Socio Economic Impact Assessment
Of the proposed Louw's Bos Memorial Park
for
Stellenbosch Municipality

In support of the Environmental Basic Assessment Report by EnviroAfrica cc.

August 2019

By

leap sustainable development
CK 1988/033181/23
c/o Rainier & Church Street, Malmesbury, 7300
info@leapsd.co.za
022 482 4653

Preliminary Socio Economic Impact Assessment of the proposed Louw's Bos Memorial Park for Stellenbosch Municipality in support of the Draft Environmental Basic Assessment Report by Enviro Africa cc

Executive Summary

Stellenbosch Municipality (SM) intends to establish of one or more Regional cemetery for Stellenbosch Municipal Area (here after referred to as Stellenbosch).

The development proposal consists of the establishment of a Memorial Park on the Southern portion (the preferred alternative) of Remainder farm no 502, Administrative District Stellenbosch, one of two identified site on this property. This memorial park is one of two memorial parks to be established in the Stellenbosch Municipal area. Stellenbosch was divided into three regions, North, East (Franschhoek Valley) and South, and sites per region were identified and assessed. Farm Louw's Bos No. 502 represents the site, with two alternatives, located in the southern region and Farm Calcutta No 29 represents the site in the north.

The proposed 70ha Louw's Bos public memorial park aims to promote a more modern concept to that of traditional public cemeteries and its 9 cemetery zones caters for the traditional and alternative burial practices and for recreation within the proposed Open Space Zone II zone. In 2015 there were an estimated 1600 gravesites available in existing cemeteries in the Stellenbosch jurisdictional area. Public cemeteries in the Stellenbosch Municipal area are nearing maximum occupation as between 600 and 800 burial spaces a year is needed.

Farm 502, Louw's Bos is registered in the name of Stellenbosch Municipality and is zoned Agricultural Zone I.

The purpose of this assessment is to outline the socio economic costs and benefits to create a MP in the Stellenbosch Municipal Area. The proposed activity and its impact should not result in unacceptable opportunity costs. Thus the operation of the MP should outweigh the net benefit yielded by next best alternative, that is farming and its benefits, being foregone for the receiving community or compete to use limited community resources i.e. water.

Approach

The approach to the study is directed by the requirements for Environmental Impact Assessments and the Guidelines for Social Impact Assessments (SIA) and Economic Impact Assessments commissioned by DEA&DP Western Cape. Hence these guidelines were used to provide a benchmark for the assessment conducted. The following activities were executed:

- Review of project information and specialist reports;
- Collection and synthesis of baseline socio-economic data on the area;
- Identification of key social and economic aspects and the impact of the project results on the receiving society and economy as per Guidelines for Social Impacts;

- Verification of some results, social aspects and impacts through interviews or correspondence with developer, specialists and key project team members and by means of a public participation process;
- Evaluating/ Rating the significance, duration, probability and intensity of identified impacts during the construction, operation and decommissioning phase and mitigation measures are proposed (Addendum A);

Rating	Score -	Score +
Low	0 to – 40	0 to 40
Medium	- 41 to – 80	- 41 to 80
High	- 81 to – 120	- 81 to 120
Very High	> - 120	> 120

- Evaluating/ Rating the extent and duration of the identified impacts;
- Preparation of Socio-Economic Impact Assessment (SIA);

Proposed Development

Land requirements for Cemeteries

The scale of the need for the next 10 to 30 years for additional cemetery space was calculated by both considering the death rate and land required for a traditional grave (5m²) as well as the provincial guidelines for cemeteries.

	Item	Extent
Calculations	Extent of a grave and space for movement	5m²
	Grave space per annum [Death rate of 1% (810 deaths per 100 000 population per annum rounded off)]	5 000m²
	Ha of land required over next 30 years	**15ha**
	Grave space per annum [Death rate of 1% (656 (2015) – 810 (2018) deaths per 100 000 population per annum)]	3280m²- 4050m²
	Ha of land required over next 30 years	**9.84ha -12.15ha**
CSIR 2012 guidelines	17.2ha Cemetery per 100 000 people Total 2011 population of 155 733 and 43 420 households Total 2019 population 192 877 (growth rate of 2.71%)	**26.8 ha – 33.2 ha**
	0.9ha park space per 1000 people: 140ha (regional parks limited to 30ha)	**30ha**

A 30ha regional cemetery site should provide sufficient space for the next 30 years. A regional park for recreational purposes accounts for 30ha more hectares. The MP proposed is 70ha in extent.

Proposed Memorial Park and Cemetery

The proposed 70hs Louw's Bos public memorial park has 9 zones catering for the following:

a. Memorial Park Centre Zone - ±0.644ha providing for a chapel, offices, storage, ablution facilities and a space to gather.
b. Service Zone - ±1.079ha providing for a workshop and storage, offices, a holding nursery and staff accommodation
c. Defined Zone - ±1.385ha providing for family/group burials and a hero's acre.
d. Columbarium Zone - ±0.750ha providing for a more modern approach to the conventional burial method by catering for a niche, memorial walls and floor panels.
e. Traditional Graves Zone - ±19.97ha providing for more conventional way of burial and represents 28.5% of the overall memorial park (±70ha) and 58% of the total cemetery uses (±34.53ha).
f. Informal Zone - ±28.889ha providing for more modern and less demanding ways of burial by means of lawn graves and the utilisation of trees as headstones. Future expansion, parklands and ablution facilities are considered within this zone.

g & h. Roads and parking - ±5.313ha providing for access & internal roads and bus & general parking.

i. Buffer Zone - ±11.970ha providing for Fynbos rehabilitation. Environmental & Heritage Education and Recreation within this zone.

Summary of Impacts of the Alternatives Sites

The study confirmed that as for the alternative sites, the southern site has an advantage over the northern site as it is further removed from groundwater sources and enhance biodiversity by creating a link to CBAs.

The moderate and high direct and residual socio-economic impacts associated the proposed MP on both sites are the following:

Impact	Type	Impact Level	After Mitigation
1. Increased crime and influx of non-Stellenbosch burials	Negative	High	Low
2. Sense of Place	Negative	High	Low
3. Increased traffic	Negative	Moderate	Low
4. Soil, groundwater and spring contamination/ Increased suspended solids in run-off	Negative	Moderate	Low (South) Moderate (North)
5. Land use change/ loss of agricultural land	Negative	High	Medium
6. Additional burial capacity for Stellenbosch inhabitants	Positive	Moderate	High
7. Employment of vulnerable groups	Positive	Moderate	High
8. Enhancement of Biodiversity	Positive	Moderate	Very High (South) Moderate (North)
9. Increased taxes	Negative	Low	Positive

The impacts, though highly and moderately negative, could be mitigated to become low negative or neutral. Impacts that rated as moderately positive changed to highly positive after mitigation. Only the land use change or loss of agricultural land cannot be mitigated. This loss is countered by the need for burial capacity for Stellenbosch inhabitants and the lack of suitable land for an amenity of this scale.

Overall the balance of the impacts identified and rated per project phase are manageable and can be mitigated. A summary of all the impacts follows below:

Alternatives	***South***		***North***		***No Go***
Direct Impacts	***Construction***	***Operational***	***Construction***	***Operational***	
Dust and Noise Levels	*Low negative, after mitigation change to neutral*	*Low negative, after mitigation change to neutral*	*Low negative, after mitigation change to neutral*	*Low negative, after mitigation change to neutral*	*No impact*
Skills levels	*None, short term*	*Moderate positive, after mitigation highly positive*	*None, short term*	*Moderate positive, after mitigation highly positive*	*No impact*
Employment	*Low positive, after mitigation stay low positive*	*Low positive, after mitigation change to medium positive*	*Low positive, after mitigation stay low positive*	*Low positive, after mitigation change to medium positive*	*No impact*
Increased use of Municipal Infrastructure	*None, unlikely*	*Low negative, after mitigation stay low negative*	*None, unlikely*	*Low negative, after mitigation stay low negative*	*No impact*
Increased use of municipal and authority services	*None, unlikely*	*Low negative, after mitigation neutral*	*None, unlikely*	*Low negative, after mitigation neutral*	*No impact*
Crime and influx	*Low, unlikely*	*High negative, after mitigation change to neutral*	*Low, but unlikely*	*High negative, after mitigation change to neutral*	*Low negative, no mitigation*
Sense of place	*Low, short term*	*Very high negative, after mitigation change to moderate negative*	*Low, short term*	*High negative, after mitigation change to moderate negative*	*No impact*
Need for a social amenity: a space for burials and recreation	*None*	*Moderate positive, after mitigation to high positive.*	*None*	*Moderate positive, after mitigation to very highly positive.*	*Vs space for agriculture*
Decrease of fresh surface and ground water quality & loss of water	*None, unlikely*	*Low negative, after mitigation change to low negative*	*None, unlikely*	*Medium negative, after mitigation change to low negative*	*Other impacts*
Increased traffic	*Low, unlikely*	*High negative, after mitigation to low negative.*	*Low, unlikely*	*High negative, after mitigation to low negative.*	*No impact*
Loss of agricultural land	*No, short term*	*High negative, after mitigation to medium negative.*	*No, short term*	*High negative, after mitigation to medium negative.*	*Vs need for cemetery space*
Increase household income	*Low positive, no mitigation*	*Medium positive, no mitigation*	*Low positive, no mitigation*	*Medium positive, no*	*Loss of opportunity*

				mitigation	
Increased GDP	*Low positive, after mitigation stay as is*	*Medium positive, after mitigation stay as is*	*Low positive, after mitigation stay as is*	*Medium positive, after mitigation stay as is*	*Loss of opportunity*
Residual Impacts	***Construction***	***Operational***	***Construction***	***Operational***	*No Go*
Employment of vulnerable groups	*None*	*Moderate positive, after mitigation to high positive*	*None*	*Moderate positive, after mitigation to high positive*	*Loss of opportunity*
Biodiversity enhancement	*None*	*Moderate positive, after mitigation to high positive*	*None*	*Low positive, after mitigation to medium positive*	*No impact – but supportive*
Public General Access to natural resources	*None*	*Low positive, after mitigation moderate positive*	*None*	*Low positive, after mitigation moderate positive*	*Limited*
Increased taxes	*None*	*Low negative, after mitigation change to low positive*	*None*	*Low negative, after mitigation change to low positive*	*None directly*

Should the MP be established, it is unlikely that there will be any cumulative impact.

