purpose of the NEMA is to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state (State Owned Companies – SOCs); to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. The NEMA is the environmental framework legislation promulgated to ensure that the environmental rights contemplated in Section 24 of the Constitution are realized. NEMA sets out:

- The fundamental principles that need to be incorporated in the environmental decision making process;
- The principles that are necessary to achieve sustainable development;
- Provides for duty of care to prevent, control and rehabilitate the effect of significant pollution and environmental degradation; and
- It allows for the prosecution of environmental crimes.

The preamble of the Act states specifically that:

- everyone has the right to an environment that is not harmful to his or her health or wellbeing;
- the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities;
- inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices;
- sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations;
- everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
    - prevent pollution and ecological degradation;
    - promote conservation; and
    - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development;
- the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all SOCs must cooperate with, consult and support one another;
- And Whereas it is desirable:
    - that the law develops a framework for integrating good environmental management into all development activities;
    - that the law should promote certainty with regard to decision-making by SOCs on matters affecting the environment;
    - that the law should establish principles guiding the exercise of functions affecting the environment;
    - that the law should ensure that SOCs maintain the principles guiding the exercise of functions affecting the environment;
    - that the law should establish procedures and institutions to facilitate and promote cooperative government and intergovernmental relations;
    - that the law should establish procedures and institutions to facilitate and promote public participation in environmental governance;
    - that the law should be enforced by the State and that the law should facilitate the enforcement of environmental laws by civil society:

The listed activities require an environmental authorization, granted by the competent authority prior to commencement (i.e. construction). In terms of the Act, to commence means the start of any physical implementation in furtherance of a listed activity or specified activity, including site preparation and any other action on the site or the physical implementation of a plan, policy, programme or process, but does not include any action required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity. The impacts of any listed activities must be investigated, assessed and reported to the competent authority before authorization to commence with such listed activities can be granted.

4.3 National Water Act, 1998 (Act No. 36 of 1998)

Central to the NWA, is a recognition that water is scares and precious resource that belongs to all the people of South Africa. It also recognized that the ultimate goal of water resource management, is to achieve the sustainable use of water for the benefit of all South Africans. The Act aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting the integrated management of water resources with the participation of all stakeholders. The purpose of the NWA is therefore to ensure that the nation's water resources are protected, sustainably and equitably used, developed, conserved, managed and controlled. The NWA provides several provisions that need to be taken into consideration.

4.3.1 Water Use Application

Chapter 4 of the NWA specifically addresses the use of water and presents principle that National Government has overall responsibility for an authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. A person can only be entitled to use water, if the use is permissible under the Act.

In general, a water use must be licensed, unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorization, or if a responsible authority waives the need for a license. Schedule I states that a person may, subject to this Act:

- 1(a) take water for reasonable domestic use in that person's household, directly from any water resource to which that person has lawful access;
- 1(b) take water for use on land owned or occupied by that person, for –
    - (i) reasonable domestic use;
    - (ii) small gardening not for commercial purposes; and
    - (iii) the watering of animals (excluding feedlots) which graze on that land within the grazing capacity of that land, from any water resource which is situated on or forms a boundary of that land, if the use is not excessive in relation to the capacity of the water resource and the needs of other users;
- 1(c) store and use runoff water from a roof;
- 1(d) in emergency situations, take water from any water resource for human consumption or firefighting;
- 1(e) for recreational purposes –
    - (i) use the water or the water surface of a water resource to which that person has lawful access; or
    - (ii) portage any boat or canoe on any land adjacent to a watercourse in order to continue boating on that watercourse; and
- 1(f) discharge –
    - (i) waste or water containing waste; or
    - (ii) runoff water, including stormwater from any residential, recreational, commercial or industrial site, into a canal, sea outfall or other conduit controlled by another person authorised to undertake the purification, treatment or disposal of waste or water containing waste, subject to the approval of the person controlling the canal, sea outfall or other conduit.
- (2) An entitlement under this Schedule does not override any other law, ordinance, bylaw or regulation, and is subject to any limitation or prohibition there under.

Section 21 of the NWA identifies eleven (11) consumptive and non-consumptive water uses which must be authorized under a tiered authorization system, in terms of Section 40 of the NWA:

- 21 (a): Taking water from a water resource;
- 21 (b): Storing water;
- 21 (c): Impeding or diverting the flow of water in a watercourse;
- 21 (d): Engaging in stream flow reduction activity contemplated in Section 36;
- 21 (e): Engaging in a controlled activity identified as such in Section 37 (1) or declared under Section 38 (1);
- 21 (f): Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- 21 (g): Disposing of waste in a manner which may detrimentally impact on a water resource;
- 21 (h): Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- 21 (i): Altering the beds, banks, course or characteristics of a watercourse;
- 21 (j): Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- 21 (k): Using water for recreational purposes.

4.4 National Heritage Resources Act, 1998 (Act No. 25 of 1999)

The National Heritage Resources Act, 1998 (Act No. 25 of 1998) (NHRA) is intended to introduce an integrated and interactive system for the management of the national heritage resources; to promote good governance at all levels, and empower civil society to nurture and conserve their heritage resources for future generations; to lay down general principles for governing heritage resources management throughout the Republic; to introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa. The South African Heritage Resources Agency (SAHRA) has been established to, together with the Government, co-ordinate and promote the management of heritage resources at national level; to set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance; to control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries; to enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; to provide for the protection and management of conservation-worthy places and areas by local authorities; and to provide for matters connected therewith.

The aim of the NHRA is to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations.

Section 3 of the NHRA lists various objects which fall within the National Estate of South Africa these include places, buildings, structures and equipment of cultural significance; places to which oral traditions are attached or which are associated with living heritage; historical settlements and townscapes; landscapes and natural features of cultural significance; geological sites of scientific or cultural importance; archaeological and paleontological sites;

graves and burial grounds; sites of significance relating to the history of slavery in South Africa; and various movable objects.

In addition to the above it should be noted that Section 34 of the Act states that no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

An important component of the EIA is a Heritage Assessment to determine the grading of places and objects considered as Heritage Resources. In terms of Section 7 a system of grading of places and objects have been put in place which distinguishes between the following categories:

- Grade I: Heritage resources with qualities so exceptional that they are of special national significance;
- Grade II: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- Grade III: Other heritage resources worthy of conservation.

In terms of Section 38 of the Act, any person who intends to undertake a development categorised as:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50 m in length;
- any development or other activity which will change the character of a site—
    - exceeding 5 000 m2 in extent; or
    - involving three or more existing erven or subdivisions thereof; or
    - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority; the
- re-zoning of a site exceeding 10 000 m2 in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report or notify the person concerned that this section does not apply.

Phase 1, Heritage Impact Assessments (HIA), are a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of such study is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and significance of such resources;

- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

The HIA, as a specialist section of the EIA, is required under the NHRA, Section 23(2)(b) of the NEMA and sections 39(3)(b)(iii) of the MPRDA.

5. ENVIRONMENTAL SETTING

5.1 Topography

The property is located on the fringe of the urban extensions of Paarl, but within the Urban Edge. The site is vacant and generally slopes form the highest point in the south-eastern corner of the site in a northern and north westerly direction from the build-up areas in the south towards Sonstraal Road and towards the North-western corner of the site. The average minimum slope is very gentle with a difference of approximately 15m from the highest to the lowest points on the site. The site has a fairly gentle and uniform fall from contour level 110m in the southeast corner of the site to level 95 in the northwest corner. The average slope over the site is 2,1%.

5.2 Soils

In terms of SANBI GIS, 2014, the soils are characterised with a marked clay accumulation, strongly structured and a non-reddish colour. They may occur associated with one or more of vertic, melanic and plinthic soils. The site is mantled by a thin (0,35 to 0,7m) layer of colluvium which has been loosened through agricultural activities. Underlying this is competent shale material at depths varying from 0,6 to 1,2m. This would be the founding level for structures.

5.3 Water Environment

The proposed development is located within the Berg River Water Management Area (G10C Quaternary Catchment). A manmade drainage courses, being a channelled portion of the Boontjies River, runs adjacent and parallel to a section of the southern boundary of the site. The limited capacity of the culvert underneath Van der Stel Street for this watercourse, causes the flow of this channel to periodically dam-up in the north-western corner of the site during winter months resulting in an enlarged flood plain and accompanying damp conditions in this area. The channelled watercourse, together with this periodic / artificial flood plan was identified as an aquatic resource and delineated for this purpose by Prism Environmental consultants. Appropriate buffers for the preservation of this area have been put in place and apart from this area no other topographical constraints are found on the site. The site is affected by the 1:50 or 1:100-year flood lines and the layout plan takes this into account. Sufficient provision was made to accommodate the flood line and safety buffers around it.

5.4 Ecology

In terms of the Western Cape Biodiversity Framework for Drankenstein and Stellenbosch, the site is characterised by the Swartland Alluvium fynbos, which is coded as FFa 3 in terms of the Threatened ecosystem code and is regarded as an ecosystem of critical status. The site is

located within the Swartland Alluvium Fynbos (Vegetation Type Code FFg 3) (85%)- and Swartland Shale Renosterveld (Vegetation Type Code FRs 9)((15%) Biomes. The Swartland Alluvium Fynbos is classified as a critically threatened ecosystem. The section below is a description in terms of Mucina &Rutherford (2006), based on the ecosystems in which the development is located. However, little of the site is in its natural status due to the presence of urban development and past cultivation.

5.4.1 Swartland Alluvium Fynbos

In terms of Mucina & Rutherford (2006), the Swartland Alluvium Fynbos (comprising approximately 85% of the project area) is found in the Western Cape Province, specifically the Swartland lowlands at west-facing piedmonts of the Groot Winterhoekberge near Porterville, Saronberg, Elandskloofberge to the Limietberge near Wellington, broad valley bottoms of the Paarl, Drakenstein, Franschhoek and Banhoek Valleys, with some extensions west of the Paarl Mountain and to Klapmuts.

The vegetation and landscape features are associated with moderately undulating plains, adjacent mountains and in river basins. The vegetation is a matrix of low, evergreen shrubland with emergent sparse, moderately tall shrubs and a conspicuous graminoid layer. *Proteoid, retinoid* and *asteraceaous* fynbos types are dominant, with closed-scrub fynbos common along the river courses. Ericaceous and retinoid fynbos is found in seeps.

Important Taxa includes:
Tall Shrubs: *Diospyros glabra (d), Olea europaea subsp. Africana (d), Psoralea aphylla (d), Rhus angustifolia (d), Dodonaea viscosa var. angustifolia, Metalasia densa, Morella cordifolia, Passerina corymbosa, Phylica buxifolia, Protea repens, Rhus incise, rubus rigidus.*

Low Shrubs: *Cliffortia ferruginea (d), Elytropappus rhinocerotis (d), Eriocephalus africanus var. africanus (d), Leucadendron corymbosum (d), Leucospermum calligerum (d), Passerina truncate subsp. truncate (d), Senecio hallimifolius (d), Serruria candicans (d), Athanasia trifurcate, Cliffortia juniperina, C. ruscifolia, Elytropappus gnaphaloides, Euryops pinnatipartitus, Galenia africana, Leucadendron lanigerum var. lanigerum, L. salignum, L. stellare, Oftia africana, Plecostachys serpyllifolia, Stoebe plumose, Trichocephalus stipularis.*

Woody Climber: *Microloma sagittatus.*

Herbs: *Conyza pinnatifida, Corymbium africanum, Dischisma areanarium, Lebeckia sepiaria. Geophytic Herbs: Pteridium aquilinum (d), Zantedeschia aethiopica (d), Geissorhiza imbricate subsp. bicolor, G. setacea, Mohria caffrorum, Oxalis goniorrhiza, Spiloxene flaccida.*

Herbaceous climber: *Dipogon lignosus.*

Graminoids: *Calopsis paniculata (d), Cynodon dactylon (d), Elegia filacea (d), Ficinia brevifolia (d), Ishyrolepis capensis (d), I. tenuissima (d), Juncus capensis (d), Merxmuellera cincta (d), Calopsis rigorata, Cannomois parviflora, Elegia nuta, E. recta, Eragrotis curvula, Pentaschistis curvifolia, P. pallida, Pycreus polystachyos, Restio filiformis, Thamnochortus fruticosus, T punctatus, Wildenowia glomerata, W. incurvata, W. sulcata, W. teres.*

Endemic Taxa:
Low Shrubs: *Diastella buekii, Erica alexandri, E. bakeri, Marasmodes duemmeri, M. undulata, Phylica stenopetala, Protea mucronifolia.*
Succulent Shrub: *Lampranthus schlechteri.*

Geophytic Herbs: *Brunsvigia elands-montana, Bulbine monophylla, Geissorhiza fuva, Moraea villosa subsp. Elandsmontana.*

Conservation status is classified as endangered with a 30% target. Nearly 10% is conserved in the Waterval Nature Reserve, Winterhoek (mountain catchment area) and private reserves such as Elandsberg, Langerug and Wiesenhof Wildpark. More than 75% already transformed for vineyards, olive orchards, pine plantations, urban settlements and by building of the Voëlvlei and Wemmershoek Dams. Alien *Acacia saligna* and *Hakea sericea* are prominent in places. The erosion potential in this ecosystem is considered moderate and very low.

5.4.2 Swartland Shale Renosterveld

In terms of Mucina & Rutherford (2006) the Swartland Shale Renosterveld (comprising approximately 15% of the project area) is found on moderately undulating plains and valleys supporting low to moderate tall leptophyllous shrub land of varying canopy cover, as well as low, open shrub land dominated by Renosterbos. Ridges are a very prominent local feature of this type of environment (however not part of this project area). Stunted trees and thicket are often associated with the ridges. Disturbed areas are dominated by *Athanasia trifurcate* and *Otholobium hirtum*. Patches of *Cynodon dactylon* "grazing lawns" also occur in abundance.