Summary of Impacts of Alternative Uses

The development of a 70ha MP on Agricultural Zone 1 land with the actual cemetery uses limited to a total of 34.5ha is a permanent land use and is expected to become a permanent part of the physical landscape. There have been public outcries against the establishment of a cemetery at this site, arising from fears of:

- Ground and surface water contamination by burial related pollutants.
- Traffic congestion.
- Losing the opportunity to cultivate crops (agricultural land)
- Dwindling safety and security.

The findings of this study do not support the perception that the MP and cemetery poses:

- A contamination risk to the groundwater and surface water resources in the area,
- A threat to traffic safety,
- A threat to safety and security

Or that there are any significant negative environmental or social impacts that cannot be cost-effectively mitigated.

The loss of the opportunity to cultivate crops needs to be evaluated against the need for a social amenity that provides cemetery space.

The alternatives compared to the proposed MP are the No Go, a sub-urban housing, cultivating strawberries and cultivating vineyards. The five land use development options were compared in terms

of most benefits and least costs using a range of factors or normative criteria given in the table below. This approach tries to evaluate the economic, social and environmental consequences of each option. These options are compared using a simple ranking system in relation to the normative criteria. A rank of number 1 indicates that the option is best suited to satisfying the normative criterion, and a rank of 5 indicates that the option is least suited to satisfying the normative criterion. The option scoring the lowest total s
core may be regarded as the most suited overall.

	CmMP	NG	RU	VY	SF
1 Highest economic yield land use	3	4	1	2	1
2 Most earning opportunities for communities	3	5	4	3	1
3 Best effects on land use in the area	4	5	5	1	1
4 Most preservation of green space	1	4	4	4	4
5 Best meets wider societal needs and economics	1	5	5	2	2
1 Least use toxic substances, pathogens and nutrients	3	3	4	3	3
2 Least change to land surface and drainage	3	1	5	3	3
3 Least traffic impacts	3	1	4	2	2
4 Least deferred costs (increased taxes)	4	1	5	1	1
5 Least public outcry	5	2	5	1	1
Total	30	30	42	22	19
CmMP= Cemetery & MP; NG = No Go; RU = Sub-Urban Residential Use; VY = Vineyards SF= Strawberry Farm					

Table 1: Ranking of Most Benefits and Least Costs per Alternative

Based on these criteria, the “no go” alternative scored the same as the establishment of a MP. The alternatives to establish a vineyard or strawberry farm scored the lowest which means that it has the least costs for the receiving community and most benefits. The next unlikely alternative to the MP would be the residential land use, which scored the highest and thus have the highest cost and least benefits for the receiving community.

The cemetery, although having the greatest level of public outcry, would have moderate costs and benefits, and would be most consistent with the landowner’s responsibility to provide for amenities such as cemeteries.

Conclusion

The establishment of a MP on the preferred southern site will fulfil the societal need for burial spaces and is supported.

Figures

Tables

vii

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

File Reference Number:	(For official use only)
NEAS Reference Number:	
Date Received:	

Application for integrated environmental authorization and waste management license in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921, 2013

PROJECT TITLE

Stellenbosch Municipality: Proposed establishment of Louw's Bos Memorial Park

Specialist: Contact person: Postal address: Postal code: Telephone:	Anelia Coetzee		
	P.O. Box 488		
	Malmesbury		
	7299	Cell:	082 3394338/ 022 4824653
		Fax:	022 4871661
E-mail:	info@leapsd.co.za		
Professional affiliation(s) (if any)			

Project Consultant:	EnviroAfrica cc		
Contact person:	Bernard de Witt		
Postal address:	PO Box 5367		
Postal code:	Helderberg, Somerset West	Cell:	+27 (0) 82 464 2874
	7135	Fax:	+27 (0) 21 851 1616
E-mail:	bernard@enviroafrica.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, Anelia Coetzee declare that –

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this result in views and findings that is not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

All the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Leap Sustainable Development cc

Name of company (if applicable):

18 June 2019

Date:

Preliminary Socio Economic Impact Assessment of the proposed Louw's Bos Memorial Park for Stellenbosch Municipality in support of the Draft Environmental Basic Assessment Report by Enviro Africa cc

1. Project Overview and Scope of Socio-Economic Assessment

1.1 Introduction

CK Rumboll and Partners were appointed by Stellenbosch Municipality (SM) for the *Identification and Acquisition of Authorisations and Approvals for the establishment of one or more Regional cemetery for Stellenbosch Municipality.*

The provision and maintenance of cemeteries, funeral parlours and crematoria is a function vested in Local Government in terms of Schedule 5 (Part B) of the Constitution of the Republic of South Africa 1996 (Act 108/1996). In 2015 there were an estimated 1600 gravesites available in existing cemeteries in the Stellenbosch jurisdictional area. Public cemeteries in the Stellenbosch Municipal area are nearing maximum occupation as between 600 and 800 burial spaces a year is needed.

Availability of land is the biggest challenge facing the cemetery sector in South Africa. In the Stellenbosch Municipal Area the availability of land for cemeteries is none the more obvious. Land scarcity is enhanced by land being unsuitable for burial purposes and available land is privately or government (not municipal) owned. The second biggest challenge is insufficient budgetary resources. The two remaining challenges – a high rate of conventional/traditional internments and community resistance to alternative forms of burial – contribute to the first two challenges. SM adopted the strategy of rather providing Memorial parks than conventional cemeteries in order to provide for all income groups, cultures and religions.

Because cemeteries consume vast hectares of land and contest for space with other land uses, cemeteries should be designed and managed so as to contribute to urban resilience. For instance, beyond innovative designs that are space-efficient, adaptable to growing burial needs, and sensitive to families' grieving processes, mixed uses (i.e. recreation, education, tourism and conservation) should focus on enhancing the social ecological functioning of these spaces. Having mixed uses integrated into the cemetery space ensures the adequate use of space and increases the accessibility of different services in terms of cost and time. This in turn reduces the effects of urban sprawl. Connecting these spaces with other green open spaces improves the development of a biodiversity and natural vegetation corridor whilst also increasing their use as habitats for other species.

The strategy Stellenbosch adopted to provide burial space are twofold: Expanding local cemeteries and/or establishing regional multi-purposed memorial spaces in Stellenbosch Municipal Area. With the above in mind, CK Rumboll assisted SM to identify suitable sites for the establishment of regional memorial parks and cemeteries.

1.2 Description of Proposed Development and Alternatives

The development proposal consists of the establishment of a Memorial Park on the Southern portion (the preferred alternative) of Remainder farm no 502, Administrative District Stellenbosch, one of two identified site on this property. This memorial park is one of two memorial parks to be established in the Stellenbosch Municipal area. Stellenbosch was divided into three regions, North, East (Franschhoek Valley) and South, and sites per region were identified and assessed. Farm Louw's Bos No. 502 represents the site, with two alternatives, located in the southern region and Farm Calcutta No 29 represents the site in the north.

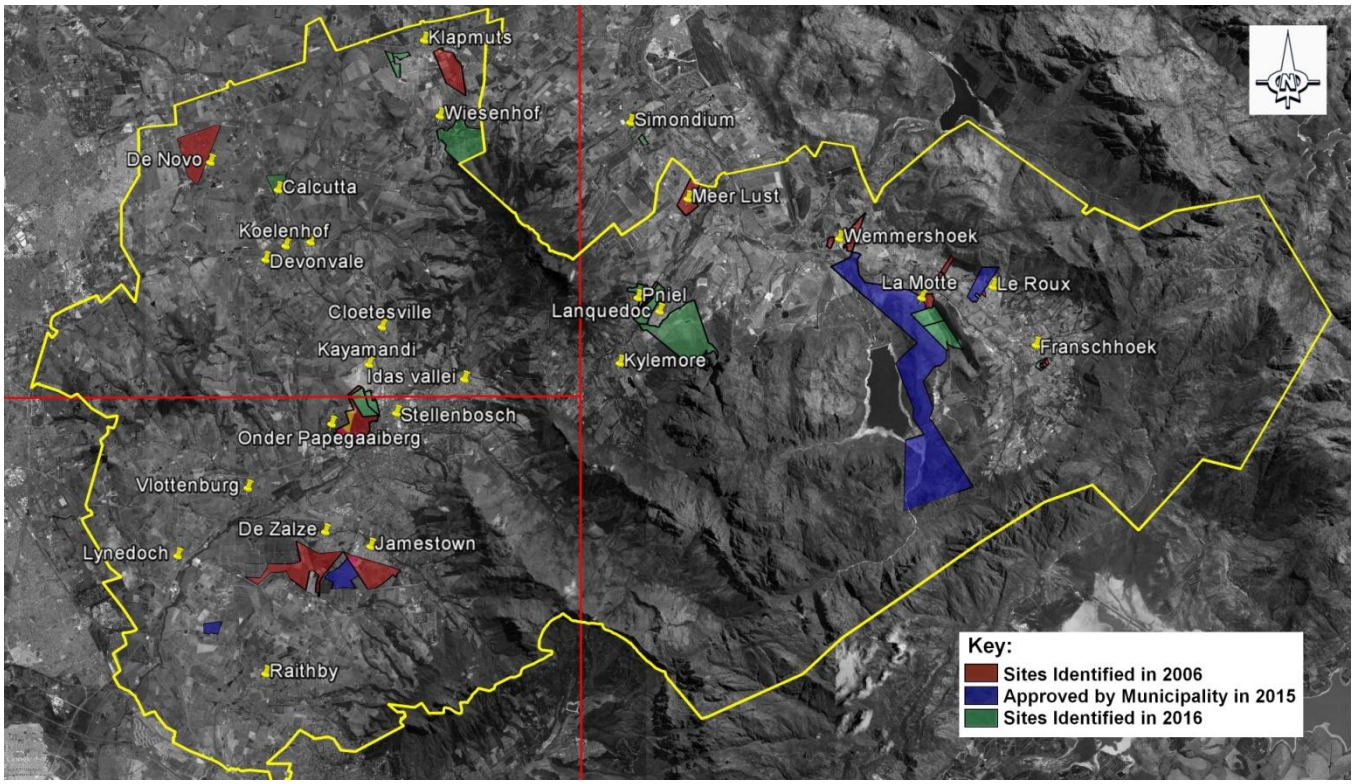


Figure 1: Northern, Southern and Eastern Regions of Stellenbosch Municipality

The site for Eastern Stellenbosch has not been promoted as yet as most of the area is located within the Berg River flood plain and potential sites have strong competitive land uses.

Site Identification and selection was informed by a 2006 Cemetery Feasibility Study conducted by Dennis Moss Partnership, site visits by CK Rumboll and Partners in May and June 2016, sites identified by the Property Management Department of Stellenbosch Municipality and sites approved on a Stellenbosch Council meeting, various dates 2015 – 2018.

Figure 2: Farm Louw's Bos no 502

Louw's Bos (Farm 502), the expansion of Onder Pappagaaiberg cemetery and the farm Raithby has been proposed as alternatives site for the Southern part of Stellenbosch Municipality.

Despite the availability of various alternative burial methods, conventional burial and funeral practices are still the norm and a large portion of land is required for this purpose. Hence, the combination of uses and the creation of a public facility and landscape feature which enhances recreation, education, tourism and conservation (protects biodiversity and environmentally sensitive areas). Community or social utilisation of the memorial park, other than for burials/ remembrance purposes, is advocated. This approach addresses the scarcity of land for cemeteries.

Figure 3: Site development Plan (OVP Associates, April 2019)

The proposed 70hs Louw's Bos public memorial park aims to promote a more modern concept to that of traditional public cemeteries and its 9 zones caters for the following:

a. Memorial Park Centre Zone - ±0.644ha providing for a chapel, offices, storage, ablution facilities and a space to gather.
b. Service Zone - ±1.079ha providing for a workshop and storage, offices, a holding nursery and staff accommodation
c. Defined Zone - ±1.385ha providing for family/group burials and a hero's acre.
d. Columbarium Zone - ±0.750ha providing for a more modern approach to the conventional burial method by catering for a niche, memorial walls and floor panels.
e. Traditional Graves Zone - ±19.97ha providing for more conventional way of burial and represents 28.5% of the overall memorial park (±70ha) and 58% of the total cemetery uses (±34.53ha).
f. Informal Zone - ±28.889ha providing for more modern and less demanding ways of burial by means of lawn graves and the utilisation of trees as headstones. Future expansion, parklands and ablution facilities are considered within this zone.

g & h. Roads and parking - ±5.313ha providing for an access road, internal roads, bus – and general parking.

j. Buffer Zone - ±11.970ha providing for Fynbos rehabilitation. Environmental & Heritage Education and Recreation within this zone.

Farm 502, Louw's Bos is registered in the name of Stellenbosch Municipality and is zoned Agricultural Zone I. ±70ha of the property is required to be rezoned to Open Space Zone II.

1.3 Development Phases

There are two development phases i.e. construction and operations whilst the demolition phase is unlikely.

1.3.1 Construction phase

During this phase the following will be established: the boundary fence, access road, entrance gates, internal roads, parking, Centre Zone providing for a chapel, offices, storage, ablution facilities and a space to gather, the Service Zone providing for a workshop and storage, offices, a holding nursery and staff accommodation and the demarcation of the differ zones for burial purposes. All zones will not be established at once as a phase approach will be followed.

1.3.2 Operation phase

Maintenance, further establishment of the park, digging graves and burials and recreational activities will be the main activities during this phase. Burials include family/group burials, state burials (hero's acre), niches, memorial walls and floor panels, conventional way of burial and more modern and less demanding ways of burial i.e. lawn graves and the utilisation of trees as headstones. Future expansion of the parklands is part of the operational activities. The garden of remembrance including the wall of remembrance will be landscaped according to the landscape plan and patrons may purchase an indigenous tree to serve as a living memory of their loved one.
Several walkways, a peripheral pathway on the inner edge of the boundary and benches within the memorial park will enhance the utilisation of the park as a place of recreation and devotion. The use of the peripheral pathway as a cycle route and running track will be encouraged.

With exception, people are cremated, as traditional burials are the norm.

Most funerals are scheduled on a weekend.

1.3.3 Decommissioning phase

In this phase graves would have to be exhumed, land being levelled and prepared to go back to its natural state. This is an expensive exercise and it is unlikely that the cemetery will be earmarked for different uses. It is more likely that sections of the cemetery will be decommissioned to be reused for cemetery space.

1.4 Purpose of the Assessment

This Socio-Economic Impact Assessment outlines the socio economic cost to create cemetery space in the Stellenbosch Municipal Area.

A Socio-Economic Impact Assessment analyses (predicting, evaluating and reflecting) and manages the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment (Vanclay, 2002).

At a broad level the impacts on the overall welfare of a community should be investigated considering the efficiency, equity and sustainability of the project as well as the trade-offs or 'opportunity cost' the various alternatives will yield.

1.5 Approach

The approach to the study is directed by the requirements for Environmental Impact Assessments and the Guidelines for Social Impact Assessments (SIA) and Economic Impact Assessments commissioned by DEA&DP Western Cape. Hence these guidelines were used to provide a benchmark for the assessment conducted. The following activities were executed:

- Review of project information and specialist reports;
- Collection and synthesis of baseline socio-economic data on the area;
- Identification of key social and economic aspects and the impact of the project results on the receiving society and economy as per Guidelines for Social Impacts;
- Verification of some results, social aspects and impacts through interviews or correspondence with developer, specialists and key project team members and by means of a public participation process;
- Evaluating/ Rating the significance, duration, probability and intensity of identified impacts during the construction, operation and decommissioning phase and mitigation measures are proposed (Addendum A);
- Evaluating/ Rating the extent and duration of the identified impacts;
- Preparation of Socio-Economic Impact Assessment (SIA);

1.6 Assumptions & Limitations

<u>Assumptions</u>

Assumptions include

a) The extent of the wage bill assumed to be 19,7%, the same as a construction project and which is the percentage used in the calculations of this assessment.

<u>Limitations</u>

a) Assessment of alternatives is limited to the proposed project site and the no-go alternative as the only alternatives.

b) Demographic data is based on the 2011 Census which is older than 5 years.
c) Ratings are a validation by and not a representative sample of the receptor community, specialists and developer.

1.7 Specialist details

The author of this report is an independent specialists with, 13 years' experience in the field of rural development, 7 years in community education, 13 years in project management and coordination, 13 years in town and regional planning (Reg. no: A/1369/2010) and 11 years in socio-economic research.

1.8 Declaration of Independence

This is to confirm that Anelia Coetzee, responsible for conducting the study and preparing the Socio Economic Impact Assessment Report, is independent and has no vested or financial interests in the proposed development being either approved or rejected.

1.9 Report Outline

The report is divided into four sections, namely:

- Section 1: Project Overview & Assessment Scope
- Section 2: Socio- Economic Overview of Study Area and Legal Context
- Section 3: Assessment of Impacts: Construction and Operations Phases
- Section 4: Assessment of Alternatives and Cost-Benefit Analysis
- Section 5: Management guidelines to address socio-economic impact.

2. Socio- Economic Overview and Legal Context

This section provides an overview of the baseline socio-economic conditions of the receiving environment and the policy context.

2.1 Socio- Economic Overview of Stellenbosch

Stellenbosch municipal area has a total population of 155 733 and 43 420 households. A population growth rate of 2.71% is anticipated for Stellenbosch area. Youngsters between 0 and 14 years constitute 22.8%, whose of working age (15 – 64) constitutes 72.3% and the elderly (65+) constitutes 4.9%. The Growth rate between 2001 and 2011 is 2.71%. The average household size is 3.3 whilst 34.6% households are female headed. According to Census 2011, 52,2% of the population are coloured, 28,1% are black African, and 18,5% are white. The other population groups make up the remaining 1,2%.

Of those aged 20 years and older, 6,2% (5.4%) have completed primary school, 35% (27.5%) have some secondary education, 25,2% (17.1%) have completed matric, and 17,3% (6%) have some form of higher education, while 3,1% (2.4%) of those aged 20 years and older have no form of schooling and (31%) have some primary education (whilst 10 is not applicable). StatsSA 2011.

Of the 67 135 people who are economically active (employed or unemployed but looking for work), 15,2% are unemployed. Of the 34 184 economically active youth (aged 15 – 34) in the area, 21,5% are unemployed.

Three quarters (75.1%) of the households lives in formal dwellings whilst the same percentage of households and higher have services, that is flush toilet connected to sewerage, weekly refuse removal, piped water inside dwelling and electricity for lighting. 80,5% of households have access to piped water either in their dwelling or in the yard. Only 3% of households do not have access to piped water.

2.2 Need for burial space and Health

Cape Winelands experienced 6 560 deaths/out of 48 141 deaths in the Western Cape in 2016 translating in a death rate of 0.75%. Cape Winelands had a population of 866 223 people in 2016 with the highest number of deaths occurring in the age cohorts of 65+ followed by 45 – 64 and 15 – 44 as outlined below.

Age	0	1-14	15 – 44	45 – 64	65+	Unspecified	**Total**
Population	185	83	1 530	2 174	2 581	7	**6 560**

Table 2: Deaths per age cohort

According to the latest statistics provided by Stellenbosch Municipality, **810 people** got buried in the Stellenbosch region for the 2017/2018 financial year, averaging ±68 burials per month.

Cemeteries	No of Burials: 2015/16	No of Burials: 2016/17	No of Burials: 2017/2018
Onder Papegaaiberg	46	36	74
Jamestown	398	42	527
Pniel	20	7	15
Wemmershoek	6	5	17
Franschhoek North	116	85	161
Franschhoek South	2	6	16
Pauper Burials	0	2	0
Total	**588**	**183**	**810**

Table 3: Burials per Annum (Stellenbosch Municipality, 2019)

Tuberculosis as the leading cause of death in South Africa, was ranked 5th in the Western Cape. Diabetes Mellitus was the leading (1st) natural cause of death in the Western Cape whilst it was second (2nd) in South Africa. A sizable proportion of deaths amongst females are associated with diabetes mellitus. Diabetes Mellitus is followed by Human Immunodeficiency Virus [HIV] disease and ranked as 2rd cause of death in the Western Cape whilst it ranked as the 5th cause of death in South Africa. Ischaemic heart disease ranked the 3rd cause of death in the Western Cape, whilst other forms of heart disease ranked the same in South Africa.

2.3 Land requirements for Cemeteries

The scale of the need for the next 10 to 30 years for additional cemetery space was calculated by considering the death rate and land required for a traditional grave (5m²).

Land requirements for Cemeteries

The scale of the need for the next 10 to 30 years for additional cemetery space was calculated by both considering the death rate and land required for a traditional grave (5m²) as well as the provincial guidelines for cemeteries.