Important taxa include:
Tall shrubs: *Aspalathus accuminata subsp. acuminata (d), Olea europaea subsp. africana (d), Rhus angustifolia (d), R. incisa (d), Chrysanthemoides monilifera, Euryops speciosissimus, E. tenuissimus, Gymnosporia buxifolia, Lebeckia cytisoides.*

Low shrubs*: Anthospermum aethiopicum (d), A. spathulatum subsp. tulbaghense (d), Elytropappus rhinocerotis (d), Eriocephalus africanus var. africanus (d), Euryops thunbergii (d), Galenia Secunda (d), Helichrysum cymosum (d), H. teretifolium (d), Osteospermum spinosum (d), Otholobium hirtum (d), Agathosma glandulosa, Aspalathus aculeate, A. pinguis subsp. pinguis, A. spinosa subsp. flavispina, A. tridentate subsp. staurantha, A. varians, Asparagus rubicndus, Athanasia trifurcate, Clifforia marginata, Diosma hirsute, Euclea acutifolia, Felicia filifolia subsp. filifolia, F. hyssopifolia, Galenia africana, Lebeckia cinerea, Leucadendron lanigerum var. lanigerum, Marasmodes polycephala, Metalasia dregeana, M. octoflora, Muraltia decipiens, M. ononidifolia, Oftia africana, Passerina truncate subsp. truncate, Phylica gracilis, Plecostachys serpyllifolia, pteronia divaricate, P. incana, Rhus dissecta, Senecio puubigerus, Stoeberitanica, Lampranthus elegans.*

Woody Climber: *Microloma sagittatum.*

Herbs: *Berkeya armata (d), B. rigida, Cotula turbinate, Echiostachys spicatus, Lichtensteinia obscura, Manulea cephalotes, Senecio laxux, Stachys aethiopica.*

Geophytic Herbs: *Cyanella hyacinthoides (d), Melasphaerula ramose (d), Albuca maxima, Aristea africana, Babiana melanops, Cheilanthes capensis, Disa physodes, Geissorhiza impricata subsp. bicolor, G. inflexa, G. juncea, G. purpureolutea, G. tulbaghensis, Lachenalia longibracteata, L. pallida, L. polyyphylla, Mohria caffrorum, Ornithagalum thyrsoides, Oxalis pes-caprae, Romulea flava, R. leipoldtii, R. rosea, R. tabularis, Watsonia marginata.*

Graminoids: *Cynodon dactylon (d), Ehraharta calycina (d), Elegia capensis (d), E. recta (d), E. tectorum (d), Ficinia brevifolia (d), Ischyrolepis capensis (d), Merxmuellera stricta (d), Ehrharta delicatula, E. tunbergii, Hordeum capense, Merxmuellera arundinacea, Tribolium hispidum.*

Endemic Taxa includes:
Low Shrubs: *Leucadendron verticillatum (d), Aspalathus acanthophylla, A. horizontalis, A. puberula, A. rectistyla, Cliffortia acockii, Lotononis complanata, Serruria incrassate. Succulent Shrubs: Erepsia ramose, Ruschia patens, R. pauciflora.*

Herb: *Indigofera triquetra.*

Geophytic Herbs: *Aristea lugens, Babiana angustifolia, B. odorata, B. Secunda, Hesperantha pallenscens, H. spicata subsp. fistulosa, Lachenalia liliflora, L. mediana var. rogersii, L. orthopetala, Lapeirousia fastigiata, Moraea gigandra, M. tulbaghensis, Oxalis fragilis, O. involute, O. leptocalyx, O. levis, O. macra, O. perineson, O. strigose, Pelargonium viciifolium.*

Conservation Importance: This is a critically endangered vegetation unit. Target 26%, but since 90% of the area has been totally transformed (mainly cropland), the target remains unattainable. The remnants are found in isolated pockets, usually on steeper ground. So far only a few patches have been included in conservation schemes.

Aliens include: *Acacia saligna, A. mearnsii*, as well as several species of *Prosopis* and *Eucalyptus.* Alien annual grasses of the genera *Avena, Briza, Bromus, Lolium, Phalaris* and *Fulpia* are a primary problem in remnant patches. Other serious aliens include herbs, such as Erodium cicutarium, *E. moschatum, Echium plantagineum* and *Petrorhgia prolifera*. Erosion is very low to low in this area.

5.4.3 Aquatic Ecosystem

The proposed mixed-use development is situated on Portion 3 of the Farm Nederburg 613 in Paarl, Western Cape Province. The site is accessed via the Sonstraal Road. The area is located between two quaternary catchments namely, G10C and G10D in the Berg Water Management Area (WMA 19). The study area falls within the Southwestern Coastal Belt Level-24 Ecoregion (Ecoregion 24) (Kleynhans et al., 2005).

In terms of the aquatic ecosystem for the Nederburg 613 Mixed-use Development the following is applicable:

- There was no flowing water on the site during the time of assessment to do a baseline aquatic survey.
- This was largely due to the sampling season chosen and that the Boontjies River is a non-perennial river.

- The lack of flow would assist with the construction phase. If the construction was done during the low flow season.

5.5 Socio Economic

The proposed project is located within Ward 25 of the Drakenstein Municipality. In terms of the Integrated Development Plan of the Municipality, this ward comprises approximately 4% of the overall municipal population, lending it to a population of almost 9 000 people (8 877). The population composition of the ward is made up of:

- Black African: 6,4%
- Coloured: 89,3%
- Asian/Indian: 0,5%
- White: 3%
- Other: 0,8%

Thirty-three (33) percent of individuals have no monthly income, with 30% of individual earning between R1 000 and R3 200 per month. In terms of home ownership, 43% of individuals own the property they live in, with 10% of households staying rent free in a type of dwelling. More than 2% of the households live in informal dwellings.

Based on the IDP, and specifically with reference to service delivery information, there are no challenges or backlogs in terms of water supply. Eighty-seven (87) percent of households receive their water from the municipality, with the remaining either from boreholes or a water tanker. Sanitation has been listed as a backlog, with 77% of households having access to sanitation services above the minimum service level. 0.77% of households have no access to sanitation services and 3.27% use bucket toilets.

Another area characterised as a backlog is electricity for lighting. About 0.4% of households use paraffin for lighting purposes, 3.86% use candles for lighting purposes and only 3 households utilise solar energy.

Refuse removal is also listed as a backlog service, with approximately 78% of households receive refuse removal services above the minimum service level. 0.18% have no access to refuse removal services, and 245 households receive the service less frequent, and 97 households use their own refuse dump.

Housing has been identified as a backlog, with about 419 households. According to the IDP 33% of the housing structures are formal housing structures, 24.91% of structures are informal (2.02% is in an informal settlement, and 22.89% is in shacks in the backyard). The 2.02% informal structures represent 0.06% of all informal structures within the municipal area.

Although the area is zone as Agriculture Zone 1, the property is located within the urban edge. Preliminary meetings with the municipality have indicated the opportunity to develop this portion of land, which fulfils the requirements of the IDP. The land is further owned by Nederburg Wines (Pty). An application for amendment of the approved rezoning and subdivision was submitted to the Municipality in December 2020 to allow for the changes.

5.5.1 Cultural and Heritage Significance

Authorisation for the amended development plan was granted by Heritage Western Cape – see authorisation ref. HM/CAPE WINELANDS/DRAKENSTEIN/PAARL/FARM 3/613, Case No: 20120704SB1208E of 22 January 2021.

6. SUMMARY OF IMPACTS

From the assessment undertaken no significant impacts are foreseen overall, potential and even likely impacts will have a high potential to be reversed. The site has no natural vegetation and no areas of cultural or heritage significance were identified.

During the construction phase the site will be cleared and shaped to prepare for the construction activities. Due to the historic agricultural activities on site, no natural vegetation is present onsite, and no significant impact is foreseen. Key areas that should be managed are the potential for erosion gulleys to form and the establishment of invader species due to the presence human activities. Buffers must be established and maintained around the river course to protect the integrity of the resources. The site is not considered to be pristine, and the formulization of the site (i.e. establishment of buffers, access control) will most probably result in an improvement of the water resource characteristics. The main impacts foreseen to occur during the construction phase are, (1) the change in runoff and subsequent formation of erosion gulleys and potential siltation of watercourse, (2) pollution of the site and watercourse due to littering, (3) influx of job seekers which could result in an increase in petty crime and potential demographical conflicts.

During the operational phase, most of the potential impacts should have been addressed with the inclusion of management measures. However, housekeeping impacts may remain in terms littering, establishment of invader species and river system.

Although these impacts may present itself during the project life cycle, the management measures proposed in this report, should reduce the significance or avoid the impacts, and may even result in an overall improvement of this site.

6.1 Topographical Impacts

Construction Phase:

The area in which the development is being planned is fairly gradual, the overall topography will therefore not be altered significantly. However, the establishment of the development will require compaction of the area, which will permanently impact on the micro-topography. This will in turn impact on the overall water flow and geographical processes in this area. Ineffective management measures could lead to ongoing impacts such as the increase in erosion and associated siltation of the surrounding watercourse. The impact on the topography and geographical processes can be effectively managed, to an extent where the surrounding geographic, as well as biological components benefit from the development, as presented in the sections hereafter.

Operational Phase:

With the correct implementation of management measures, such as geographic shaping and landscaping, as well as implementation of effective stormwater management systems, the topographical impacts and impacts associated with those, would only benefit in the long-term (i.e. improved runoff, improved water quality).

6.2 Visual Impacts

Construction Phase:
In the short-term the site will be characterised by construction activities and the associated dust emitted from these activities, which without effective management measure could cause a negative impact on the visual characteristics of this area. The impact will be temporary and will as far as practically possible be scheduled in such a manner as to reduce any haphazard visual impacts.

Operational Phase:
The area is currently vacant, untransformed land. Sonstraal Road is considered as an access route to various tourism destinations, including Nederburg Wines Estate. The site is currently characterised by informal tracks, invasive vegetation, littering and the fences and walls of the town of New Orleans as the backdrop. The formalisation of the area into a development, which is established by the Applicant, for the purpose of the surrounding tourism destination (Nederburg Wines Estate), will be undertaken in such a manner as to add value to the surrounding tourism destinations. The impact on the visual impacts in the long term is therefore regarded as a positive impact.

6.3 Soil, Land Use and Land Capability Impacts

Construction Phase:
The clearing of the area may result in short-term erosion onsite, due to the short nature of construction activities, the erosion impacts should be limited and not significant. This will be managed as far as practically possible, however in the event that erosion gulleys do form, these will be mitigated immediately.

The development of this open land into a residential area, even though earmarked for such purpose (residential) in both the IDP and SDF, will result in the permanent loss of soils in a land zoned currently for agricultural purposes. The significance of this is greatly reduced, due to the fact that it is the owner of the land, who is practicing agricultural activities (Nederburg Wines Estate), in the form of vineyards, is also proposing this development. It can therefore safely be concluded that the overall positive use of this land will benefit residential development more than that of extending the existing agricultural activities.

The area will be fenced off during the construction phase, which will prohibit parties to make use of the previously used informal tracks (which to a degree can be considered as a current land use). A buffer will be left between the site boundary and the township of New Orleans, which will allow parties to still access northerly areas, however the short route through the site will no longer be available.

Operational Phase:
No further impacts are envisaged during the operational phase.

6.4 Noise Impacts

Construction Phase:
The construction activities will definitely result in an increase in the noise levels throughout the construction phase. This will be linked to the excavations, site vehicles and the building activities. Spot checks in terms of noise levels will be taken in the development area, but also in the surrounding residential areas. Should it be determined that the noise levels exceed the regulatory urban levels, mitigatory measures, such as mufflers will be incorporated. Construction activities will be limited to the day-time from 7h00 to 18h00, and will not be undertaken on Sundays.

Operational Phase:
No further impacts are envisaged during the operational phase.

6.5 Surface Water Impacts

Construction Phase:
The clearing of vegetation during the construction phase could lead to the siltation of the surrounding watercourses. It is important that stormwater management measure be implemented at the start of the construction activities, and that the sensitive areas be delineated and clearly demarcated.

The design of the facility has taken into consideration the flood lines around the river. These areas have been excluded from the development footprint, and is delineated as green zones (parks), no construction activities will be allowed in these areas.

Potential spills of hydrocarbons, by construction vehicles could lead to contamination of the watercourses. It is important that spill kids be available and that all parties are trained in the use of these products. It is recommended that water quality in the river be managed prior to construction activities, as a baseline, and thereafter monthly up until the completion of the construction activities.

The design of the facility will be undertaken in consultation with the local municipality and services suppliers to ensure that the water supply, wastewater management, etc. is operated and managed in line with the specific agreements.

Operational Phase:
The design of the facility has taken into consideration the flood lines around the river. These areas have been excluded from the development footprint, and is delineated as green zones (parks), for that reason no long terms impacts are foreseen.

The facility will fall within the waste management area of the local municipality. The applicant will ensure that the development is managed in a strict, environmentally friendly and visually pleasing manner.

6.6 Groundwater Impacts

Construction Phase:

The construction activities will involve the compaction of the site to prepare for the establishment of infrastructure. This will reduce the infiltration of water to groundwater resources. However, the design of the facility has taken into consideration the flood lines around the river. These areas have been excluded from the development footprint, and are delineated as green zones (parks), no construction activities will be allowed in these areas. This said, the impact on the groundwater system should be limited, if not avoided.

Operational Phase:
No further impact is expected from that already identified in the construction phase. The implementation of the aquatic buffers should ensure the limitation or avoidance of any groundwater impacts.

6.7 Air Quality Impacts

Construction Phase:
In the short-term the site will be characterised by construction activities and the associated dust emitted from these activities, which without effective management measure could cause a negative impact on the visual characteristics of this area. The applicant will establish a dust monitoring system onsite to monitor dust fall out during the construction activities. The applicant will commit to fulfil the requirement of the NEM:AQA National Ambient Air Quality Standards and National Dust Control Regulations (NDCR) that were published on the 01 November 2013 in the Government Gazette (GG 36974). The standard states 600mg/m2/day for residential areas and 1 200mg/m2 /day for non-residential areas.

Operational Phase:
No further impact is expected during the operational phase.

7. ENVIRONMENTAL MANAGEMENT PROGRAM (EMPr)

7.1 Project Location

The project is located within the jurisdiction of the Drakenstein Local Municipality and falls within the Berg River Water Management Area (G10C Quaternary Catchment). The site is located on the corner of Sonstraal Road and Van der Stel Street. The site is bordered by a small canal to the south, followed by a row of single residential properties to the south of this canal in the New Orleans Township (previous reference in the application was also made to the Town of Chicago). The Nederburg Wine Estate is bordering the proposed development to the east. To the north and across Sonstraal Road, the Allandale Correctional Facility and Police station is located. The remainder is 62.5478 ha in extent, but Portion 3, the portion to which this application relates is 10,8398ha in extent.

The property is currently vacant. A key point is that the property is situated within the urban edge along Sonstraal Road in the urban / rural transitional zone.

The following GPS co-ordinates are presented to locate the activity:

Point	Latitude	Longitude
Property Centre	33° 42'47.21" S	18° 59'46.76" E

7.2 Key Objectives of the EMPr

7.2.1 Environmental Management Policy

The applicant (ASLA DEVCO), commits to the following:

- Recognition of the environment as being of primary importance to the health and well-being of human beings.
- Compliance with the relevant statutory requirements applicable to the environment in which the construction will occur and, in the operation, and management of the occupied development.
- Striving to maintain the highest standards with respect to environmental management, by:
    - implementing and maintaining a structured Environmental Management System (EMS);
    - the provision of financial and other resources to maintain the EMS;
    - the assessment and management of environmental risks associated with the development;
    - periodically adapting environmental objectives to ensure that measurement, monitoring and reporting (auditing) occurs in the light of improved technology;
    - involving owners, employees, local communities, government bodies and other interested and affected parties in the development of procedures to ensure a practical, feasible and effective EMS;
    - providing relevant training to employees to ensure their effective participation in and successful implementation of the EMS;
    - waste management, amongst others through reduction of waste volumes, promoting re-use and recycling on site and setting up of a waste recycling system on site;

- reducing the use / consumption of potable water; and
- the efficient use of energy and employment of on-site electricity generation technology and energy saving devices.

7.2.2 EMPr Objectives

The objectives of the EMP are to:

- Ensure compliance with the conditions of authorisation of the activity and related guidelines of any public authority.
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMP-related activities is consistent with the significance of project impacts.
- Verify environmental performance through information on impacts as they occur.
- Respond to changes in project implementation not considered in the EIA.
- Respond to unforeseen events.
- Provide feedback for continual improvement in environmental performance.

7.2.2.1 Planning Phase Objectives

The following management objectives are relevant to the Planning Phase:

- To have all environmental permits and licenses in place;
- To have all design drawings available and signed off by an ECO to ensure it complies with the EMPr commitments and conditions;
- To have all environmental awareness documentation drafted; and
- To have all contracts drawn up with the inclusion of environmental management requirements.

7.2.2.2 Construction Phase Objectives

The following management objectives are relevant to the Construction Phase:

- To minimize the area of disturbance by demarcating the construction and green zone areas;
- To control pollution to the receiving environment, specifically the 1:100 Floodline and downstream environment;
- To preserve flora and fauna, where relevant;
- To preserve topsoil for optimal rehabilitation and landscaping following construction;
- To ensure an open channel of communication with stakeholders and regulatory authorities; To monitor the construction activities in terms of the EMPr and approved designs;
- To manage and control the formation of erosion;
- To ensure that environmental awareness programmes are enforced throughout the construction phase;
- To ensure that a waste management plan in terms of waste hierarchy is enforced onsite; To ensure good housekeeping practices and general neatness on site;
- To ensure that the construction activities contribute to the brand and Environmental Policy of the applicant; and
- Control the establishment of alien invasive plants during the construction phase of the project, as well as following rehabilitation of the site thereafter.

7.2.2.3 Operational Phase Objectives

The following management objectives are relevant to the Operational Phase (when the development is established and residents reside):

- To retain the demarcated areas throughout the life of the development in order to ensure the minimization the area of disturbance and formulising the green zone;
- To control pollution to the receiving environment, specifically the 1:100 year Floodline and downstream environment;
- To preserve flora and fauna, by ensuring that indigenous species are required as part of the landscape design;
- To ensure an open channel of communication with stakeholders and regulatory authorities;
- To ensure that a waste management plan in terms of waste hierarchy is enforced onsite and implemented by residents;
- To ensure that environmental awareness is created as part of the site development and operation;
- To ensure good housekeeping practices and general neatness onsite;
- To ensure that the development contributes to the brand and Environmental Policy of Distell and the neighbouring Nederburg Wines Estate; and
- Control the establishment of alien invasive plants during the construction phase of the project, as well as following rehabilitation of the site thereafter.

7.2.2.4 Decommissioning Phase Objectives

The following management objectives are relevant to the Decommissioning Phase (of the construction phase):

- To ensure that all construction and domestic wastes are removed from site in an orderly manner and disposed of at a licensed facility, i.e. implement and give effect to the NEMA Principal of "Cradle to Grave";
- To retain the demarcated areas throughout the life of the development in order to ensure the minimization the area of disturbance and formulising the green zone;
- To control pollution to the receiving environment, specifically the 1:100 year Floodline and downstream environment;
- To preserve flora and fauna, by ensuring that indigenous species are required as part of the landscape design;
- To ensure an open channel of communication with stakeholders and regulatory authorities; To ensure that a waste management plan in terms of waste hierarchy is enforced on site and implemented by residents; and
- To ensure that environmental awareness is created as part of the site development and operation;
- To ensure good housekeeping practices and general neatness onsite;
- To ensure that the development contributes to the brand and Environmental Policy of Distell and the neighbouring Nederburg Wines Estate; and
- Control the establishment of alien invasive plants during the construction phase of the project, as well as following rehabilitation of the site thereafter.

7.3 Roles and Responsibility (General)

Although various parties are involved in the project, the most important, from an environmental responsibility perspective are the following:

- Regulatory Authorities:
    - The Department of Environmental Affairs and Development Planning (DEADP);

  - Department of Water and Sanitation (DWS);
- Applicant:
  - The Developer (the employer);
  - Project Manager (designated by the developer);
- Independent Consultants:
  - The Environmental Control Officer (ECO); and
  - Contractor / s.

7.3.1 Department of Environmental Affairs and Developmental Planning (DEA&DP)

Due to the location of the proposed Nederburg Mixed Land Use Development within the Western Cape Province, the DEADP is the designated authority tasked with assessing and considering the Environmental Authorisation, as well as comment and possible approval of the EMPr.

Upon the granting of the EA, the client will be responsible to appoint an Environmental Control Officer (ECO). It will be the responsibility of this ECO to assess environmental compliance of construction activities. Audit reports compiled by the ECO, as well as external audits done by an independent ECO, shall be submitted to the Department for their information and record purposes.

7.3.2 The Developer (Employer)

As contained in the relevant South African environmental legislation (NEMA, 1998) the Applicant / Employer is responsible and accountable for the potential impact of the activities that are undertaken and is responsible for managing these impacts. The developer, as the employer, therefore, has overall environmental responsibility to ensure that the implementation of the EMPr complies with all relevant legislation, and conditions as stipulated by the EMPr.

7.3.3 Project Manager (PM)

The Applicant must identify a Project Manager who has overall responsibility for managing the Project Contractors and for ensuring that the environmental management requirements are met. During the construction phase, the Project Manager could be appointed as the Proponent's construction manager; during the operations phase this role might be fulfilled by the operations manager. All decisions regarding environmental procedures and protocol must be approved by the Project Manager, who also has the authority to stop any construction activity in contravention of the EMPr.

- The Project Manager (PM) (on behalf of the developer) will be responsible to ensure the developer's and the contractor's responsibilities are executed onsite, in terms of the relevant legislation and in compliance with the EA and EMPr.
- On behalf of the developer, the PM will be responsible for the appointment of a suitably qualified ECO for the construction phase of the project.
- The PM will be responsible for ensuring all contractors receive a copy of this document and understand its contents.
- The PM must be familiar with the requirements, mitigating measures and stipulations as per the relevant compliance documents.
- The PM has the right to enforce penalties as per Point 7.3.7. Any on-site decisions in respect of environmental management will ultimately be the responsibility of the PM.

- *Inter alia*, responsibilities of the PM will include:
    - Ensuring that all required authorisations and permits have been obtained.
    - Reviewing and approving method statements compiled by the Contractor.
    - Assisting the Contractor in finding environmentally sensible solutions to problems, with input from the ECO where necessary.
    - Instruct the removal of persons and / or equipment not complying with the EMPr and facilitate correction of issues of non-compliance to ensure rectification.

7.3.4 Environmental Control Officer (ECO)

The ECO must be competent in the field of environmental management and hold at least one related qualification pertaining to interpretation and implementation of South African environmental laws, conservation, or environmental management. The appointment of an ECO will remain with the developer at the start of the construction phase. The ECO will be appointed by the applicant and the construction activities will be audited once every week, or alternatively. Water monitoring samples of the river system will be taken once a month for the remainder of the construction activities.

Inter alia, the ECO's responsibilities will include:

- Be conversant with the requirements, mitigating measures and stipulations as per the relevant compliance documents, in particular the EMPr.
- Implementation and, through the project manager, enforcement of the conditions of this EMPr and the Environmental Specifications included herein, throughout the construction phase of the project.
- Ensure that all contractors / subcontractors / employees are fully aware of their environmental responsibilities. This will take the form of an initial environmental awareness-training program in which requirements of this document will be explained.
- Monitor site activities on a regular basis to ensure that there is minimal environmental impact due to construction activities.
    - The timeframes for site audits are suggested as follows:
        - Site establishment phase – daily audits.
        - Construction phase – weekly site visits, bi-weekly reports and monthly compliance audits. Construction closure audit is required prior to the operational phase
        - Decommissioning phase – site closure audit to be conducted.
- Following each site visit an audit report must be compiled to relay any non-compliance issues that need to be addressed, as well as compliance matters.
- Regular communication between the PM and the Construction Manager (CM) onsite should be maintained.
- Determination and enforcement of environmental "no-go" areas in consultation with site management staff and related to haul and access roads on and off-site, site storage and accommodation areas.
- Ensure that a 'hotline' exists for reporting incidents and resolving any problems speedily. The ECO shall have access to the site and all activities occurring thereon, with due regard for all safety requirements.
- The ECO shall furthermore have unfettered authority to order restriction or control measures over any activity which is contradictory to the EMPr, the EA and the mitigating

measures as included in Specialist Studies, through the appropriate site management structures.
- Update the EMPr as necessary and inform the relevant parties of the changes.
- Conduct a final or close-out environmental audit.

7.3.5 Contractor /s (C)

The contractor/s in this case refers to any contractor/s on site, including the building contractor/s and subcontractors on each phase/section of the construction of the facility. All contractor/s employed by the developer in respect of any aspect of the construction of the facility, will be bound by all and any agreement between the developer and the contractor, to ensure compliance with the Environmental Authorisation, mitigating measures included in the Specialist Studies, as well as this EMPr. The responsibilities will involve:
- Taking full responsibility for each of his / her employees. Be familiar with the contents of the EMPr and the specifications contained herein;
- Comply with the Environmental Specifications contained in the EMPr and subsequent revisions.
- Confirm legislative requirements for the construction works, and ensure that appropriate permissions and permits have been obtained before commencing activities;
- Prepare Method Statements, programme of activities and drawings / plans for submission to the ECO when requested.
- Undertake daily site inspections to monitor environmental performance and compliance with the Environmental Specifications.
- Notify the ECO immediately in the event of any accident or infringements of the Environmental Specifications and ensure appropriate remedial action is taken;
- Notify the ECO at least 10 working days in advance of any activity he has reason to believe may have significant adverse environmental impacts, with specific reference to blasting, so that mitigatory measures may be implemented timeously.

7.3.6 Auditing/ Inspections

- The appointed ECO on a regular, ad hoc, basis will inspect the site where construction might be in progress and / or where rehabilitation of an area might have commenced.
- The contractor will use the formats presented in this EMPr to report to the PM as to the compliance with this document.
- When, in the opinion of the ECO, a construction activity will result in environmental change, the ECO will issue instruction to the PM, who will in turn order the Contractor to halt the activity.

7.3.7 Penalties

- Tolerance with respect to environmental matters applies during construction as well as day-to-day operations required in completing the work.
- The Contractor will comply with the environmental requirements on an ongoing basis, and any failure on their part to do so will entitle the PM, in consultation with the Environmental Manager and ECO, to certify the imposition of a fine subject to the details set out in the EMPr.
- The PM, Environmental Manager (EM) and any other specific personnel as designated by the PM may alter the Schedule of Fines for this specific project.

- Fines may be issued per incident at the discretion of the Site Manager. Such fines will be issued in addition to any remedial costs incurred as a result of noncompliance with the requirements of the EMPr and documents supporting thereof. Fines may be omitted from construction guarantees as supplied by the contractor.
- The Site Manager and ECO will be the judge as to what constitutes a transgression in terms of the above clause. Further, note that in the event that transgressions continue to an unacceptable level the client may cancel the contract.
- Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental requirements, he will be liable to pay a penalty fine over and above any other contractual consequence. This may also lead into a Rectification Application in terms of Section 24G of the NEMA, which could lead to certain fines and/or prosecution.
- The Contractor is deemed NOT to have complied with this specification if:-
    - Within the boundaries of the site, site extensions and access roads there is evidence of contravention of the requirements of the EMPr. o Environmental damage ensues due to negligence.
    - The Contractor fails to respond adequately to complaints from the public.
    - Legal action is instituted against the Developer in terms of Environmental laws due to any action / activities undertaken by the Contractor.
- Payment of any fines in terms of the contract will not absolve the offender from being liable from prosecution in terms of any law.
- A record of penalties will be maintained within the procurement department, and may influence later commissions awarded to the contractor.
- The following, *inter alia*, represents a list of offences that could result in penalties:
    - Silt fences not installed as per EMPr where silt enters the environment unchecked and / or soil erosion is uncontrolled.
    - Insufficient sedimentation ponds which allows silt to enter the environment unchecked. o Inadequate and poor dust control.
    - Illegal activities.
    - On-going, repeated non-conformances.
    - Damage to no-go areas, specifically and most importantly, topsoil and the riparian bufferzones.
    - Failure to provide adequate waste disposal certificates.

7.4 Reporting

7.4.1 Lines of communications (reporting)

Open and clear lines of communication shall be established and maintained between the contractor, the developer and any further parties to be appointed by the client (e.g. Independent ECO, Consulting Engineers (CE), etc.).

7.4.2 Compliance monitoring

The contractor is to ensure that employees and all sub-contractors on site are familiar with the requirements of the EMPr and conditions stipulated in the relevant environmental authorisations (i.e. NEMA Environmental Authorisation, and WULA) issued for the project. Therefore, the contractor should implement a management system reviewing compliance to these.

The client must appoint an internal, permanent ECO onsite who will be monitoring the site and submitting monthly monitoring reports to the client.

Monitoring reports are to be sent to the relevant authorities by the client or the appointed independent ECO, as per the specific requirements set in the project's environmental authorisations.

7.4.2 Communication with Authorities

Only the client and the appointed independent ECO are to liaise with Authorities, except if the contractor has to report Occupational Health and Safety (OHS) incidents/accidents to the Department of Labour.

7.4.3 Incidents

Incident reporting:
The contractor is to conduct incident investigations immediately after occurrence. If an incident is identified as being a major incident, the contractor is to inform the client without delay.
The contractor is to ensure all employees are made aware on the relevant incident reporting procedures. The contractor must ensure that all relevant appointments are in place. An Incident Register must be always kept onsite and up to date.

Legal non-compliance:
Any legal non-compliance which may have a significant detrimental impact on the environment must be reported by the client to the relevant Authority within 24 hours, unless otherwise stipulated.

Non-compliance with conditions:
Any legal non-compliance that may have a significant detrimental impact on the environment with conditions stipulated in any Authorisation / License / Permit, to be reported by the client to the relevant Authority within 24 hours, unless otherwise stipulated.

Compliance monitoring:
Compliance monitoring will be done against, *inter alia:*

- The EA;
- The EMPr;
- All applicable Environmental Legislation;
- The Occupational Health and Safety Act, 1993; and
- Procedures and policies prescribed and amended from time to time by the client.

The responsibilities in terms of Environmental Compliance Monitoring are as follows:

- The Proponent will be responsible for the appointment of a suitably qualified Environmental Assessment Practitioner (EAP) as an independent ECO for the construction phase of the project.
- A management team must be appointed to ensure compliance with the Environmental Management Programme (EMPr) during the operational phase.

- The PM will be responsible to ensure all contractors receive a copy of this document and understand its contents.
- The ECO will ensure that all contractors / subcontractors / employees are fully aware of their environmental responsibilities.
- Contractors must ensure that all the environmental and safety precautions contained in the EA, mitigating measures included in the Specialist Studies as well as this EMPr are adhered to, at all times.
- Compliance monitoring will take place by means of regular site visits and reporting by the ECO, for onwards transmission to the client and the relevant Government Departments for their information and record keeping.