	Item	Extent
Calculations	Extent of a grave and space for movement	5m²
	Grave space per annum [Death rate of 1% (810 deaths per 100 000 population per annum rounded off)]	5 000m²
	Ha of land required over next 30 years	**15ha**
	Grave space per annum [Death rate of 1% (656 (2015) – 810 (2018) deaths per 100 000 population per annum)]	3280m²- 4050m²
	Ha of land required over next 30 years	**9.84ha -12.15ha**
CSIR 2012 guidelines	17.2ha Cemetery per 100 000 people Total 2011 population of 155 733 and 43 420 households Total 2019 population 192 877 (growth rate of 2.71%)	**26.8 ha – 33.2 ha**
	0.9ha park space per 1000 people: 140ha (regional parks limited to 30ha)	**30ha**

Table 4: Land Requirement Calculations for Cemeteries and Parks

A 30ha regional cemetery site should provide sufficient space for the next 30 years. A regional park for recreational purposes accounts for 30ha more hectares. The MP proposed is 70ha in extent.

A subsidized House is 42m² in extent and equals 8 graves. On average 4 people inhabit a subsidized house. Thus half of the space we need for houses we need for graves.

Erven on which subsidized houses are built, are 80m² in extent and equals 16 graves. Thus one quarter of space we need for fully subsidized house erven we need for graves.

Alternatively a soccer field is 0.72 ha or 7140m² and equals 1428 graves or 90 subsidized housing erven. Expressing it differently, Stellenbosch requires annually nearly one soccer field to provide for the number of deaths per annum.

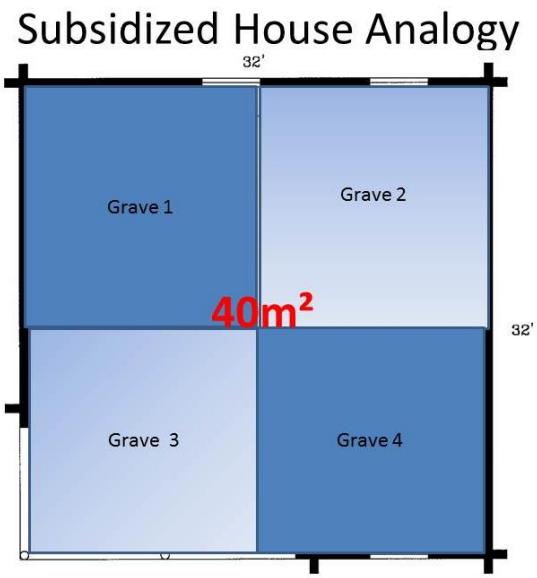


Figure 4: Subsidized House vs Grave Spaces

2.4 Socio-Cultural Practices

A key solution to the inadequate land for cemetery development is the introduction of burial alternatives. Several of these burial alternatives have existed for many years around the world, but are not actively practised in South Africa due to tradition. All alternative "memorials" other than traditional graves, i.e. memorial walls and parks, can be incorporated in cemeteries. The following should be considered when designing a cemetery:

- To approach cemeteries as a social space (including parks) in the design of cemetery site plans
- To provide for all alternative burial methods even some of them may have a very slow uptake.
- To provide for inexpensive maintenance of cemeteries
- To market alternative burial options

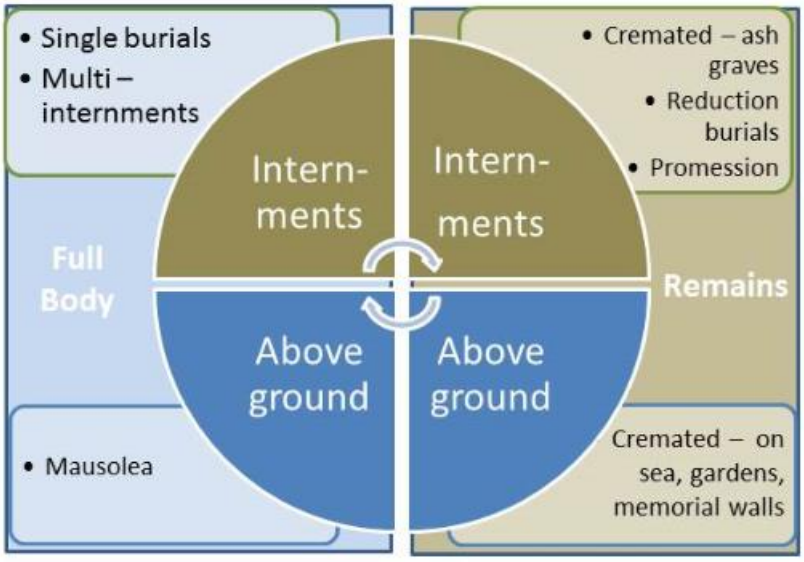


Figure 5: Alternative Burial Practices

Limited knowledge of and lack of exposure amongst communities to alternative ways of internment, the challenges for suitable land and the upkeep of traditional cemeteries are experienced. Alternative burial methods, which can be the solution to the land-hungry burial methods currently practiced in South Africa, has to be promoted and established. The different types of burial methods are categorized into four main categories: Internments of the whole body or a reduction thereof and above ground burials of the whole body or a reduction thereof.

The proposed Louw's Bos public memorial park aims to promote a more modern concept to that of traditional public cemeteries by including some or all modern trends as listed above.

2.5 Policy and Planning Context

2.5.1 National Level

a) Constitution of the Republic of South Africa, 1996

Part B of schedule 5 of the Constitution of the Republic of South Africa, 1996, rules that cemeteries, crematoria and funeral parlours are local government matters. The provision of a cemetery is thus the responsibility of Stellenbosch Municipality and is aligned with the jurisdiction the constitution affords municipalities.

b) Health Act, 1977 (Act 63 of 1977); as amended (the Health Act)

The provision of a memorial park providing cemetery space is supportive of the amended Health Act, which provides for health services and systems and matters connected therewith as it is part of the Health value chain. The act determines the location of cemeteries as it regulates a 500m buffer between cemeteries and habitable buildings.

c) Inquest Act, 1959 (Act 58 of 1959)

A cemetery is one of several spaces where inquest subjects can be accessed according to the Inquest Act, regulating the holding of inquests in cases of death or alleged deaths apparently occurring from other than natural causes and for matters incidental thereto.

d) National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977)

The structures as per the proposed MP i.e. chapel, ablution facilities and outbuildings will comply with the National Building Standards.

e) Human Tissue Act, 1983 (Act 65 of 1983)

A cemetery is one of several spaces where human tissue can be accessed in accordance with the Human Tissue Act, authorising the acquisition or use of tissue lawfully imported or removed from a Body of a Living or deceased Person.

f) Births and Deaths Registration Act, 1992 (Act 51 of 1992) (the BDRA); as amended

A cemetery register provides for an extended death register and supports the regulation of the registration of births and deaths.

g) Local Government: Municipal System Act, 2000 (Act 32 of 2000)

Section 73 of the Local Government Municipal Systems Act, 2000 (Act No. 32 of 2000) places a general duty on municipalities to give effect to the provisions of the Constitution; Hence the provision of a memorial park providing for a cemetery is aligned with the Municipal Systems Act, 200 as to ensure universal access to essential services that are affordable to all.

h) The Cemeteries, Crematoria and Exhumation of Bodies Act 2005

The provision of a memorial park providing for cemetery space is done in accordance with the Cemeteries, Crematoria and Exhumation of Bodies Act. The Act provides for the establishment and operation of cemeteries; to provide for the exhumations of bodies and to provide for the prohibition of desecration and destruction of graves.

i) Funeral, Burial and Cremation Services Act, 2002 (Republic of South Africa Act (108/1996))

The provision of funeral and burial services as per the Funeral, Burial and Cremation Services Act will take place within the proposed MP providing for cemetery space.

2.5.2 Provincial, District and Local Level

a) SPLUMA and LUPA

The proposed MP with cemetery space is aligned with the five development principles for spatial planning as per Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013 and Land Use Planning Act (LUPA), Act 3 of 2014 **that** provides for spatial planning and land use management on national level.

This proposed memorial park supports these principles as follows:

- **Spatial Justice:** The proposed regional site is highly accessible, and as a social amenity, will create much needed grave space as the current cemeteries are reaching capacity.
- **Spatial Sustainability**: Though the proposed memorial park is not located on any CBA area according to the Western Cape Biodiversity Spatial Plan, it will enhance the establishment of a natural vegetation corridor between Riathby and the northern portion of Farm 502, Louw's Bos. It will advance the rehabilitation of ESA on the northern portion of Farm 502, Louw's Bos. Overall it will enhance the natural environment. Its location is neutral to the built environment as it is located outside the 500m buffer required between cemeteries and habitable buildings. From a social perspective it provides for burial space which is a high priority need for the Stellenbosch community.
- **Efficiency**: The proposed memorial park will use alternative resources to support infrastructure and is located within an acceptable distance to the community it serves.
- **Spatial Resilience:** The proposed development does not limit future benefits that the surrounding and remainder property may have should it be operated as a multipurpose facility. A multi-purpose facility in itself is a demonstration of spatial resilience.
- **Good Administration:** The public will be afforded an opportunity to contribute to and participate in the planning and provision of the social amenity.

b) IDP (2017 – 2022)

To create dignified living (spaces) is a strategic focus area (No 4) of Stellenbosch Municipality. The development of a social infrastructure master plan for the upgrading and maintenance of social facilities

in all wards is part of this strategic focus area. The proposed memorial park is thus a forerunner for the social infrastructure needed. In addition, identified social facilities will be upgraded and developed for multi-purpose use. The IDP indirectly provides for the proposed social amenity i.e. MP and cemetery space.

c) Stellenbosch SDF (May 2018)

The SDF omits cemeteries and memorial parks. However, the proposed MP will not be in the way of or impact on any of SDF proposals. The need for such amenities was acknowledged by Stellenbosch Council and its location had to be determined by an investigation and feasibility followed by an application

d) Western Cape Guidelines for the provision of Facilities in the Western Cape

These guidelines provides for cemeteries. It defines a cemetery is defined as land set aside for burial purposes, which can include a chapel (or equivalent), a memorial garden, crematoria and mausoleums, sometimes also referred to as a graveyard or burial ground. The proposed MP and cemetery space is thus aligned with the definition provided.

The locational criteria motivates that it is being place adjacent to places of worship and police station or nature conservation areas. The proposed MP complies as, although the proposed MP is not located on any CBA area according to the Western Cape Biodiversity Spatial Plan, it will enhance the establishment of a natural vegetation corridor between Riathby and the northern portion of Farm 502, Louw's Bos. It will advance the rehabilitation of ESA on the northern portion of Farm 502, Louw's Bos.

Generally it is not placed within a settlement cores but upon peripheries or in lower density areas. The guidelines view it as an ideal activity to place on the urban edge or in the urban rural transition as long as it is not located in the path of future development. Regulations relating the management of Human Remains have been published by the Department of Health in terms of the National Health Act, 2003 and determine that burial grounds must be located 500m from the nearest residential area. The proposed MP is located 500m from the nearest residential area and is not located in the path of future development. Another criteria determining the location of a cemetery is that a cemetery should not be placed in an area prone to experiencing a high water table at any time of the year, and therefore the drainage, geological features and hydrological features of the site are critical to determine its ideal location. Low-lying areas, or area within the floodplain, are generally not suitable for cemeteries.

The site must be determined by the identified need for burial, including future forecasting:

- 2000 grave sites can be provided per hectare, or alternatively 5m2 can be provided per grave including an additional 10% for circulation. According to Population threshold criteria as per CSIR, 2012 guidelines, a site can be as small as 0.88ha for 5 000people (1 250 dwelling units) or as large as 17.2 ha for 100 000 people (2 500 dwelling units). Smaller cemeteries can be provided in smaller settlements that do not meet this threshold.

- A cemetery is a high order facility and generally should only be provided as 1 per 100 000 people. Cemeteries should be accessible by public transport.

As per section 1.3.2 it was calculated that over the next 30 years 15-18ha of land will be required for cemetery purposes based on the death rate. Applying the CSIR 2012 guidelines and population growth

rate (2.71%) and considering the 2019 population and deaths, 26.8 hectares – 33.2 hectares are required for cemetery only purposes. Adding the 0.25ha/ha space for recreation and park purposes, results in 33.5 hectares - 41.5 hectares of land required. In addition, religious practices have to be considered when determining the spatial requirements, for example some burial grounds needs to be separate or removed from other religious burial grounds.

e) Stellenbosch Burial Parks/ cemeteries By-law

Seeks to ensure the proper management of cemeteries and funeral undertakers within the area of jurisdiction of the municipality of Stellenbosch: the By-law on funeral parlours and cemeteries apply to all funeral undertakers' premises and to cemeteries and other places of internment as determined by Council and to persons making use of such funeral undertakers, cemeteries and other places of internment. The proposed MP and cemetery space will be regulated by this By-law.

3. Assessment of Impacts

The chapter provides a description of **direct impacts** assessed according standard assessment measures (Addendum A) within the following impact categories:

a. Health and Social Well being
b. Quality of living environment
c. Economic and Material Well being
d. Family and Community life
e. Cultural Impacts
f. Gender relations
g. Institutional, Legal, Political systems and Equity

The assessment of **direct impacts** will be reflected according to the following ratings as per standard assessment measures.

Rating	Score -	Score +
Low	0 to – 40	0 to 40
Medium	- 41 to – 80	- 41 to 80
High	- 81 to – 120	- 81 to 120
Very High	> - 120	> 120
NI	No impact	
NER	No evaluation required	

Table 5: Impact Rating Scale

b) **Residual impacts** are the result(s) of a project or action, secondary to the main purpose of the project, that are nonetheless impacting on the surroundings and the community (https://bizfluent.com, September 2017). Residual Impacts are defined as those impacts that remain following the implementation of mitigation measures (Seagrave Road Environmental Statement Addendum Vol1)

c) **Cumulative Impacts** are the impact which results from the action when added to other past, present, and reasonably foreseeable future actions which include proposed project activities, other similar activities and unregulated background pressures and trends. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation (Business Biodiversity and Offsets Programme (BBOP) 2012).

The combined effect of individual impacts occurs when a receptor is affected by more than one impact during any phase of development (Seagrave Road Environmental Statement Addendum Vol1)

3.1 Construction and Operations Phases

The socio economic cost and benefits are outline below and listed as a general cost or benefit, followed by specifics for the proposed MP site and concluded with management directives.

3.1.1 Construction Phase

For both alternatives (South and North), there are several impacts with similar negligible positive results during this phase that will not be evaluated: These include employment, increased income, economic contribution and the employment of vulnerable groups.

For both alternatives (South and North), there is one impact with similar negative results during the construction and operational phase that impact on the quality of the living environment which determines the health and social well-being of the receiving community. The evaluation of this impact for both phases follows below:

Dust & Noise levels

Intensified dust and noise caused decreased health (physical and environmental).

Construction activities will contribute to the noise and dust levels. These impacts will be of a local nature (immediate surrounding of the MP) and limited to the construction period of less than 1 year.

Sporadic, intensified dust & noise levels will occur as the park is operated and the gardens are established, graves are dug and ceremonies are taking place as:

- large portions of raw land with no vegetation coverage could result in large plumes of dust affecting sensitive crops.
- dust pollution, from gravel roads may cause a further nuisance.
- noise Pollution will occur as funerals are held on weekends, often with large crowds of mourners attending, making use of megaphones.

A summary of the impact follows in table below.

Impact	**Air quality and noise levels changes**
Nature of Impact	**Decreased health and impact on agricultural production as noise and dust levels increase.** It is anticipated that during the construction and establishment phase, when the site is prepared and landscaped, sporadic dust and noise may occur, both for short periods of time. During the operational phase, dust & noise could be generated by: - large portions of raw land with no vegetation coverage resulting in large plumes of dust affecting sensitive crops. - gravel roads. - funerals making use of megaphones.

Alternatives & Phases	Construction		Operations		No Go	
Extent of impact (A)	Local	1	Local	1	Status Quo remains	0
Duration of Impact (B)	Permanent	1	Permanent	1	No impact	0
Probability of occurrence (C)	Probable	2	Probable	2	No impact	0
Intensity of Impact(D)	Low negative	-1	Low negative	-1	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low negative	-2	Low negative	-2	Status Quo remains	0
Mitigation measures: • Dust suppression measures to be applied when required. The necessary equipment and procedures have to be supplied and be in place. • Regulate noise on site and compile standard operational procedures. • Budget and provide for dust suppression measures and equipment on site. • No extended portions of raw land with no vegetation coverage will be allowed and should land be cleared it will be planted with vegetative cover. • gravel roads will be compacted and kept dust free. • No megaphones or sound amplifiers will be allowed.						
Level of significance after Mitigation	Intensity: Negligible	0	Intensity: Negligible	0		
Related results						

Table 6: Impact of dust and noise: Construction and Operational Phase

For both alternatives (South and North), the impact is similar and of temporary nature. The dust and noise generated is within acceptable levels and these levels can be decreased and neutralised through mitigation. It is unlikely that sporadic dust and noise levels will impact in the long term and be outside acceptable levels. The impact is rated low and not of significance.

3.1.2 Operational Phase

For both alternatives (South and North), there are several impacts with similar negligible or low results during this phase that will be evaluated: These include employment, increased use of municipal infrastructure, increased use of municipal and authority services and increased income.

For both alternatives (South and North), there are several impacts with similar moderate and high results during this phase that impact on the population and family characteristics, political and social-resources, quality of the living environment which determines the health and social well-being, economic and material well-being and institutional arrangements of the receiving community.

The evaluation of these impacts within the framework of the Stellenbosch Burial Parks/ cemeteries By-law follows below. The By-law seeks to ensure the proper management of cemeteries and funeral undertakers within the area of jurisdiction of the municipality of Stellenbosch and applies to all funeral undertakers' premises and to cemeteries and other places of internment as determined by Council and to persons making use of such funeral undertakers, cemeteries and other places of internment. The proposed MP and cemetery space will be regulated by this By-law.

For this phase several impacts were identified, are assessed and mitigation measures are suggested in the section below.

Family and Community life and gender relations will be impacted upon and population and family characteristics may change. The impacts evaluated below reflect these likely changes.

Skills levels

A 30-70ha memorial park (MP) will require landscaping, manicuring and maintaining. Sustainable employment opportunities will be created by the MP. A minimum of twelve (12) full time permanent jobs are required to landscape, maintain and manicure the MP.

Employees should be selected and appointed from within Stellenbosch Municipal Area. Those employed to do so and who may not have appropriate qualifications/ skills should be afforded the opportunity to obtain the qualification/ skills.

The skills levels of the population are Stellenbosch is tabulated below:

No Schooling (2.4%) & some primary (31%)	Unskilled: 33.4%
Completed Primary (27.5%)	Semi-skilled: 27.5%
Completed Secondary (17.1%) and Higher education (6%)	Skilled: 23.1%
Not applicable (10.5%)	Not applicable:10.5%

Table 7: Skills level of Population of Stellenbosch

Of those aged 20 years and older, 33.4% are unskilled, 27.5% are semi-skilled and 23.1% are skilled. Hence the receiving community may not have the skills required to establish and maintain the proposed memorial park development. The skills required to establish and maintain a memorial park includes: landscaping, driving various vehicles and maintenance (keeping the appearance and condition of the park according to the landscaping plan).

Should capacity building and skills development training programmes be implemented, they will benefit the community in the short term and long term. To establish and maintain the park, effort should be made to employ 100% locals. As people get trained their skills level and income will increase and their economic and material well-being will improve.

A summary of the impact follows in table below.

Impact	**Changes in economic and material well-being as the skills base amongst the local population expands and deepens.**			
Nature of Impact	Skills levels and skills capacity will increase. The newly acquired skills may leave the area as new projects in surrounding areas come into being or should the competition for employment be to strong (outsiders be employed to do the job).			
Alternatives & Phases	**Operational**		**No Go**	
Extent of impact (A)	Local	4	No impact	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Moderately positive	2	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Medium, positive	68	No impact	0

Mitigation measures: • SM reserve 100% of jobs for local labour. • Should skilled persons from outside the community be employed, SM should implement a training and skills development programme or learnerships to enhance the opportunities for local historically disadvantaged individuals. Measures should be put in place to ensure successful training and development i.e. structured job shadowing and learnerships. Such a programme should be offered in liaison with an accredited Further Education and Training College or an University of Technology;				
Level of significance after Mitigation	Intensity: Highly Positive: 3	100	Status Quo remains	
Related results	Skills drain in the Municipality as people find work elsewhere. Others are afforded the opportunity to develop their skills instead of locals.			