7.5 Impact Mitigation Measures

The following abbreviations are used to indicate the timeframes of the management measures:

- Life of Development (LOD)
- Planning Phase (PP)
- Construction Phase (CP)
- Operational Phase (OP)
- Decommissioning Phase (DP)

7.5.1 Planning Phase

Table 5: Planning Phase mitigation measures

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
Legal Compliance and Directors Liability	1. No activities may take place without the required EA and permits in place. 2. All conditions associated with the permits and / or licences should be adhered to. 3. Any significant changes to the presented layout and / or EMPr should be communicated to the relevant regulatory authority prior to the initiation of these changes. 4. Baseline photos and water monitoring sampling should be undertaken prior to site clearance.	PM, ECO	Continuous
Land Use and Development Plans	1. The rezoning of the site will be in line with the municipal IDP and SDF. No land clearance may be commissioned without the correct zonation in place, or with the approval from the Drakenstein Municipality.	PM	Continuous

7.5.2 Site Clearance and Construction Phase

Table 6: General Considerations

Impact on:	Mitigation Measures:	Responsible Party:	Frequency:
General	1. The site will be clearly delineated prior to the commencement of construction activities. 2. No accommodation for workforce onsite except a security presence. 3. No open fires are allowed onsite. 4. No smoking allowed on the site. The contractor is to provide a designated safe smoking area. 5. Areas identified as open space as part of the design layout should as far as practical be excluded as contractor's laydown areas. 6. A buffer of 10m will be retained around the watercourse (1:100 floodline), this will be clearly demarcated. 7. The 10m buffer will be demarcated as a green zone within the overall development. 8. ECO should undertake weekly inspections on the implementation of the EMPr on site, and must provide progress reports to the PM. Any non-conformances should be highlighted and a rectification plan must be implemented.	Contractor ECO, Contractor	Continuous
Construction Facilities	9. Potable water must be made readily available to all construction staff. 10. Chemical toilets must be made available within the site camp. 11. Ablution facilities are to be provided by the Contractor, at a ratio of 1:10. 12. Ablution facilities must be erected within 100m from all workplaces. 13. Toilets are to be secured to the ground and must have a closing mechanism. 14. Toilet paper must be provided at these facilities and toilets must be serviced once per week. 15. Certified contractors to maintain and remove chemical toilets regularly. 16. The contractor must ensure that spillage does not occur when toilets are cleaned / serviced, and contents must be properly stored and disposed of. 17. Discharge of waste into the environment and / or burial of waste are strictly prohibited.	Contractor	Continuous

Impact on:	Mitigation Measures:	Responsible Party:	Frequency:
	18. Washing of persons and effects, and ablution is only allowed at facilities provided. 19. Dedicated wash areas to be situated at least 100m away from watercourses, riparian zones and areas with shallow groundwater. 20. Sanitary arrangements must be to the satisfaction of the PM, ECO, the local authorities and the applicable legal requirements. 21. Areas demarcated for eating must be cleaned on a daily basis, to ensure the highest possible standard of hygiene. 22. No fires are to be lit outside of facilities designed to contain fire. These structures to be designed in consultation with the EO and ECO.	PM, Contractor Contractor PM, Contractor	
Surrounding landowners	23. Maintain an open channel of communication for surrounding stakeholders to raise comments and concerns. 24. Trespassing on adjoining properties will not be allowed under any circumstances. 25. Damage to private / public property to be repaired immediately and to the satisfaction of the owner. 26. No wastewater may run / be discharged freely onto any of the surrounding streets or naturally vegetated areas.	PM, Contractor, ECO PM, Contractor Contractor	Continuous

Table 7: Environmental Training

Impact on:	Mitigation Measures:	Responsible Party:	Frequency:
General training of all staff on site	1. Environmental Training to be provided to all persons working onsite (Toolbox talks, demos or media). 2. Topics to be covered include, inter alia: a. Reason for conservation and protection of the environment (EMPr aim) b. Impact of construction activities on the environment. c. Mitigation measures in respect of these impacts. d. Emergency spills, awareness thereof and response there to. e. Social responsibility towards surrounding properties, owners and businesses during the construction phase of filling station.	PM, ECO ECO,	Before Construction commences

Impact on:	Mitigation Measures:	Responsible Party:	Frequency:
	f. Detailed discussions on sections of the EMPr highlighted as being important. g. Explanation of the management structure and individuals responsible for matters pertaining to the EMPr. 3. The Contractor shall keep a record of all environmental training sessions, including an attendance register and copies of media and information discussed. 4. Performance by workers to be monitored to ensure sufficient comprehension of matters discussed and compliance with EMPr requirements. 5. Training must be given prior to construction commencement on safety when dealing with wild animals such as snakes.	Contractor	

Table 8: Site Clearance, Shaping and Construction

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
Demarcation and Clearance	1. The site will be clearly delineated prior to the commencement of construction activities. This will be done with barrier tape and droppers to prevent vehicular movement in this area. 2. Clearance will be undertaken in a phased manner, to allow animals to relocate from the intended area as far as practically possible. 3. Areas identified as open space as part of the design layout should as far as practical be excluded as contractor's laydown areas.	Contractor, ECO Contractor, PM Contractor, PM	As and when required
Fauna and Flora Management	4. The introduction and establishment of endemic vegetation as part of the landscape design of the development will be initiated as soon as practically possible during the construction activities. 5. Disturbance to any indigenous plant species, especially indigenous trees at the site should be limited to a minimum during the construction phase. 6. The removal of plant material for medicinal purposes is prohibited. 7. The planting of exotic grasses should not occur, instead, non-invasive indigenous flora should be used where required (in consultation with the ECO and Ecological Consultant).	Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	8. The feeding or leaving of food for stray or wild animals in the area is strictly forbidden. 9. No animals may be hunted, trapped or disturbed nor is fishing allowed during the construction phase of the project. 10. Nesting and breeding sites for birds and mammals must be avoided at all costs. 11. Should fauna be encountered during site clearance or during construction activities, earthworks shall cease immediately, until such fauna have been safely relocated. 12. No animal will be killed unless an immediate threat to human health is perceived. In such an instance, the incident must be reported to the ECO and PM immediately. 13. A walk over, by an accredited ecologist, should be undertaken prior to the commissioning of the activities to confirm that sensitive species are not present. 14. Photographs of sensitive plants and animals must be displayed in the construction camp to heighten awareness of these creatures. 15. Should sensitive species be found, these need to be removed in consultation with an ecologist and with the necessary permit documentation. 16. Contractors and Employees will be trained in terms of environmental requirements.		
Topsoil Management and Soil Erosion	17. A methodology sketch plan of the working areas for the storage of top soil, movement of plant and subsoil storage must be approved prior to construction. 18. The ECO must document the management of top soil via photographic evidence during the construction phase. 19. Topsoil stockpiles may not exceed a height of 1.5m. 20. Topsoil stockpiles should be covered, should these become subject to erosion. 21. Vehicle movement across topsoil stockpiles should be limited and only be allowed for the stockpiling of such material.	PM, Contractor ECO Contractor Contractor, ECO Contractor	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	22. The slopes of soil stockpiles shall not have a vertical / horizontal gradient exceeding 1:1.5. 23. Clearance of topsoil to be done only prior to work commencing in the subject area. 24. Topsoil must remain uncontaminated by construction rubble and no vehicle movement is allowed onto or in the area immediately surrounding the stockpiles. 25. Under no circumstances must topsoil and subsoil be mixed during stripping. 26. Ripping must be done at 250mm or until hard rock is encountered, in 2 directions, at right angles. Topsoil must be placed in the same soil zone from which it has been stripped. 27. Topsoil stockpiles must be monitored for invasive exotic vegetation growth. 28. Remediation, where required to be done in consultation with the ECO. 29. Stockpiles are to be stabilized if signs of erosion are visible. 30. Topsoil contaminated with alien vegetation must not be used for rehabilitation, unless mitigatory measures are found (i.e. germinating and eradicating of seedlings). 31. Instability and erosion of steep slopes must be stabilised immediately. Re-vegetation in consultation with landscape architect and ECO should be done if required. 32. To reduce the loss of material by erosion, disturbance must be kept to a minimum. 33. If clearing of slopes occur within the rainy season, earth berms must be created along the up-slope side of the construction area. 34. Where possible, natural vegetation should be retained to reduce the risk of erosion. 35. Should erosion occur due to negligence on the part of the Contractor to apply the above measures, the Contractor will be responsible for reinstatement of the eroded area to its former state at his own expense. Any surface water pollution occurring as a result of this negligence will be cleaned	Contractor, ECO	

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	up by the Contractor or a nominated clean up organisation at the expenses of the Contractor.		
Activities in and outside the 10m buffer Aquatic and River Buffer	36. Prior to site clearance, water quality and bio-monitoring sampling will be undertaken to serve as baseline conditions of the site. 37. Monitoring will be undertaken monthly for the duration of the construction phase. 38. A buffer of 10m will be retained around the watercourse (1:100 flood line), this will be clearly demarcated. 39. The site will be demarcated as a green zone within the overall development. 40. The design and stormwater management of the development will allow for natural runoff to the aquatic resources as far as practically possible. 41. Berms and / or cut offs upstream of the aquatic resources should be implemented throughout the duration of the construction activities to mitigate against siltation of the aquatic resources.	ECO Contractor, ECO	Continuous
Waste Management	42. A Waste Management Programme will be implemented onsite, which will include the provision of clearly marked bins and the incorporation of recycling principles. 43. Bins will be place in designated area from where licensed contractors will collect these and dispose of the waste in designated areas. 44. Solid waste shall only be stored in the designated general waste storage area which must be enclosed and impermeable. 45. All solid waste shall be disposed of by a certified contractor, off-site, at an approved landfill site. The Contractor shall supply the ECO with a certificate of disposal for auditing purposes. 46. The mixing of general waste and hazardous materials is not permitted. Waste separation needs to occur before waste is placed in waste skips. 47. Litter (from outside the camp included) and concrete bags etc. must be collected and put into suitable closed bins on a daily basis. 48. Construction rubble must be disposed of at a registered landfill site.	Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	49. General wastewater onsite to be collected and disposed of at a registered communal facility.		
Hazardous Material and Hydrocarbon Management	50. The Contractor must provide method statements for the 'Handling and Storage of Oil and Chemicals', 'Fire' and 'Emergency Spill Procedures'. 51. Staff who will be handling Spill kits must be trained to do so responsibly. 52. These substances must be confined to specific and secured areas within the construction camp, in terms of and as per specifications of the OHSA, 1993. 53. Confinement areas (at construction camp) must be imperviously bunded with adequate containment to prevent pollution, even during periods of high rainfall. 54. Portland cement or white cement is considered a "hazardous chemical" under OHSA, Act 85 of 1993 Reg. 11/79 dd25/08/95. Therefore, cement should not be allowed to spread to the surrounding environment. 55. Cement, concrete and chemicals must be mixed on an impermeable surface to prevent contamination of the receiving environment. 56. Provisions to contain spills onto soil must be made. 57. Runoff from storage areas shall be strictly controlled, and water containing cement-residue shall be collected, stored and disposed of at registered disposal site. 58. Contaminated soil must be contained and disposed of off-site at a registered landfill site. 59. Storage tanks earmarked to store chemicals or hydrocarbons must be placed in bunded areas and capacity must be 110% the total volume of the hazardous product to be stored. 60. Empty (used) cement bags must be collected and stored in weatherproof containers to prevent air pollution by cement dust and water contamination through stormwater run-off. 61. Hydrocarbon spills, will be treated in situ by means of a spill kit.	Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	62. All contractors will be trained in the use of such spill kits and prove of such training should be available onsite. 63. Any major hydrocarbon spills should be reported to the DEADP and DWS and a remediation plan should be submitted within 24 hours or as instructed by the regulatory authority. 64. Contaminated soils should be treated as hazardous up until such time as these have been remediated. 65. Hydrocarbons should be stored in bunded areas, with a capacity of no less than 110% of the content. 66. All areas earmarked for the storage of chemicals and/or hydrocarbons should be clearly marked and MSDS's should be available. 67. No vehicle maintenance may take place onsite. 68. Drip trays should be available in the event that any equipment has hydrocarbon spills.		
Stormwater Management	69. Storm water should be allowed to drain into the area that it originally fell onto, as far as possible to retain the original orientation. 70. Increased run-off during construction should be managed using berms, temporary cut-off drains, attenuation ponds or other suitable structures, in consultation with the ECO and resident Engineer. 71. Cut off drains may not cause additional harm to environment. Care must be taken to consider their position and the receiving environment. 72. The Contractor is to ensure that excessive amounts of sand, silt and silt-laden water do not enter the stormwater system and / or natural watercourses found along the length of the construction line. 73. Run-off containing high sedimentation loads must not be released into natural or municipal drainage systems. 74. Silt fences must be used to stabilise the site, reduce erosion and silt entering the natural environment. No unchecked silt may enter the natural environment.	Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	75. Silt fences must be fit for purpose, effective and regularly maintained. 76. The contractor must submit a methodology statement for approval by the ECO and PM prior to starting work for the installation of silt fences. 77. Stormwater management system is to be installed as soon as possible following site establishment, to attenuate stormwater during the construction phase, as well as during the operational phase (if applicable). 78. Surface- and stormwater to be directed away from trenches and areas of excavation. 79. Sedimentation settling ponds if require must be contracted to collect sediments. 80. Sedimentation ponds to be maintained and fit for purpose. 81. The contractor is to provide a methodology for the settling ponds prior to commencement of works. Failure to install adequate settling ponds will amount to a penalty. 82. Any surface water pollution occurring as a result of this negligence will be cleaned up by the Contractor or a nominated clean up organisation at the expenses of the Contractor. 83. Disposal of runoff or stormwater to the municipal system will be undertaken in accordance with the requirements of the local by-laws.		
Noise Levels	84. Noise levels are to be limited with due care to residents in urban, peri-urban and rural areas, as well as workers in the industrial area. 85. Baseline noise levels will be taken prior to the commencement of site clearance activities. This should be undertaken at all principal wind directions around the site, as well as within the site itself. 86. Spot checks of noise monitoring will be taken during operational hours, at least twice a week, especially around the vicinity of the residential area of New Orleans. 87. An open channel of communication will be kept with all residents or land users to ensure that any potential concerns are	Contractor, ECO ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	documented and acted upon within a suitable time period (i.e. within 24 hours). 88. No construction activities may take place prior to 7h00 am and after 18h00 pm.		
Dust Management	89. Site Clearance activities, including transportation activities, should be limited to the demarcated areas. 90. Wet suppression or a dust suppressant should be implemented onsite to limit dust dispersion. 91. Only chemical blasting is allowed onsite; no explosives may be utilised. 92. Should dust prove to be a concern, a dust monitoring programme should be implemented.	Contractor, ECO	Daily
Traffic Impacts	93. A speed limit of 20km/h to be maintained on all dirt roads. 94. Routes for temporary access, lay down areas, turning areas, additional soil storages outside of the working strip and haul roads shall be located within prior approved demarcated areas and vehicle movement shall be confined to these roads and areas. 95. Movement of vehicles outside the designated working areas shall not be permitted without authorisation from the ECO who must advise and approve the routes for the Engineer to endorse. 96. Access to the site is to be controlled and restricted. 97. Planning of temporary access roads to the site, over areas that need to be cleared to facilitate same, must be done in conjunction with the ECO, the PM and the landowner (if applicable). 98. Where existing roads to be used for access are in a bad state of repair, photographic evidence must be taken. Repairs must be done prior to use, if required, to prevent damage to equipment and vehicles. 99. Authorised clearing of access roads must be done under the supervision of the ECO. 100. Access roads for earthmoving equipment must be clearly demarcated and positioned as close as possible to the proposed construction area.	Contractor Contractor, PM, ECO Contractor Contractor, ECO	Contnuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	101. No driving off the marked roads is permitted, and designated parking areas must be identified and demarcated with applicable signage. 102. Neither the site nor the access roads must be allowed to be used for recreational activities. Security personnel must be informed and ensure this is enforced. 103. Should construction vehicle traffic lead to compacting of soil, soil must be deep ripped to loosen compacted layers. 104. The development will provide a hard surfaced sidewalk along site frontage with Sonstraal Road. 105. Clear road signage should be erected in consultation with the local municipality to provide warning of the presence of heavy vehicles entering and existing the site if and when required. 106. A dedicated eastbound right-turn lane is recommended along Sonstraal Road at the access to improve safety at the intersection. 107. No employment to be taken place onsite. 108. No local employment opportunities would be created, as contractors will be appointed, however where possible local employees should be used in the weed eradication and environmental awareness programmes. 109. The applicant will be in close consultation with the local ward councilor to discuss any social concerns which may arise. 110. An open channel of communication will be kept with all residents or land users to ensure that any potential concerns are documented and acted upon within a suitable time period (i.e. within 24 hours). 111. No site staff, apart from security personnel and skeleton staff will be housed onsite, unless authorised in the EA. 112. Workers found to be engaging in activities such as excessive consumption of alcohol, drug use or selling of any such items onsite must be disciplined.	Contractor, PM Contractor, ECO Contractor Contractor, ECO Contractor	