Table 8: Impact of skills development, training and capacity building: Operational Phase

For both alternatives (South and North), the impact of skills development is similar: medium positive, and change to high positive after mitigation. Creating skills development opportunities for locals, irrespective of the number of people that benefit, is viewed as significantly positive given the challenge of unemployment in the municipality and in the province. Moreover skills are a long term investment.

The impacts to follow affect political and social resources such as employment levels, increased use of municipal infrastructure, increased use of municipal & authority services and crime and influx:

Increased employment levels

A minimum of twelve (12) full time permanent jobs are required to landscape, maintain and manicure the 30-70ha MP. Though a low number of people benefit, the impact is positive.

A summary of the impact follows in Table below.

Impact	**Employment is generated**					
Nature of Impact	**Construction Phase:** Of the 16 jobs created, four (4) is the skilled category and 12 jobs in the semi-skilled and unskilled category being created, will be earmarked for locals. **Operational Phase**: Twelve jobs will be created, benefitting locals. The formal jobs will involve landscaping, manicuring and maintenance.					
Alternatives & Phases	**Construction**		**Operations**		**No Go**	
Extent of impact (A)	Local	4	Local	4	No impact	0
Duration of Impact (B)	Short term	1	Long term	3	No impact	0
Probability of occurrence (C)	Probable	2	Probable	2	No impact	0
Intensity of Impact(D)	Low, positive	1	Low, positive	1	No impact	0
Degree of confidence (E)	Medium	2	Moderate	2	No impact	0
Level of significance (AxBxD+E)xC	Low, positive	12	Low, positive	28	No impact	0
Mitigation measures **Construction Phase**: • Contractor should be required to employ locals and particularly HDI locals. • The municipality should inform the local community of potential job opportunities; • The service provider database of local companies or individuals (including small businesses owned and						

operated by HDIs that qualify as service providers etc.) should be used by contractors to appoint service providers. Should a local company not be registered on the municipal service providers list, the contractor should assist such a company to register and comply prior with the commencement of the project. These firms should be invited to render services where required; Mitigation measures **Operational Phase**: • Jobs are reserved for youth and women. • Youth and women are afforded an opportunity to enhance their skills and/ or improve their education. • When appointing relevant staff, locals should have preference.						
Level of significance after Mitigation	Intensity – Medium 2	20	Intensity – Medium 2	52	No mitigation	
Residual impacts						

Table 9: Impact caused by job creation, Construction and operational Phases

For both alternatives (South and North), the impact on job creation is similar as the increase in the number of jobs is positive, and the impact is of low significance at a local level during the construction and operational phases. After mitigation the impact changes to medium significance during the operational phase. As these jobs are few, the impact rates as low (less than 1% of employable people). At a local level, the community rates creating jobs as highly significant.

Increased use of municipal infrastructure (Services)

The electricity supply authority for the development is Eskom, yet the provision of electricity from a solar system will be favoured.

Storm water will be transported from hardened surfaces (roofs of buildings and roads) to detention facilities where storm water can be polished and used for irrigation of trees, vineyards and natural vegetation. The option of providing permeable paving will be investigated in order to transport storm water from the development.

Surface water from the areas earmarked for graves and informal areas will be taken via swales or rock line channels to the storm water reticulation system. It is envisaged that the monitoring holes be provided on site in order to track quality of groundwater, upstream and downstream of the regional cemetery.

Subsurface drainage will have to be provided to a piped system in order to manage subsurface flow. The design of pavement structures and other amenities will take cognisance of the prevailing geotechnical conditions in order to provide a storm water network to the detention facilities. The facilities are earmarked to be adjacent to the northern boundary of the development in close proximity to Annandale Road.

Due to the important role that cemeteries play in a community, it is imperative that cemeteries be located within an acceptable distance to the community it serves. Internal road will be constructed from imported material as the site is mainly overlain by sands and loam material. Imported material will be required to provide proper pavement structures to accommodate traffic loading and meet the minimum design standards of Stellenbosch Municipality.

The access road proposed for the facility will integrate with Annandale Road where turning and deceleration lanes will be provided. Internal roads will provide access to the memorial park, offices, workshop, chapel etc.

There are currently no existing sewer network services on the terrain or any municipal reticulation system close to the site. It is therefore proposed that a package plan be constructed on site which can treat the effluent from the offices/ablution facilities/staff accommodation. It is furthermore proposed that the sewer treatment occurs downstream of the offices. The treated effluent will be taken to the detention facility from where it is used for irrigation.

A reticulation underground system will be provided, in order to collect sewage from all buildings using sewer pipes and manholes. It is foreseen that a network of 160mm piping will be adequate with smaller 110mm individual connections to different buildings.

Adjacent Annandale Road, a main waterline can be found which could possibly be used for provision of water to the cemetery. As an alternative, boreholes can be drilled in order to provide water to the cemetery. Water will be pumped to the offices and ablution facilities via an underground pipe system. Water use will be limited and water wise features (toilets and taps) and plants will be promoted to prevent soil erosion and to introduce landscaping.

Telkom and other service providers will be approached with a layout of the development and will have the opportunity to provide a distribution system within the development. The necessary sleeves will be provided at street crossings.

A summary of the impact follows in table below.

Impact	**Increased use of municipal infrastructure services.**			
Nature of Impact	The proposed MP will make use of own or alternative sources and no addition load will be added to existing networks and sources. However potable water will be obtained from the municipal supply, refuse has to be removed and sewerage may have to be removed.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local and regional	4	Status quo remains	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Low negative	-1	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low negative	-28	Status quo remains	0
Mitigation measures: • None				
Level of significance after Mitigation	Intensity: Low negative	-28		
Related results				

Table 10: Impact of municipal services: Operational Phase

For both alternatives (South and North), the impact on the municipal services is similar and rated low negative as potable water will be required from services resources and services are limited to refuse and sewerage removal. No mitigation is proposed as the services planned are highly likely alternative services.

Increased use of municipal & authority services

Municipal and authority services will be required more regularly but merely to regulate and guide traffic. This would have been the case no matter where such a park would be developed or even should smaller cemeteries scattered across Stellenbosch Municipal area being developed.

A summary of the impact follows in table below.

Impact	**Municipal and authority services will be required more regularly.**			
Nature of Impact	Traffic officers will be required regularly every weekend to regulate traffic. More officers will impact on the budget of SM and ultimately of those paying rates and taxes.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local and regional	4	Status quo remains	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Low negative	-1	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low, negative	-28	Status quo remains	0
Mitigation measures: • Develop an amenity information brochure marketing the facility and the different components thereof i.e. the chapel. Encourage users of the MP to hold services on site. • Processions should not be allowed on provincial roads.				
Level of significance after Mitigation	Intensity: Negligible	0		
Related results				

Table 11: Impact of increased use of authority services: Operational Phase

For both alternatives (South and North), the impact on municipal and authority services is similar and will be required more regularly to regulate and guide traffic. The impact is low negative. With mitigation the impact changes to low positive.

Crime and Influx

Cemeteries are perceived as spaces where drugs are exchanged and abused, sexually related crimes may take place, physical harm and insult may occur and graves may be vandalise more easily as cemeteries are isolated. Although this perception exist, and strongly so amongst the immediate community, the management of this open space has to institute security and safety to prohibit crime and to make it a place where people like to spend time and feel safe.

Security of surrounding estates (settlements and farm yards) could be affected by the presence of a MP both during the establishment and operational phases.

Proper access control to the cemetery will be essential and exercised. The access road, positioned from the middle of the Northern boundary MP, will lead to the entrance of the cemetery and parking area for visitors.

Jamestown burial park has been and still is a space where people do not fear to go as the community governs this open space. The memorial park will be managed similarly to the Jamestown burial park; yet with tighter entrance control.

The availability of cemetery spaces may cause population influx to bury their deceased. Facilities may be used by those who do not contribute to the economy of Stellenbosch.

Should no provision be made for cemetery space, community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving communities. The impact will be medium negative in the short term, and high negative in the long term.

A summary of the impact follows in Table below.

Impact	**Changes in safety and security of the local and immediate community.**			
Nature of Impact	Whilst the MP offers opportunity for other uses, if not secured and strictly managed and being kept safe, it may become a space where drug abuse, sexually related crimes, physical harm and insult may take place and graves may be vandalise. This perception exists amongst the immediate community. The availability of cemetery spaces, may cause population influx to bury their deceased. Community contentment (homogeneity and cohesion) could be reduced.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Regional & Local	4	Regional & Local	4
Duration of Impact (B)	Permanent	4	Long term	3
Probability of occurrence (C)	Medium probability	2	Low probability	1
Intensity of Impact(D)	High negative	-3	Moderately negative	-2
Degree of confidence (E)	Moderate	2	Low	1
Level of significance (AxBxD+E)xC	High, negative	-92	Low, negative	-23
Proposed Mitigation measures: - Impermeable parameter fence - Controlled entrance gate - Regular paroles (on bicycle or horseback) - Control of persons entering: o Tight control of burial ceremonies and grave visits o Tight control of recreation activities - Ensure the memorial park forms part of the agricultural landscape and should be inviting to people to spend time at the park.				
Level of significance after Mitigation	Intensity: Negligible	0	No mitigation	
Related results	The availability of cemetery spaces may cause population influx to bury their deceased. Facilities may be used by those who do not contribute to the economy of Stellenbosch. Community contentment (homogeneity and cohesion) could be reduced.			

Table 12: Impact on material well- being and safety: Operational Phase

For both alternatives (South and North), a similar level of fear exists that the proposed memorial park and cemetery development may lead to increased crime and impacts negatively on the surrounding neighbourhood and community, management, safety and security measures could prohibit those. Without mitigation the impact of the memorial park is highly negative. With the appropriate mitigation the score change to low positive, as it should become a place owned and safeguarded by the community and the municipality and should not become a place that people fear to go to.

Should no provision be made for cemetery space, community contentment (homogeneity and cohesion) could be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving communities. The impact will be low negative in the short term, and medium negative in the long term.

The quality of the living environment and institutional arrangements determines the health (environmental and physical) and social well-being of the receiving community. These impacts are now evaluated:

Sense of place

The proposed development of a memorial park will have a high impact on the landscape which will cause changes to the visual environment. The proposed Louw's Bos Memorial Park is a new regional cemetery operated as a memorial park with a formal layout. The site and area is an open hillside on the south side of the Bonte River Valley along Annandale Road. The site is immediately adjacent Annandale Road, a Grade IIIa scenic route, making the site visible from the road. The landscape is generally scenic (IIIb) in a mixed agricultural setting near the Stellenbosch Mountains.