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	113. A boundary fence must be erected to prevent public access, for public safety and security reasons. 114. ECO and Contractor should ensure that only authorised personnel are on site at all times.		
Health and Safety	115. The Contractor must provide a method statement for 'Safety Measures', 'Standard Operating Procedures', and 'First Aid' to be adhered to on site. 116. A Health and Safety Plan (in terms of the OHSA, 1993) must be compiled and must be available on site, at all times. 117. An Incident Record of Health and Safety incidents must be kept onsite and up to date. Incidents must be reported to the ECO and the PM immediately. 118. Machinery and equipment must be maintained in a safe operating condition. 119. A complete, appropriate First Aid Kit must be available onsite, within range of where labour is in progress. 120. Stockpiled material to be secure to prevent injury. 121. Personal Protective Equipment (PPE) must be made available to all construction workers and must be compulsory. 122. Hard hats and safety shoes must always be worn. 123. Dust masks and ear plugs as and when required. 124. No person must be allowed to enter the site without the required PPE. 125. Regular noise spot sampling should be undertaken in areas where construction is taking place to ensure that the noise levels are within required limits. 126. Trenches, uncovered manholes and other excavated areas must be cordoned off and clearly demarcated. 127. Warning signs must be adequate and clearly visible to inform of hazardous areas. 128. Firefighting equipment must be placed in prominent positions and must be distributed over the entire site. Equipment must be in full, working condition and must include fire extinguishers, a fire blanket and a water tank.	Contractor PM, Contractor Contractor, ECO Contractor. Contractor, ECO Contractor Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	129. Covered resting areas must be provided for workers. 130. Emergency contact numbers for all Emergency services, the Local Municipality and any other relevant persons must be easily accessible on site.	Contractor	
Heritage Landscape	131. Should any site of heritage importance or considered to be potentially such a site be found, the infrastructure development activities in that area should cease immediately and a qualified Archaeologist should be contacted to assess the site and provide the necessary way forward.	Contractor, ECO	Continuous
Social Environment	132. Any and all contact with Interested and Affected Parties, as well as neighbours, and general public shall be courteous at all times. 133. Road rehabilitation should take place as and when required, to ensure minimum inconvenience to other road users (where applicable). 134. Construction vehicles are to use only the designated roads. 135. Damage to infrastructure shall not be tolerated and damage is to be repaired immediately. 136. The Contractor shall assist the PM with responding to queries and complaints from the public by: documenting details and submitting the information to the PM for inclusion in the complaints register; bringing any such matters to the attention of the PM immediately as they arise and taking any remedial action as per the PM's instruction. 137. Any work on land owner property that is not within the approved working area, must have a written agreement from the landowner concerned. 138. All disturbances must be rehabilitated. 139. No private agreements between the contractor and the landowner will absolve the contractor from illegal activities. 140. Illegal transgressions in this regard without the PM's approval will be the sole liability of the contractor and the contractor will bear the full consequences of such actions.	Contractor Contractor, ECO Contractor Contractor, PM	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	141. Local residents (including females) are to be offered unskilled job opportunities where possible. 142. Remuneration should be in line with the relevant Labour Law legislation. 143. Workers will have a formalised forum through which they can make inputs into the overall management of the project (e.g. a workplace committee).	Contractors, ECO, PM Contractor, PM	

7.5.3 Decommissioning Management Measures

Table 9: Decommissioning Management Measures

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
Camp decommissioning (associated infrastructure)	1. All rubble to be removed from the site and disposed of at a registered landfill site. 2. All rubbish / litter to be collected. 3. Surfaces to be checked for waste activities such as cement mixing and cleared as per instruction from the ECO. 4. Building / construction material not utilised to be removed off-site and returned to the depot. 5. All natural surfaces hardened or compacted due to construction activities to be ripped and foreign material removed. 6. Watercourses are to be checked to ensure same is clean from litter, rubbish, and construction or waste materials. 7. All fences, demarcation barriers and signs associated with construction to be removed. 8. Residual stockpiles, following spreading of same over areas affected by construction for rehabilitation purposes, to be spread on site, as directed by ECO. 9. All construction / building related rubble left onsite is to be collected and removed from site and disposed of at a registered dumpsite. Drakenstein Water Division may require proof of this disposal in the form of an invoice to the Contractor or a weighbridge notice from the relevant disposal site. 10. Rubble buried in the soil must be removed to a depth of 100mm.	Contractor, ECO ECO Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
Equipment and Services	11. Structures comprising the construction camp to be removed. 12. Area that constituted the construction camp to be checked for spills / waste of materials such as oil, diesel, paint etc. These are to be cleaned. 13. All temporary services to the site (sewage removal, waste removal etc.) to be cancelled.	Contractor, ECO	Continuous
Rehabilitation	14. Existing access roads to be left accessible for maintenance purposes in the future. 15. The entire scarred area is to be levelled off as close as possible to the surrounding topography so as not to hinder water drainage and cause channelling which may in time lead to erosion. 16. Compacted soils should be ripped following the construction phase of the project. Topsoil should be spread over the work area to ensure optimal rehabilitation to a state similar to pre-construction activities. 17. If the area requires 'cut and fill' to a depth greater than 300mm, the topsoil is to be removed prior to cutting. 18. Soil preparation for reseeding is to be done by means of ripping the site with a tractor mounted single tine sub-soiler to a depth of 300 mm to relief compaction. The area is then to be renovated to obtain an even (fine) tilts (not dug over), to a depth of 100 mm. 19. Finalise the level of the area ensuring that once the veld grass seed is planted the finished level will tie in with the existing hard landscape levels. 20. Re-vegetation of areas within which the construction occurred, as well as areas either side thereof affected by construction activities to be completed. 21. Areas used for storage, parking bays and other construction activities to be rehabilitated in a similar manner. 22. Areas where topsoil was removed, is to be levelled and re-covered by topsoil, to reflect surrounding conditions. 23. Care should be taken to not create slopes exceeding heights of surrounding areas, which could lead to soil erosion.	Contractor Contractor, ECO PM, Contractor, ECO Contractor, ECO	Continuous

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	24. Erosion monitoring and control should be conducted, as part of the maintenance and control of the operation phase of the filling station. 25. All areas subjected to hydrocarbon spills should be cleaned. The contaminated soils should be remediated and replaced. 26. Areas of standing water should be prevented. 27. Following completion of all rehabilitation measures, a final site inspection is to be conducted by the Contractor, the ECO and the PM, to ensure full compliance with all requirements as per the EA, the EMPr and the mitigating and rehabilitation measures as per the various Specialist Studies conducted.	Contractor	

7.5.4 Operational Phase

Table 10: Operational Phase Management Measures

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
Site Operation	1. <u>Weed Eradication:</u> a. A weed eradication programme should be maintained and enforced on site, which could include pulling, cutting, targeted pesticide use, biological controls and native species reintroduction. b. Due to the low expected presence of invader species, it is recommended that manual control techniques be implemented, such as digging and hand pulling. It is important that the entire root system is removed and that this is undertaken during spring when small and young plants are available. c. Where manual control techniques are not effective, chemical control measures should be implemented using pesticides. d. Proper PPE should be used during the use of chemical pesticides. e. Local employment will be preferred to undertake and implement the weed eradication programme. 2. <u>Aquatic Buffer and Management:</u>	Facility Manager	Weekly

Activity:	Mitigation Measures:	Responsible Party:	Frequency:
	a. A buffer of 10m will be retained around the watercourse, this will be clearly demarcated. b. The site will be demarcated as a green zone within the overall development. c. Water quality and bio-monitoring sampling will be undertaken weekly throughout the operation of the development. The results of the monitoring programme will be submitted to the DWS. 3. Waste Management: a. A Waste Management Programme will be implemented on site, which will include the provision of clearly marked bins and the incorporation of recycling principles. b. Bins will be place in designated area from where licensed contractors will collect these and dispose of the waste in designated areas. c. Owners will receive rules and regulations in terms of environmental compliance and protection as part of the purchasing or renting agreements. d. Owners will receive rules and regulations in terms of environmental compliance and protection as part of the purchasing or renting agreements 4. Stormwater Management: a. The design and stormwater management of the development will allow for natural runoff to the aquatic resources as far as practically possible. b. The Stormwater Management System will be maintained to ensure its effectiveness. c. Disposal of runoff or storm water to the municipal system will be undertaken in accordance with the requirements of the local by-laws. 5. Environmental Awareness: a. The presence of the green zone and also an information notices of the importance of this site will be erected on site in an attempt to create environmental awareness.		

7.6 Conclusion

It is very important that the stipulations of this EMPr are adhered to and that all tasks are completed to ensure that no environmental pollution takes place during the construction and operational phases of the proposed Nederburg mixed-use development. The EMPr must be implemented before any construction takes place.

Nederburg must also ensure that all relevant are appointed to manage the project and ensure that the EMPr conditions are realised. The proponent must also appoint an ECO to attend weekly site audits to ensure that environmental issues are mitigated properly.
Your attention is also drawn to the fact that this EMPr document is a legally binding document that must be signed by the applicant thus agreeing to all aspects mentioned and instructions to be met accordingly. The EA and its conditions must also be considered and adhered to in line with the EMPr.

APPENDIX H: Screening Report Tool

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: 16/3/l/1/B3/28/1120/14

Project name: ASLA DEVCO

Project title: PROPOSED MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG ESTATE NO. 613, PAARL

Date screening report generated: 01/03/2021 15:40:58

Applicant: Virdus Works

Compiler: Ludwig van der Merwe

Compiler signature:

.....

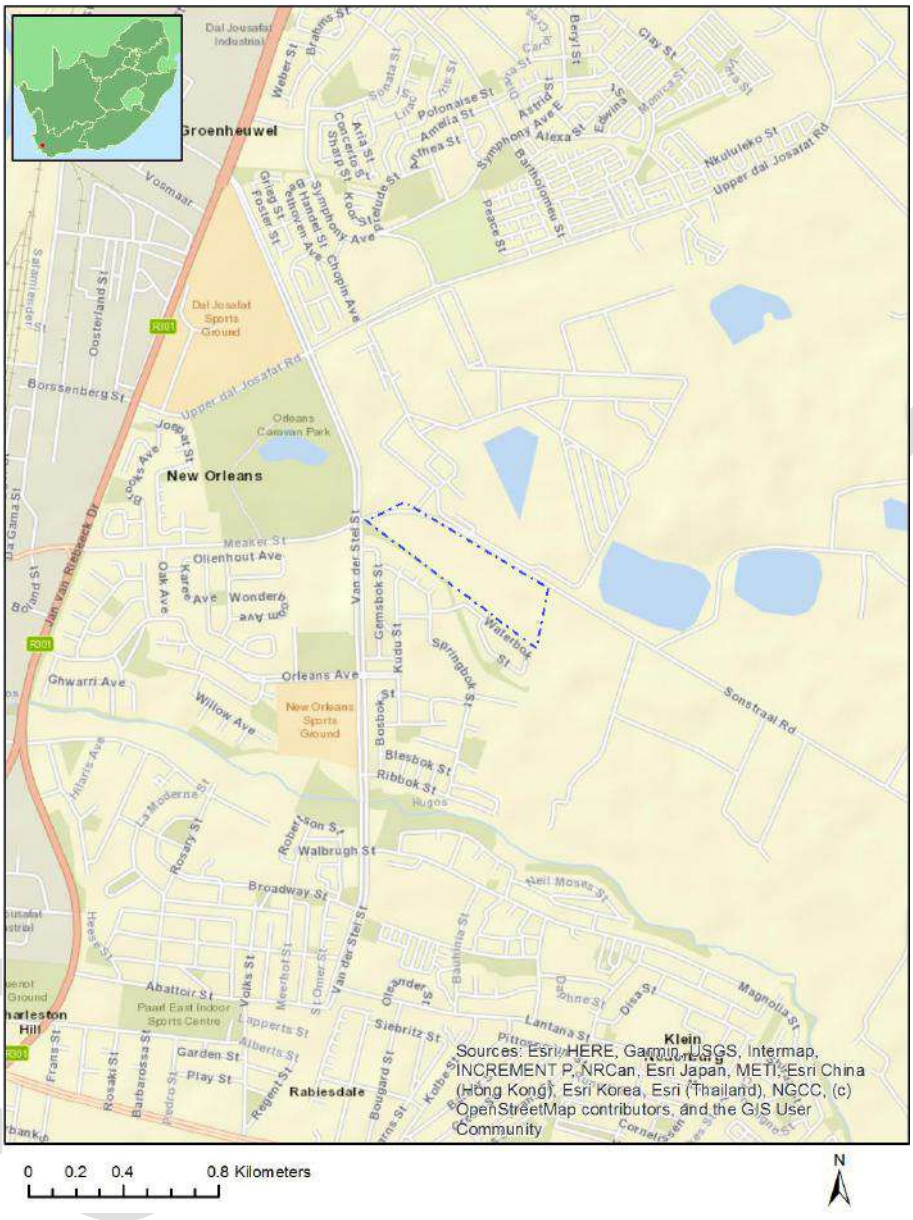
Application Category: Transformation of land|From agriculture or afforestation

Table of Contents

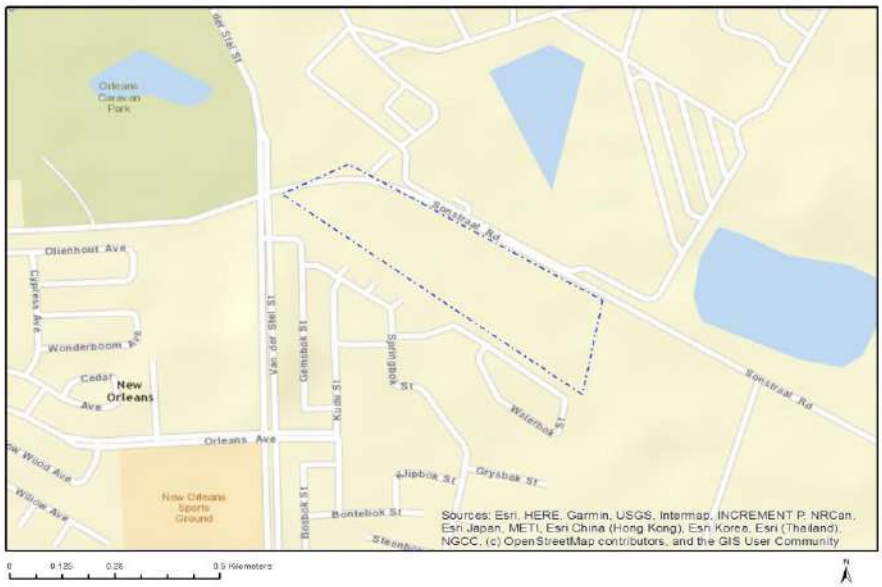
Proposed Project Location

Orientation map 1: General location

General Orientation: ASLA DEVCO



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	PAARL	9335	0	33°43'2.13S	18°59'27.9E	Erven
2	NEDERBURG ESTATES	613	0	33°43'8.68S	19°0'6.24E	Farm
3	NEDERBURG ESTATES	613	0	33°43'8.72S	19°0'8.32E	Farm Portion
4	NEDERBURG ESTATES	613	3	33°42'49.69S	18°59'50.6E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Transformation of land|From agriculture or afforestation**.