The proposed Memorial Park with a total footprint of approximately 70ha comprises of the following elements which have a visual implication: defined zones for family/ group burials and a hero's acre, a Columbarium Zone providing for niches, memorial walls and floor panels, a traditional Graves Zone and an informal Zone (±28.889ha or 41%) providing for lawn graves and the utilisation of trees as headstones. Future expansion, parklands and ablution facilities are considered within this zone. A peripheral pathway on the inner edge of the boundary and benches within the memorial park will enhance the utilisation of the park as a place of recreation (cycling and running) and devotion.

From a heritage perspective the change of land use of this Grade IIb site, from agriculture to open space to operate a memorial park is visual-aesthetically high, whilst the associative impact is moderate as public access is retained. The associative impact, related to the social history of outspans in the area, will be enhanced. Due to the disturbed nature of the site significant archaeological impacts are unlikely.

The landscape (receiving environment) of the Southern site has a uniform character consisting of hills covered with vineyards, strawberries or vegetables with no prominent topographical features besides the cultivated hills. The typical vineyard farmland character is made up of neatly manicured vineyards or strawberries or vegetable fields, interspersed with farmsteads and -yards. The visual and aesthetic sensitivity of the area is moderate.

The landscape (receiving environment) of the northern site is interspersed infrastructure i.e. the airport, tunnels and other agricultural infrastructure amongst vineyards and tunnel cultivation. The visual and aesthetic sensitivity of the area is moderately low.

Mitigation measures as proposed will ensure that impact (visually and aesthetically) will be reduced.

A summary of the impact follows in Table below:

Impact	*Changes in visual appearance and the sense of place*
Nature of Impact	The change of sense of place will impact on people's relationship to site and its surroundings. Changes in the quality of the living environment will be in memory as historically, the land once formed part of the extensive Stellenbosch Commonage to the south of the town. Trek paths once criss-crossed the site both north and south. Graded Heritage Sites are located nearby. The second change in the quality of the living environment will be in memory: At this time people associate Annandale with wine farming, vineyards and historical farm yards. The site and area, an open hillside on the south side of the Bonte River Valley along Annandale Road, will change to a park and cemetery with a formal layout. The site location immediately adjacent Annandale Road, make the site significantly visible from the road. The successful establishment of the memorial park will cause people to change peoples' relationship to environment as the proposed facility will be one of few in extent and multi-use.

ALTERNATIVES	**South**		North		**No Go**	
Extent of impact (A)	Local	4	Local	4	Status quo remains	0
Duration of Impact (B)	Permanent	4	Permanent	4	No impact	0
Probability of occurrence (C)	Highly Probable	3	Highly Probable	3	No impact	0
Intensity of Impact(D)	Highly negative	-3	Moderately negative	-2	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Very highly negative	-138	High Negative	-90	Status quo remains	0

Mitigation measures <u>to minimize visual and aesthetic impact:</u>

- Taller structures should be set back from the road.
- The landscape buffers along the edges are very important (should be well planted).
- Lighting should be carefully managed to prevent excessive lighting.
- Colouring of structures and fences should be subtle.
- Where possible, greenery should be maximized.
- The use of permeable paving is recommended.
- Protect natural vegetation
- Prevent pollution
- Monitor the landscape, soils and vegetation.
- The landscape design of the MP should enhance the scenic and historic landscape.
- Southern site: Change from vineyards to memorial park: • The potential loss of vineyards to Soverby to be carefully considered in terms of its current setting and screening. Possible reallocation of proposed portions under vineyards to be extended into cultivated land south of the site if preferred. This will retain the existing vineyards as part of this historic farm and contain the homestead in an appropriate heritage context.
- Commonage Interpretation: The development of the historic Commonage's sites should be prepared including interpretive information and signage about the history of the Common. The possible development of a trek path-outspan trail on the remainder of R502 could be considered

Level of significance after Mitigation	Intensity: Low negative: -1	-42	Intensity: Low negative: -1	-42	No mitigation	
Related results						

Table 13: Impact caused by Visual Changes: Operational Phase

After mitigation, the proposed development of a MP on the southern or northern site, impacts very highly or highly negative respectively on the landscape which will cause changes to the visual environment. The

development's visual impact is site-related (local) and medium significance after mitigation for both sites in the long term. The impact during the construction phase will be short term and negligible.

Need for a social amenity: a space for burials and recreation

There is a pressing need for cemetery space in the Stellenbosch Municipal area. Over the next 30 years and at a death rate of 810 deaths per 100 000 per annum (2018), 12.15ha of land for graves only will be required or 17.2ha are required per 100 000 people as per provincial guidelines. There were 1600 grave spaces space left in 2015 at existing cemeteries within Stellenbosch to provide for the inhabitants of Stellenbosch to honour and celebrate the life of their deceased. Cemeteries represent a social space reflecting the value a community attached to the memories of their family, friends and colleagues.

MPs as commissioned by Stellenbosch Municipality are simultaneously designed to:

a) enhance alternative burial methods and
b) recreation and leisure opportunities: hiking trails, cycling and jogging paths etc.

This resulted in the combination of a cemetery and park to establish the proposed MP of 70ha in extent. The role of the site, a regional MP, dictates it size. It is 10x the size of the James town burial park (6.8ha) and should last for the next 30 years. Other cemeteries, their remaining burial space and likely expansions were considered, yet not factored into the determination of the extent of the MP given its long term provision.

Burial practices are often linked to religious practices and traditionally demands extensive portion of land. This has to be considered in the immediate provision for cemeteries. However family burial practises may change over time and particularly when people are introduced thereto and it is marketed accordingly. Alternative burial spaces are going to be provided and alternative burial practices should be well regulated and managed so as to maximise the available space.

The MP will provide for all income groups, all cultures and all religions: The MP and its design and use should not exacerbate class equalities or cultural exclusivity. The MP has to make allowance to accommodate dissimilarities in social practices i.e. social standards (burial options), religion and values and income.

Stellenbosch has limited burial space left and the lack of cemetery space may disrupt social networks which will bring about changes in social ethos of community. Community contentment (cohesion) could be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving communities.

A summary of the impact follows in table below.

Impact	Enhancing social health of the Stellenbosch community.			
Nature of Impact	**Access to social amenities:** The lack of cemetery space may disrupt social networks which will bring about changes in social ethos of community. Community contentment (homogeneity and cohesion) could be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving communities. The MP will provide the required cemetery space and celebrate the lives of the deceased and honour the dead.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local	4	Status quo remains	0
Duration of Impact (B)	Permanent	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Moderately positive	2	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Medium, positive	68	Status quo remains	0

Mitigation measures:

- Entrance control of the site and control of allowable activities will enhance the celebration of life. Entrance to the cemetery should be controlled during the day and the cemetery should be locked at night.
- The park should be managed as a park and not as a cemetery.
- Links should be created to the natural vegetation and agricultural cultivation of the surroundings of the park.
- Voluntary manicure and maintenance programmes should be managed involving educational institutions.
- Provide a MP in each of the major municipal areas i.e. north and south.
- Regulate the use of grave space and rent out space for a specific period i.e. 25 years or even shorter time periods. Develop a MP policy or by-law to address access to resources i.e. burial space.
- Encourage different and alternative burial methods and practices. Families have to be encouraged to consider different burial options which are less land dependant.
- Develop a burial alternative campaign.
- Linking the site to a network of recreation routes i.e. walking or cycling will expand the celebration of life. Recreational activities should be encouraged.
- Encourage leisure and recreational activities i.e. develop park calendar. Create links with existing trails.
- Allow for limited economic opportunity i.e. flower sellers and a nursery. Disadvantaged and vulnerable members of the community should partake in such an opportunity.
- Manage graves and burial sites in MP with zero waste of space.

Level of significance after Mitigation	Intensity: High Positive: 3	132		
Related results	The availability of cemetery spaces may cause population influx to bury their deceased. Facilities may be used by those who do not contribute to the economy of Stellenbosch.			

Table 14: Impact of a social amenity: Operational Phase

For both alternatives (South and North), the MP will provide the required memorial and cemetery space to the Stellenbosch community and celebrate the lives of the deceased and honour the dead. Should cemetery space not be provided, community contentment (homogeneity and cohesion) could be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the

Stellenbosch community in conflict with receiving communities. The impact will be moderately positive without mitigation and very highly positive after mitigation.

Archaeological Resources

The use of community resources impacts on the economic and material well-being of the receiving community. These impacts are now evaluated:

"The development will not have an impact of great significance on pre-colonial archaeological heritage [for the southern and northern site alternatives]. The receiving environment (i.e. transformed agricultural land) is not a sensitive or threatened archaeological landscape. No mitigation is required prior to construction or operational activities commencing."

Palaeontological Resources

"Late Caenozoic superficial deposits (sandy soils, ferricrete) as well as the underlying, deeply-weathered Cape Granite in the Memorial Park study area are all of low to very low palaeontological sensitivity (Almond & Pether 2008). No fossil remains were recorded during the palaeontological site visit."

"The proposed cemetery development [on the southern and northern site alternatives] is very unlikely to entail significant impacts on palaeontological heritage."

Decrease of fresh surface and ground water quality & loss of water

Surface Water

No indirect or cumulative impacts on surface water were identified.

From a geotechnical perspective it was established that the proposed site is underlain by a soil mantle comprising, from ground surface, loose to very loose to medium dense sands and gravel of colluvial origin overlying clays of residual origin all of which classify as Soft Excavation. Leachate migration is unlikely as the clays in the profile are impervious. The cemetery site was rated in terms of the attribute rankings and in terms of the Site Suitability Rating Index, the site is considered satisfactory for development as a cemetery.

Inhabitants of De Zalze are concerned about the perched water table due to the underlying clays derived from the weathered granite. The perception exist that during winter there will be sub-surface runoff from the proposed northern burial site onto De Zalze, which has several wetlands and storage dams. There is uncertainty about the effect of a cemetery have on the sub-surface run-off to the Estate.

Ground Water

Groundwater occurs in intergranular and fractured aquifers at depths of >17 m. No groundwater was intersected above the clay layer on sites which provided borehole drill records.

The surficial cover of the site comprises of ferricrete and alluvial material (sandy) which grades into an argillaceous material (clayey). Bedrock in the area comprises of granite. Groundwater occurs in the weathered zone above the fresh granite and within fractures/joints in the pluton.