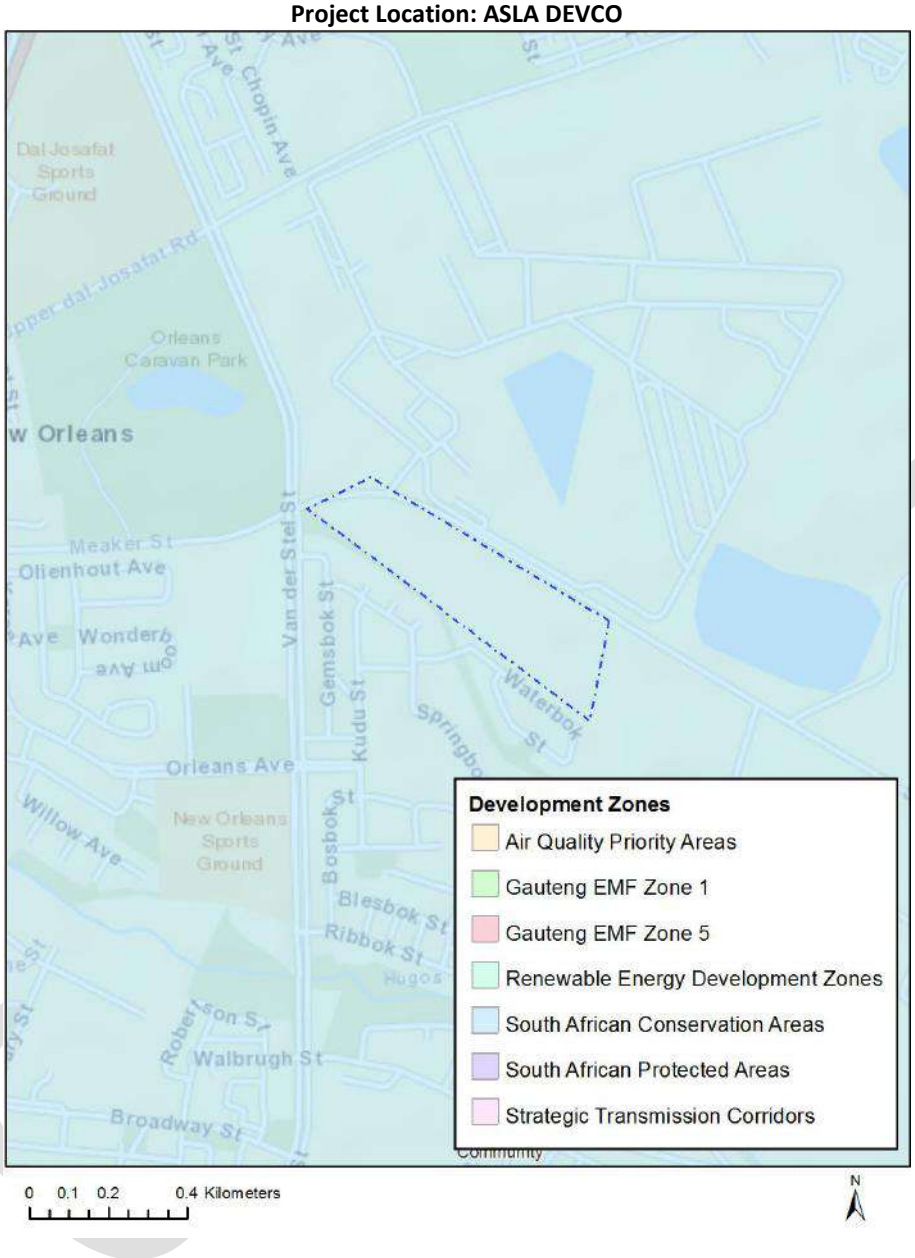
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GN113 16 February 2018.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2020_Q3_Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: ASLA DEVCO



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols

	Assessment	/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
10	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

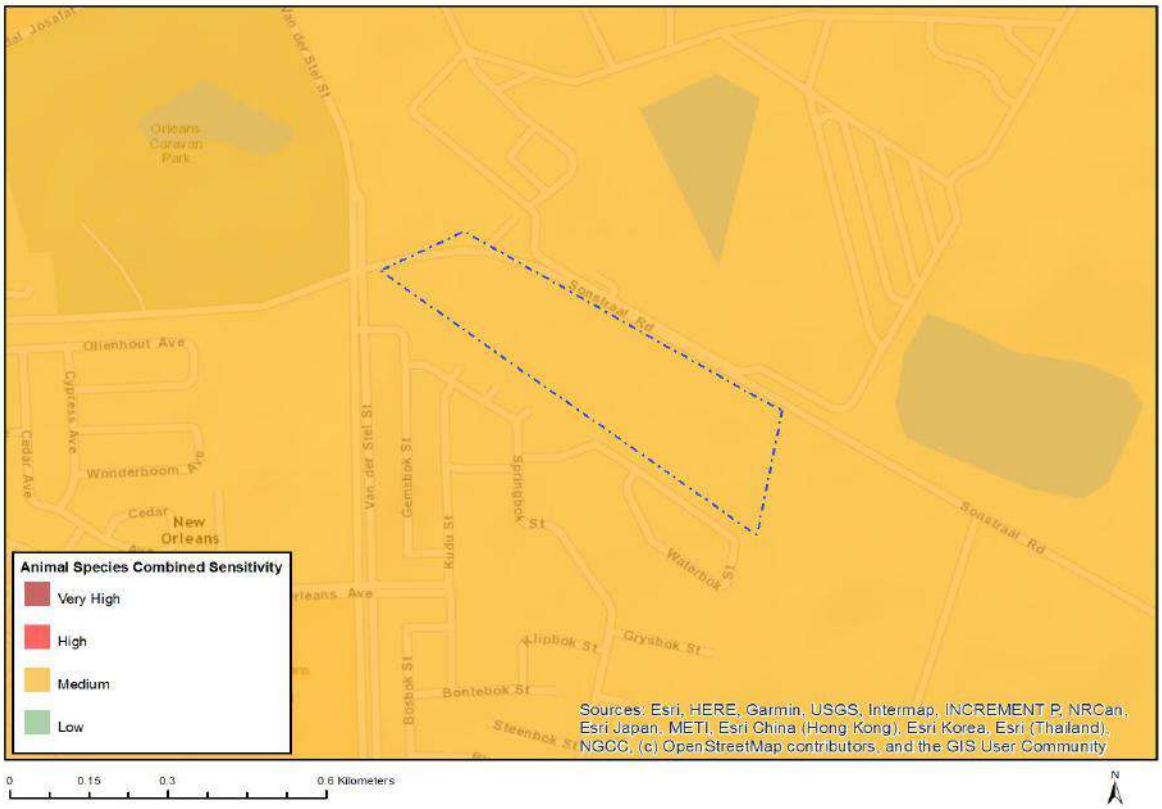
MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Viticulture;Land capability;09. Moderate-High/10. Moderate-High
Very High	Viticulture;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Invertebrate-Aneuryphymus montanus
Medium	Invertebrate-Brinckiella aptera
Medium	Invertebrate-Conocephalus peringueyi

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Strategic water source area

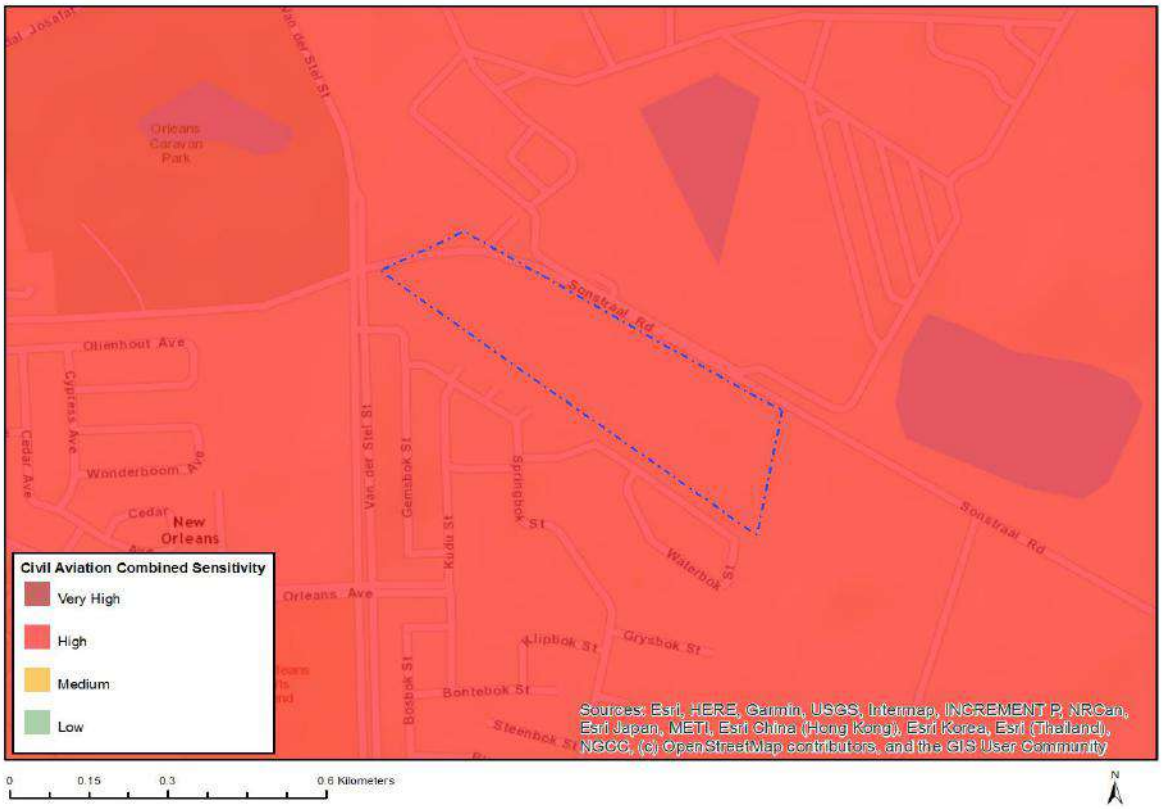
MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Within 5km of a Grade I Heritage site
Very High	Within 2km of a Grade II Heritage site

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

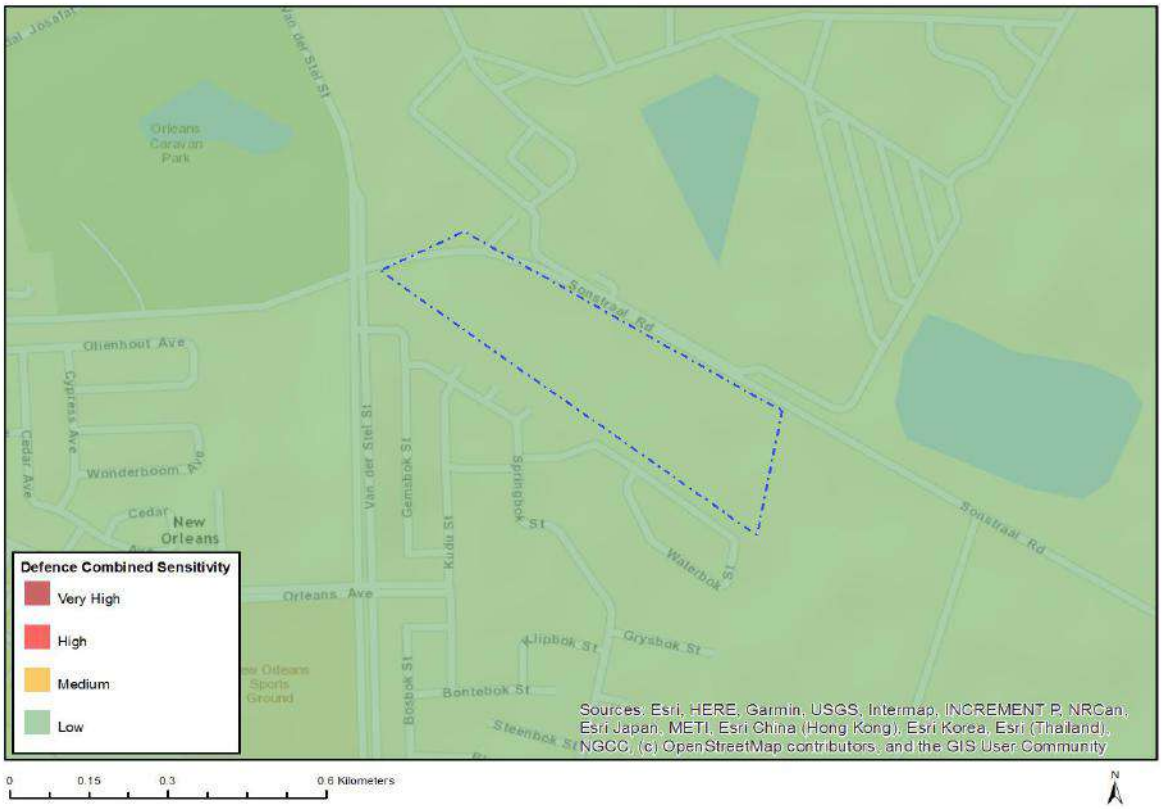


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 8 km of other civil aviation aerodrome
High	Dangerous and restricted airspace as demarcated

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

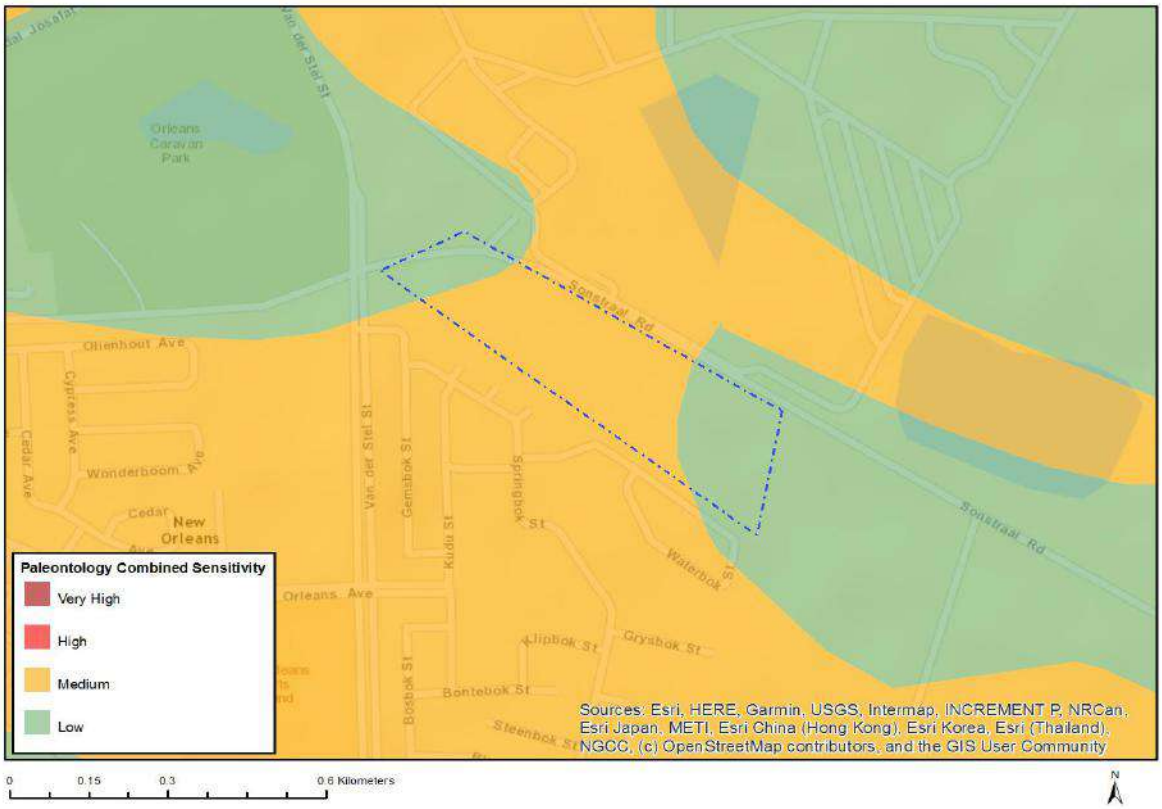


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

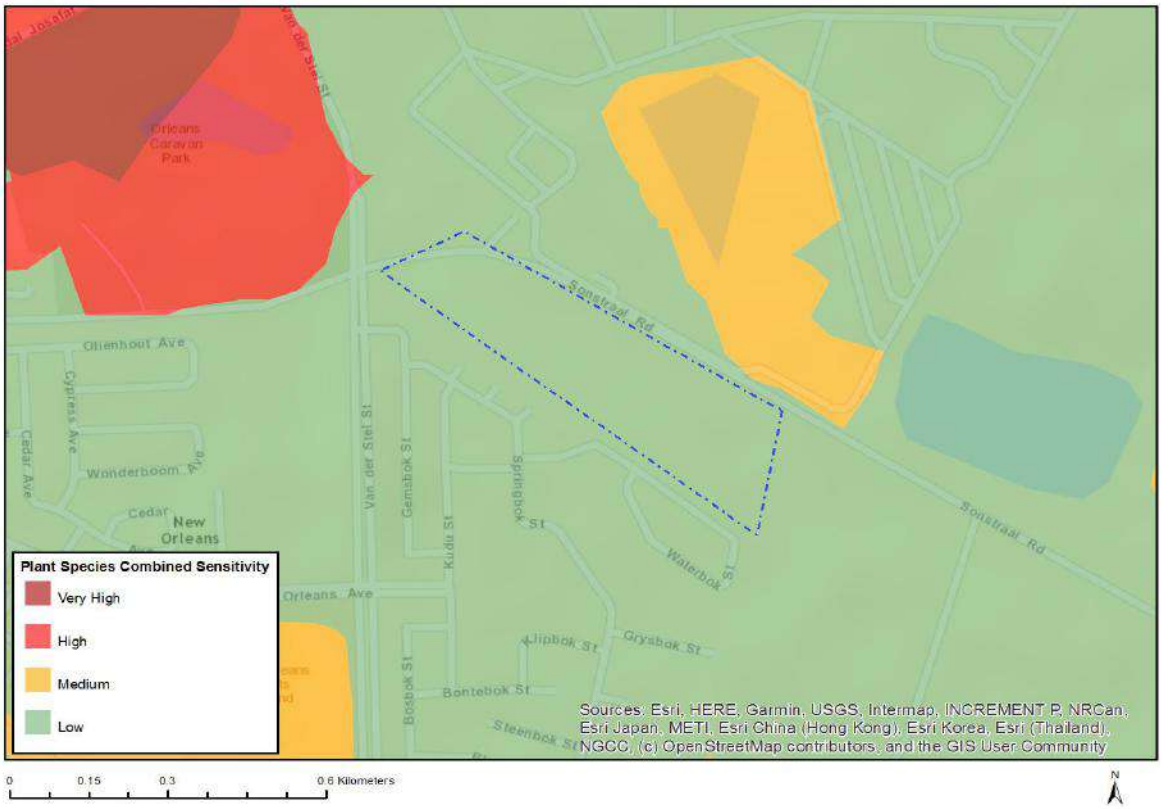


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Ecological Support Area 2
Very High	Critical Biodiversity Area 1
Very High	Strategic Water Source Area
Very High	Critically endangered ecosystem

APPENDIX I: Public Participation Plan and DEA&DP Approval

Virdus Works Environmental (Pty) Ltd (Reg. No. 2019/133896/07)
Ludwig van der Merwe
(SACNASP 133969/ EAPASA 2020/2817)
Candidate Natural Scientist/ Environmental Practitioner
Mobile: +27 73 137 4625
Email: ludwig.vdmerwe@virdus.com

In association with:

VIRDUS WORKS

PUBLIC PARTICIPATION PLAN FOR MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG NO. 613, PAARL. DEA&DP REF NO. 16/3/3/5/B3/28/1069/20.

Background

The proposed development of a mixed-use complex on Portion 3 of Farm Nederburg No. 613, Paarl, has been approved by various governmental departments and a subsequent Environmental Authorisation ('EA") was granted by the Department of Environmental Affairs and Development Planning (DEA&DP). The approvals and authorisations granted for the development include:

- Authorisation for subdivision and exemption in terms of the Subdivision of Agricultural Land Act, 1970, Act 70 of 1970, issued 05 October 2017;
- Permit in terms of the National Heritage Resources Act, 1999, Act 25 of 1999 (NHRA);
- Authorisation for a specific development in terms of the National Environmental Management Act, 1998, Act 107 of 1998 (NEMA), issued 06 January 2017;
- Approval in terms of the Roads Ordinance, 1976, Ordinance 19 of 1976;
- Permission to affect a watercourse in terms of the National Water Act, 1998, Act 36 of 1998 (NWA); and
- Rezoning and subdivision in terms of the Land Use Planning Ordinance, 1985, Ordinance 15 of 1985 (LUPO), issued 06 June 2017.

The approvals and authorisations are due to lapse in January 2022 in the case of the NEMA environmental authorisation, and in June 2022 in the case of the LUPO approval. However, according to the conditions of the LUPO approval, the conditions lapsed in June 2019. The Agricultural subdivision approval lapses in October 2022. Consideration of the amendments need to take the extension of the validity periods into consideration.

The scope of the project has since been changed to improve the feasibility thereof. Due to the changes being made a Part 2 Amendment Application was launched at the DEA&DP.

As per the NEMA Act of 1998 (as amended) a Public Participation Process must form part of a Part 2 Amendment Application process. Legislative guidelines dictate that all registered Interested and Affected Parties (I&AP) and all other relevant stakeholders/ departments be informed of significant changes that are made to a proposed development.

An Amendment Report, which includes the proposed changes and relevant specialist reports, must be made available to the registered I&APs and other stakeholders/ departments for a 30-day commenting period. Under sub-regulation 32(1)(b) of the EIA Regulation, 2014, a 50-day time extension may be granted, "*when significant changes have been made or significant new information has been added to the report, which changes or information was not contained in the report consulted on during the initial public participation process contemplated in subregulation (1)(a) and the revised report will be subjected to another public participation process of at least 30 days*".

The EA application in terms of the EIA Regulations published in June 2017 covered the following:

Activity No.	**Basic Assessment Listed Activity,** in **Listing Notice 1 (GNR 327** of **20170407)**
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;
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development will occur outside an urban area
9 of Government Notice No. 544 (not similar listed in terms of the EIA Regulations, 2014, Listed Activities)	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or stormwater - (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughout of 120 litres per second or more, excluding where: a. such facilities or infrastructure are for bulk transportation of water, sewage, or stormwater or stormwater drainage inside a rood reserve; or b. where such construction will occur within urban areas but further than 32 metres, from a watercourse, measured from the edge of the watercourse.
11 of Government Notice No. 544 (not similar listed in terms of the EIA Regulations, 2014, Listed Activities	The construction of: (ii) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size: or (xi) Infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse measured from the edge of a watercourse. excluding where such construction will occur behind the development setback line.
	Basic Assessment Listed Activity, in **Listing Notice 3 (GNR 324** of **20170407)**
None	None
	Basic Assessment Listed Activity, in **Listing Notice 2 (GNR 325** of **20170407)**
None	None
Any other	**Any other as identified during the process after consultation with stakeholders**
None	None

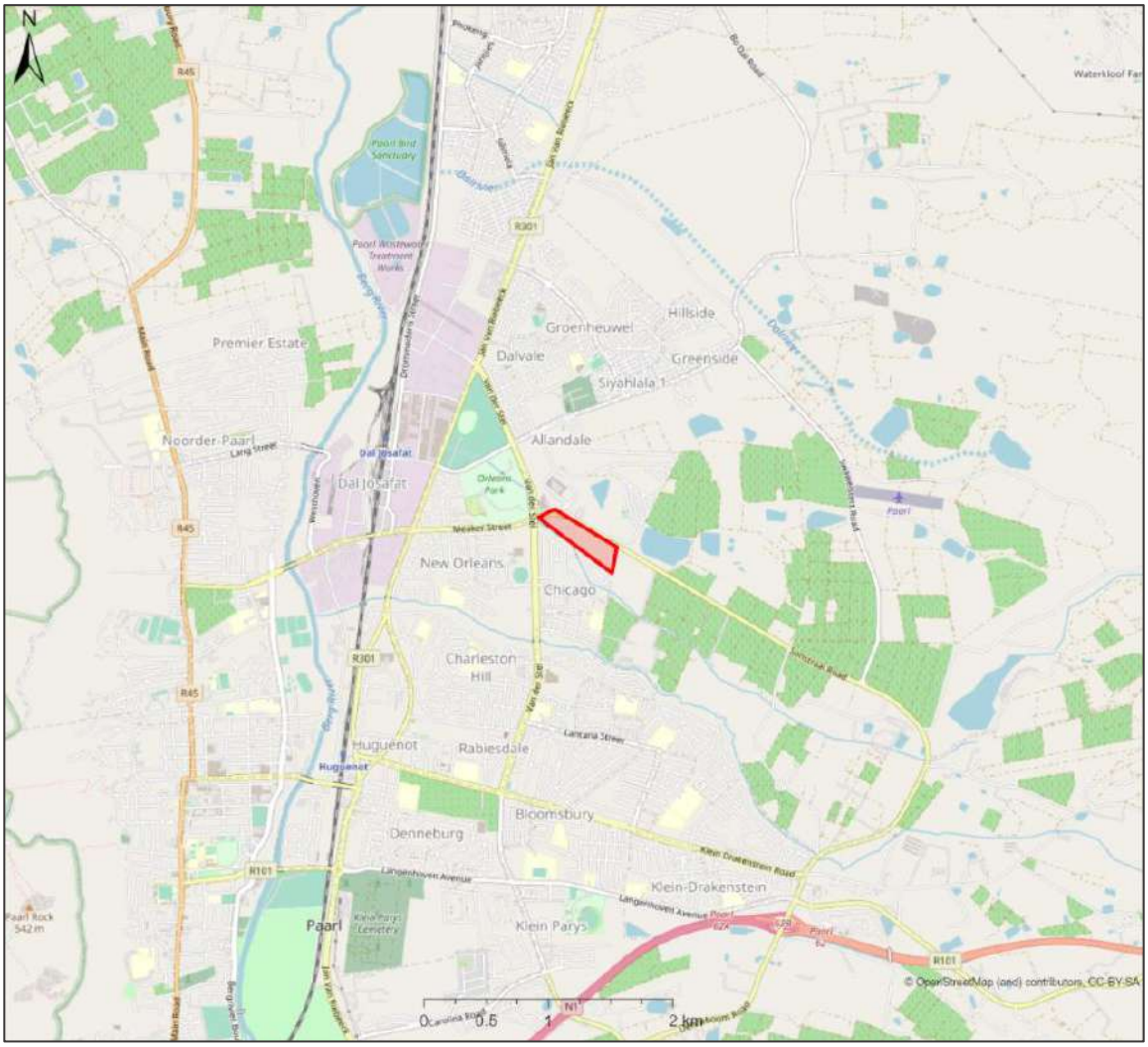
Background of the receiving environment

The site is situated along the southwestern side of Sonstraal Road towards the Van Der Stel interchange. The property is surrounded by residential and zoned agricultural land (Portion 3 of Nederburg Farm Estates No. 613, Paarl).

On the northwestern side (opposite side) of Sonstraal Road, the adjacent land is used for a correctional facility. The property borders the Nederburg Farm Homestead on the Western side, where agriculture is being practised.
The rest of the site is surrounded by residential areas. The neighbourhoods Chicago and New Orleans can be found directly South and West of the property, respectively. The residential areas are lower-income areas, mostly developed through the segregated development policies of the past, for

coloured people. The project site is surrounded by roads, stormwater channels and bulk water lines along its northeastern and western borders.

The Boontjies River, a non-perennial watercourse, is abutting the property on the southeastern side.



Project details

As mentioned above, the project has been issued with the needed approvals from various governmental departments. However, the scope and layout of the project have since changes to improve the feasibility of the project. See the table below for a summary of the proposed changes to the project.

Land use	**NEW LAYOUT**	**Area (ha)**	**APPROVED (OLD) LAYOUT**	**Area (ha)**
1) Residential erven	305	6,45	214	5,45
2) Open spaces	5	1,01	3	0,96
3) Institutional	1	0,22	2	0,39
4) Business	0	0,00	1	0,15
5) Internal street	1	2,20	1	2,85
6) Remainder road (Sonstraal Road)	1	1,02	1	1,02
Extent:		10,8398		10,8398

Public participation process

As per the NEMA Act of 1998 (as amended) a Public Participation Process must form part of a Part 2 Amendment Application process. Legislative guidelines dictate that all registered Interested and Affected Parties (I&AP) and all other relevant stakeholders/ departments be informed of significant changes that are made to a proposed development. The process will be initiated with a pre-application assessment. All registered I&AP, including the competent authority, will be given at least 30 days to register as I&AP's and/or to submit comments on the amendment report. All notices will provide information about the availability of the reports and documentation, while letters will contain background information.

Thereafter, all information that reasonably has or may have the potential to influence any decision regarding the amendment application will be provided to the registered I&AP's and all authorities with an interest in the project, for an opportunity to comment on the reports and plans that form part of the part 2 amendment application.

The process will be facilitated through the following measures:

- Registered letters to all the registered interested and/or affected parties whose postal addresses can be established, inclusive of the Ward Councillor and relevant authorities;
- Email communication and sending of the same letter sent by registered mail to all the registered interested and/or affected parties whose email addresses were established;
- Placing of a notice in English and Afrikaans in a newspaper (Paarl Post) distributed in the area;
- Placing of all correspondence, reports, notices, and plans on the company website (www.virdus.com);
- Placing two A3-sized on-site notices on the project property, one adjacent to the road access from Sonstraal Road and one adjacent to the access from the neighbouring residential area; and
- Dropping copies of the same letter sent by registered mail at all those potentially interested and/or affected parties resident in and at all businesses and non-residential premises in the immediately surrounding area.

The following measures will be taken as per the DEA&DP Circular No. 0001/2021, dated 6 Jan 2021:

- all reasonable measures will be taken to identify potential I&APs for purposes of conducting public participation on the application;
- as far as is reasonably possible and taking into account the specific aspects of the application,
    - information containing all relevant facts in respect of the application or proposed application will be made available to potential I&APs; and
    - participation by potential or registered I&APs will be facilitated in such a manner that all potential or registered I&APs have been provided with a reasonable opportunity to comment on the application or proposed application; and
- if applicable, the Public Participation Plan, as agreed with the relevant authority, will be adhered to and any deviations from such agreed plan where relevant will be indicated; with a copy of the agreed Public Participation Plan to be submitted as an Annexure to the documentation submitted to the relevant authority.

List of Registered IA&Ps and other stakeholders/ departments

Landowner Consultation

The following stakeholders were identified at the start of the Public Participation Process upon the

development of the stakeholder database as part of the Basic Application Report (BAR) and must be consulted about the changes made to the project.

- All landowners bordering the proposed development (north, east, south, and west) were identified.
- Ward Councillor of Ward 24
- Ward Councillor of Ward 25
- Red Table Restaurant
- New Orleans Secondary School
- New Orleans Primary School
- Sonstraal Hospital
- Paarl East TC Newman Hospital
- Mooibly Guesthouse
- Allendale Correctional Services
- Paarl East Police Station
- Lize Malan Heritage Consultants

List of Authorities

The following regulatory authorities were consulted during the BAR and must be consulted about the changes made to the project.

- Department of Environmental Affairs and Development Planning (DEA&DP)
- Drakenstein Local Municipality
- Department of Water Affairs
- Department of Agriculture
- Heritage Western Cape
- Cape Nature

All the registered I&APs will be contacted through the below-indicated means:

Predicted environmental issue	**Identified I&AP's** (and competent authority)	**Nature of notification**	**Timing / program**
Road access	Drakenstein Local Municipality	Registered letter and/or letter by email	On-going from pre-application stage
	Western Cape Department of Transport	Registered letter and/or letter by email	On-going from pre-application stage (Will only provide comments once a formal application is launched)
Road use and development activity	Chicago and New Orleans residents and entities	Letter by mail drop	Only to registered I&AP's
	Department of Agriculture (provincial and national)	Registered letter and/or letter by email	On-going from pre-application stage (application is pending, the department confirmed that the application was received)
	Western Cape Department of Transport PRASA / Metrorail	Registered letter and/or letter by email	On-going from pre-application stage (Will only provide comments once a formal application is launched)
	Drakenstein Local Municipality	Registered letter and/or letter by email	On-going from pre-application stage (Will only provide comments once a formal application is launched)

Predicted environmental issue	**Identified I&AP's** (and competent authority)	**Nature of notification**	**Timing / program**
	Heritage Western Cape	Registered letter and/or letter by email	On-going from the pre-application stage (approval issued on 22 Jan 2021)
	Adjacent landowners, occupants, or residents	Registered letter, mail drop and/or letter by email	At the pre-application stage and then to registered I&AP's
	All parties and potential I&AP's	Public notices (media and on-site)	On-going from pre-application stage
Stormwater systems and watercourse	DWS Cape Nature Drakenstein Local Municipality	Registered letter and/or letter by email	On-going from pre-application stage
	Adjacent landowners, occupants, or residents	Registered letter, mail drop and/or letter by email	Only to registered I&AP's

We have been in contact will several of the relevant departments regarding the needed approvals. Please see list of applications below for summary.

- Part 2 Amendment of an Environmental Authorisation Application in terms of the National Environmental Management Act (NEMA), 1998 (Act no. 107 of 1998) Environmental Impact Assessment Regulations.
- Amendment authorisation for subdivision and exemption in terms of the Subdivision of Agricultural Land, 1970 (Act no. 70 of 1970).
- Amendment of permit in terms of National Heritage Resources, 1999 (Act no. 25 of 1999). Application was successful and authorisation granted on 22 Jan 2021.
- Approval in terms of the Road Ordinance, 1976 (Ord no. 19 of 1976).
- Amendment of rezoning and subdivision in terms of Land Use Planning Ordinance (LUPO), 1985 (Ordinance 15 of 1985).
- Amendment to water use license for general use in terms of the National Water Act (NWA), 1998 (Act no. 36 of 1998).

Please see approvals and confirmations attached hereto.

Yours faithfully,

Ludwig van der Merwe

Ludwig van der Merwe
(SACNASP 133969/ EAPASA 2020/2817)
Candidate Natural Scientist/ Environmental Practitioner
5 VYGEBOOM CLOSE, DURBANVILLE, 7550, SOUTH AFRICA
Cell: +27 73 137 4625
Email: ludwig.vdmerwe@virdus.com

Virdus Works Environmental
(Pty) Ltd (Reg. No. 2019/133896/07)
Environmental Management, Assessment and Administration
Director: Nico F Williams
PO Box 247, Wolseley, 6830, South Africa
Mobile: +27 76 564 8569
Email: nico.williams@virdus.com

Department of Environmental Affairs and Development Planning
Bernadette Osborne
Development Management
Bernadette.Osborne@westerncape.gov.za | Tel: 021 483 3679

REFERENCE: 16/3/3/6/B3/28/1181/21
ENQUIRIES: Bernadette Osborne
DATE OF ISSUE: 21/9/2021

The Board of Directors
Asla Devco (Pty) Ltd
25 Jan Conradie Street
STRAND
7140

Attention: Ms Karen Siebrits

Tel: (021) 845 8552
E-mail: karen@asla.co.za

Dear Madam

APPROVAL OF THE PUBLIC PARTICIPATION PROCESS ("PPP") PLAN IN TERMS OF CIRCULAR: DEA&DP NO 0001/2021 FOR THE MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG NO. 613, PAARL.

1. The electronic copy of the amended PPP Plan received by this Department on 30 August 2021, refers.

2. The Department hereby approves the amended PPP Plan submitted in terms of the Department's Circular (CIRCULAR: DEA&DP NO 0001/2021). All the measures highlighted in the PPP Plan must be implemented to meet the requirements of Regulations 41 of the NEMA EIA Regulations 2014.

3. The approved PPP Plan must be included with the submission of the formal amendment application and should also form part of the draft report that will be distributed as part of the Public Participation Process.

4. Please note that the applicant must comply with any other statutory requirements that may be applicable to the undertaking of the activity.

5. Kindly quote the abovementioned reference number in any future correspondence concerning the proposed development.

6. This Department reserves the right to revise or withdraw its comments and request further information based on any information received.

Yours faithfully

ppHEAD OF COMPONENT
ENVIRONMENTAL IMPACT MANAGEMENT SERVICES: REGION 1
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

Cc: (1) Mr Ludwig van der Merwe (Virdus Work Environmental) E-mail: Ludwig.vdmerwe@virdus.com
(2) Ms Cindy Winter (Drakenstein Municipality) E-mail: Cindy.Winter@drakenstein.gov.za

APPENDIX J: Pre-Application Feedback

Department of Environmental Affairs and Development Planning
Bernadette Osborne
Development Management: Region 1
Bernadette.Osborne@westerncape.gov.za | Tel: 021 483 3679

REFERENCE: 16/3/3/6/B3/28/1181/21
DATE: 2/7/2021

The Board of Directors
Asla Devco (Pty) Ltd
25 Jan Conradie Street
STRAND
7140

Attention: Ms Karen Siebrits

Tel: (021) 845 8552
E-mail: karen@asla.co.za

Dear Madam

COMMENT ON THE DRAFT AMENDMENT REPORT IN TERMS OF PART 2 OF THE ENVIRONMENTAL IMPACT ASSESSMENT ("EIA") REGULATIONS 2014 FOR THE MIXED-USE DEVELOPMENT ON PORTION 3 OF FARM NEDERBURG NO. 613, PAARL.

1. The Environmental Authorisation ("EA") issued on 6 January 2017 and the electronic copy of the abovementioned document received by this Department on 8 June 2021, refer.

2. After reviewing the information submitted to this Department, it is noted that the amendment application entails the following:
   - Transfer of rights and obligations from Distell Limited to Asla Devco (Pty) Ltd.
   - The following preferred layout alternative approved in the EA issued on 6 January 2017:
     - 213 residential erven;
     - 1 business erf;
     - 2 institutional erven;
     - 1 business erf;
     - 2 open spaces;
     - A new access from Sonstraal road; and
     - Associated bulk services crossing the river.

     must be amended as follow:

     - 305 residential erven;
     - 5 open spaces;
     - 1 institutional erf;
     - 1 internal road; and
     - 1 remainder road (Sonstraal road)

3. This Department's comments are as follow:

3.1 It is noted that the 30-day commenting period ends on Saturday, 3 July 2021. Please note that Regulation 3(1) of the EIA Regulations, 2014 stipulates that *"...when a period of days must in terms of these Regulations be reckoned from or after a particular day, that period must be reckoned as from the start of the day following that particular day to the end of the last day of the period, but if the last day of the period falls on a Saturday, Sunday or public holiday, that period must be extended to the end of the next day which is not a Saturday, Sunday or public holiday."* Hence, to ensure compliance with this regulatory requirement, the 30-day commenting period must end on 5 July 2021, as opposed to 3 July 2021. Please ensure that this regulatory requirement is complied with in future.

3.2 The information provided does not conform to the requirements of an Amendment Report, as outlined in the Regulations. A copy of the Amendment Application Form and supporting documents are provided, but not an Amendment Report that includes the details of the proposed amendment, the findings of the specialist studies, the mitigation measures that must be incorporated to minimise the potential impacts of the amended proposal and what specific amendments are required to the EA issued on 6 January 2017 to reflect the revised proposal. As specified on page 2 of the Amendment Application Form, *"...this in only the Application Form and not the Amendment Report that is to be submitted in terms of a Part 2 Amendment Process."* Please ensure that an Amendment Report that includes all the required information regarding the proposed amendment is compiled and included with the existing information.

3.3 As indicated in the Departmental letter dated 28 January 2021, the following must be addressed and included in the Amendment Report:

- The Environmental Management Programme ("EMPr") must be updated in line with the proposed amendments. Please ensure that all the relevant sections of the EMPr are amended accordingly and a copy of the amended EMPr must be included in the Amendment Report circulated for comment during the application process and submitted for decision-making.
- Associated bulk services crossing the river was excluded from the proposed amended layout alternative and this was also reflected in the freshwater specialist report. Clarity must be provided in the Amendment Report whether the associated bulk services will still be provided or how this will now be achieved.
- Since the proposal entails an increase in the number of approved residential units, written confirmation of the availability of services from the relevant service providers must be included in the Amendment Report.

3.4 The recommendations made in the specialist studies must be included in the relevant sections of the EMPr.

3.5 Comment from the following authorities is required:

- Comment from the Department of Transport and Public Works is required regarding the Traffic Impact Assessment Report.
- Comment from Department of Water and Sanitation is required regarding the Freshwater Impact Assessment Report.
- Comment from the Drakenstein Municipality regarding the amended proposal.

3.6 Please note that the Public Participation Process ("PPP") Plan does not refer to the latest Departmental Circular (Circular: DEA&DP No 0001/2021) issued on 6 January 2021. Please amend it accordingly and resubmit it to the Department for approval prior to submitting the Amendment Application Form. The approved PPP Plan and a copy of

the PPP Plan approval must be included with the submission of the formal amendment application to the Department.

4. Kindly quote the abovementioned reference number in any future correspondence in respect of the application.

5. The Department reserves the right to revise initial comments and request further information based on any new or revised information received.

Yours faithfully

ppHEAD OF COMPONENT
ENVIRONMENTAL IMPACT ASSESSMENT SERVICES: REGION 1
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

Cc: (1) Mr Ludwig van der Merwe (Virdus Work Environmental) E-mail: Ludwig.vdmerwe@virdus.com
(2) Ms Cindy Winter (Drakenstein Municipality) E-mail: Cindy.Winter@drakenstein.gov.za

DRAKENSTEIN
MUNISIPALITEIT • MUNICIPALITY • UMASIPALA
Paarl | Wellington | Gouda | Saron | Simondium

+27 21 807 4500 +27 21 872 8054
www.drakenstein.gov.za
customercare@drakenstein.gov.za
Civic Centre, Berg River Boulevard, Paarl 7646

Enquiries: C. Winter
Contact number: (021) 807 4731
Reference: 15/4/1(F613/3)P
Date: 28 July 2021

Virdus Works Environmental (Pty) Ltd.
5 Vygeboom Close
DURBANVILLE
7550

Attention: Mr. Ludwig van der Merwe
By email: ludwig.vdmerwe@virdus.com

Dear Sir

PRE-APPLICATION DRAFT BASIC ASSESSMENT REPORT (BAR): ENVIRONMENTAL AUTHORISATION AMENDMENT APPLICATION: PORTION 3 OF NEDERBURG FARM ESTATES NO. 613, PAARL (DEADP Ref Nr: 16/3/3/5/B3/28/1069/20 (OLD 16/3/1/1/B3/28/1120/14)

Reference is made to the Pre-application Draft Basic Assessment Report (DBAR) for the proposed development on the abovementioned property.

The Environmental Management Division (EMD) was made aware of this application on 21 July 2021. However, the due date for I&AP's to submit any comments/input was on 3 July 2021. Usually this division circulates applications for environmental authorisation to the relevant technical line departments within the municipality for comment. The reports and associated documents are made available to these departments for a number of days to do an adequate evaluation.

Since the Environmental Management Division did not get an opportunity to circulate this amendment application, it must be stated that the following are the views of this division and not necessarily the views of the other line departments.

The amendment application can be summarised as follow:

- Environmental authorisation for the initial development proposal was issued to Distell Limited on 06 January 2017 for the proposed mixed-use development on Portion 3 of Farm Nederburg Estate No. 613, Paarl.
- The motivation for the proposed amendment is due to the following reasons
    - The current holder (Distell) of the Environmental Authorisation wishes to transfer its rights and obligations to developers ASLA DEVCO (PTY) LTD.
    - ASLA DEVCO (PTY) LTD wishes to improve the feasibility of the project and to better utilize the available land to accommodate as many residential units as possible without significantly changing the character of the proposed development.
- The changes to the proposal can be reflected as follow:

Land Use	Approved (old) layout	New Layout
1. Residential erven	214	305
2. Open Spaces	3	5
3. Institutional	2	1
4. Business	1	0
5. Internal Street	1	1
6. Remainder Road (Sonstraal Road)	1	1
Area (Ha)	10,8398	10,8398

In principle the Environmental Management Division has no objection to the proposed amendments. However, this Division would request that it be made aware of the subsequent public participation rounds timeously in order to circulate the proposed amendment application to other line departments like Civil Engineering Services, Spatial Planning, Heritage Resource Management, Electrotechnical Services, Land Use Management, etc for their comments.

Kind regards,

.....

C. WINTER
MANAGER: ENVIRONMENTAL MANAGEMENT

TRANSPORT & PUBLIC WORKS: ROADS
Chief Directorate: Road Planning
Email: grace.swanepoel@westerncape.gov.za
Tel: +27 21 483 4669
Room 335, 9 Dorp Street, Cape Town, 8001
P.O. Box 2603, Cape Town, 8000

REFERENCE: **16/9/6/1-10/67 (Job 22779)**
ENQUIRIES: **Ms G Swanepoel**
DATE: **27 July 2021**

Virdus Works Environmental
5 Vygeboom Close
DURBANVILLE
7550

Attention: Mr Ludwig van der Merwe

Dear Sir

FARM 613/3 PAARL: DIVISIONAL ROAD 1118 (SONSTRAAL ROAD): PART 2 APPLICATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION

1. Letter to this Branch dated 3 June 2021 from Mr Ludwig van der Merwe of Virdus Works Environmental, DEA&DP ref. 16/3/3/5/B3/28/1069/20 (Old 16/3/1/1/B3/28/1120/14) and attached documentation refer.

2. The earlier application provided for 213 residential erven and business, institutional and open space zones. The revised application increases the residential component to 305 erven and removes the business zone. The layout and access arrangements are therefore amended.

3. The original layout took access from a point on the straight section of Divisional Road 1118 (Sonstraal Road) to the east of the access to the Correctional Services facility. The revised layout proposes to take access by way of a roundabout positioned on the horizontal curve directly opposite the Correctional Services access.

4. Traffic on Divisional Road 1118 (Sonstraal Road) is modest and being a low-income development, vehicle trip generation of the site will not be high. Intersections serving the site and carrying traffic onto the major road network will not be adversely affected by the proposed development.

5. This Branch has some concern about the location of the proposed access and the close proximity of the proposed 4-way roundabout to the access to the SAP facility. The access proposals will be reviewed at the land use application stage and amendments may be

required. It is noted that the subject property straddles Divisional Road 1118 and it is recommended that consideration be given to utilising this area to combine the two accesses (SAP and Correctional Services) outside the road reserve of DR1118 to provide a single access on the north side of the road. This will enhance the safety of vehicle movements through, to and from this section of Divisional Road 1118 (Sonstraal Road).

6. This Branch approves in principle the proposed development on Farm 613/3 Paarl but may at the land use application stage require amendments to the access arrangements.

Yours Sincerely

SW CARSTENS
***For* DEPUTY DIRECTOR-GENERAL: ROADS**

ENDORSEMENTS

1. Drakenstein Municipality

   Attention: Mr E Cyster (e-mail: Earl.Cyster@drakenstein.gov.za)

2. Virdus Works Environmental

   Attention: Mr L van der Merwe (e-mail: ludwig.vdmerwe@virdus.com)

3. District Roads Engineer

   Paarl

4. Mr E Smith (e-mail)

5. Mr H Thompson (e-mail)

6. Mr SW Carstens (e-mail)