Groundwater users exist both north and north-east of the Louw's Bos south proposed memorial park. Groundwater users exist both north and south of Louw's Bos north site. Drill reports indicate that the groundwater user's abstract groundwater from the "deep" underlying aquifer below the clay layer, Groundwater quality is classified as good based on results from north-east of the site.

The Louw's Bos south site is down gradient of the major water uses in the area and unlikely to impact users due to both the thick clay layer and inferred groundwater flow direction to the west. The Louw's Bos north site is located on a topographic high relative to the area and is up gradient from the major groundwater users. The inferred groundwater flow direction (based on the assumption that groundwater mimics surface water flow directions) would indicate that any seepage or shallow groundwater located in/above the clays would flow naturally towards major groundwater users.

The Louw's Bos south and north study sites are both on an area classified as having a "low/medium" groundwater vulnerability rating, due to the argillaceous material and clay layer present above the bedrock.

From a groundwater perspective, due to the relatively thick clay layer above the main aquifer, the proposed sites can be considered for the development of a Memorial Park. The Louw's Bos south is more suited to the development of a memorial park due to its location further away from the major groundwater users.

Annandale Road corridor, Stellenbosch supplies of close to 50% of the country's strawberries. Strawberry farmers are concerned that a cemetery in the centre of prime agricultural ground is too a great risk. They fear groundwater contamination given that the SM's cemetery management have no control over how human remains are preserved and what chemicals are used.

The land selected to establish the MP on, has 4ha of existing water use rights. Strawberry farmers are highly concerned that the allocation is not transferable and will be lost. This water can be used to expand the strawberry production, which is unlikely if the water is lost. However the water will not be lost as it can be reallocated for irrigation purposes anywhere on Farm 502 or should the municipality consider to transfer the allocation, it can be done.

A detention dam for irrigation water was built on the top of the hill above (south of) the MP. The dam and any water stored in it will be available for irrigation should farming operations recommence on the property and whilst the MP is being established or operated. The dam will not be affected by the MP and its use will continue to be in support of agricultural irrigation.

A summary of the impact follows in table below.

Impact	**Decrease of fresh surface and ground water quality.**					
Nature of Impact	Leachate from the graves may contaminate surface, sub-surface and ground water. This may impact on potable and irrigation water. Water allocated for agriculture (4ha) could be lost. There is a perception that the detention dam's purpose and role is going to fall away.					
ALTERNATIVES	**South**		**North**		**No Go**	
Extent of impact (A)	Local	4	Local	4	Status quo remains	0
Duration of Impact (B)	Permanent	4	Permanent	4	No impact	0
Probability of occurrence (C)	Probable	1	Probable	2	No impact	0
Intensity of Impact(D)	Moderately negative	-2	Moderately negative	-2	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low, negative	-30	Medium, negative	-60	Status quo remains	0
Mitigation measures: • As the park will be implemented in phases, precincts will be implemented from the lowest to the highest point. The phased approach should, in the unlikely event, curb any restrict leachate from the graves. • The water allocated to agriculture to be reallocated to continue to benefit agriculture. Ultimately the water can be transferred should the municipality consider to do so.						
Level of significance after Mitigation	Intensity: Low negative: -1	-14	Intensity: Low negative: -1	-28		
Related results						

Table 15: Impact on fresh surface and ground water: Construction and Operational Phases

The Louw's Bos south is more suited to the development of a memorial park due to its location further away from the major groundwater users.

For the southern site, the impact on fresh surface and ground water is unlikely but perceived as negative and therefore rated low negative as it is located further away than the northern site. With mitigation, although the perception will persist, the impact stays low negative.

For the northern site, the impact on fresh surface and ground water is unlikely but perceived as highly negative and therefore rated moderately negative due to its location closer to major groundwater users. With mitigation, although the perception will persist, the impact changes to low negative.

Increased traffic

The traffic impact assessment confirmed that Annandale road carries approximately 8 000 vehicles per day two-way and approximately 450 veh/h on a weekday midday and approximately 400 veh/h two-way in the Saturday peak hour for 2019.

The traffic impact concluded that the proposed MP and cemetery can take direct access off Annandale Road (DR1050), at approximately 445m east of Santa Road. The proposed access meets the required Shoulder Sight Distances and access spacing required for a Class 3 road in a semi-rural environment. The MP access intersection will require a right turn lane for traffic coming from Baden Powell Drive as

well as a left turn deceleration lane. The newly constructed road includes hard shoulders and a Non-Motorised Transport (NMT) lane (2m wide) along the northern road reserve boundary.

Although minibus taxis travel along Annandale road, no public transport facilities are evident between Baden Powell Drive and the R44. Minibus taxis will bring people to the cemetery and the layout does make provision for buses and taxis to park.

The public raised the following concerns:

- Burial processions moves slowly and will cause congestion on the R44, R310 and Annandale road. The farms along Annandale Road are grape/strawberry producers which utilise large fleets of tractors and inter-link trucks to transport the produce. The additional use of Annandale road by mourners, visitors and funeral processions will disrupt traffic flow and impact on road safety. The road will also become more unsafe for cyclists and motorists.
- There is no street lighting on Annandale Road decreasing road safety for visitors on foot to the cemetery. Cycling and walking paths to the MP should be provided to encourage non-motorised movement.
- The intersection of the R44 and Annandale roads will become unsafe. Traffic congestion at the R44 on Saturdays is very intense with the R44 market and Mooiberge (especially during strawberry season). With funerals taking place mainly over weekends, traffic congestion will increase.

A summary of the impact follows in table below.

Impact	**Provincial roads (R44, R310 and Annandale) will be congested and impact on traffic between Strand and Stellenbosch**			
Nature of Impact	The slow moving traffic of funeral processions will disrupt daily traffic which is fast moving. The congestion at the R44 and Annandale road intersection may cause people to jump the traffic lights and make the intersection unsafe. Funeral procession will worsen the congestion. The use of the road shoulder by slow moving vehicles will impact on cyclists using the R44, R310 and Annandale Road.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local and regional	4	Status quo remains	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Highly negative	-3	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Highly negative	-92	Status quo remains	0
Mitigation measures: • Processions should be prohibited on provincial roads. • Encourage users of the MP to hold services on site. • Construct a right turn lane for traffic coming from Baden Powell Drive as well as a left turn deceleration lane.				
Level of significance after Mitigation	Intensity: Low negative	-28		
Related results				

Table 16: Impact of traffic: Operational Phase

For both alternatives (South and North) the impact of the traffic congestion and reduced traffic safety is high negative but with mitigation changed to low negative as the congestion will be prohibited. From a traffic engineering perspective, the establishment of a MP is supported.

Loss of agricultural land and opportunity to produce food

The MP will be developed on medium potential agricultural land. The opportunity to cultivate food will be lost as the MP inserts a non-rural land use into a rural area in which land use is focused on agriculture:

Agricultural suitability category	**Suitability for wine grapes**	**Area (hectares)**	**Percentage of focus area of site**
High	Suitable	39	54
Medium-high	Suitable	11	15
Medium	Marginal	22	31
Total		**72**	**100**

Table 17: Agricultural suitability of site soils

The Land type (terrain form, soil pattern and macro climate) is Plintic Catena: Upland Duplex and / or Margalitic soils. The soil has strong texture contrasts with a marked clay accumulation (<15%) and is non-reddish in colour. One or more vertic or melanic and plinthic soils maybe present. The soil depth is between >= 450 mm and < 750 mm. .

The site earmarked to establish the proposed MP, is agricultural land and it is the predominant activity in the area. Land not suitable for agriculture should be used for a MP, as only 12% of South Africa's land is suitable for rain fed crops and 3% is truly fertile land. Agriculture makes a significant contribution to the Western Cape economy.

Both food production and cemetery space is for the common good of the public. Of note is that the MP does not exclude agricultural cultivation over its lifespan to fill up.
A summary of the impact follows in table below.

Impact	**Loss of agricultural land and the opportunity to produce food.**			
Nature of Impact	The MP will be developed on high and medium potential agricultural land. The opportunity to cultivate food will be lost.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local	3	No impact	0
Duration of Impact (B)	Permanent	4	No impact	0
Probability of occurrence (C)	Probable	3	No impact	0
Intensity of Impact(D)	Highly negative	-3	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Highly, negative	-102	No impact	0
Mitigation measures: • Multi scale and – functionality are two guiding principles to be promoted: • As the park will be implemented in phases, some precincts could continue to be cultivated. Whilst burials are taking place in established MP precincts, others could be cultivated. The tree lanes could include edible fruit or nut trees. All land in the MP will not be lost to agricultural				

cultivation at once. • Replace some memorial gardens with memorial blocks of vineyards. • Encourage urban agriculture in the park. • Curtail the extent of the land required and encourages alternative burial options in the MP.				
Level of significance after Mitigation	Intensity: Medium Negative: -2	-44		
Related results				

Table 18: Impact of loss of agricultural land: Operational Phase

For both alternatives (South and North), the community has to weigh up its need for burial space versus its need for food production. Without mitigation the establishment of the MP is highly negative as the opportunity to produce food is lost. With mitigation the impact is medium negative as the need for burial space and how we laid the deceased to rest is more pressing than the loss of agricultural land. Encouraging the community to change burial practises will prohibit the loss of agricultural land in future.

Increased household Income

There are 56.8% household in Stellenbosch with an income of R42 000 and less (maximum R3 500 per month), 35.6% households earns between R42 001 and R 180 000 (maximum R15 000 per month) and 6.12% households earn more than R15 000 per month.

Annual household income	Stellenbosch Percentage
below R42 000	56.78%
between R42 001 and R180 000	35.58%
above R180 001+	7.95%

Table 19: Stellenbosch Households per Income Category

It is likely that there will be 16 employees during the construction phase and 12 employees during the operational phase. Initial establishing costs for the total of 70ha (on completion):

a) Roads Internal and Intersection & Slipway: R15 million
b) Landscaping & Fencing: R20 million

Total: R35 million (of which R25 million will be spend whilst the balance will most likely be spend over several years)

Annual contribution:

- Selling of Graves (60% of deceased): R874 800/a
- Salaries (Total of 12 employees): R1 440 000/a
- Maintenance & repairs: R48 000/a

Total: R2.362 million/a

During **Construction** (fencing, landscaping and construction), a wage bill of R384 000 (over 6 months) will benefit the locals directly.

During **Operations**, the expected current value of direct employment for the first ten (10) years is R16.5 million of which 90% or R14.9 million rand will benefit previously disadvantaged individuals. Households may now have an income or additional income. Overall household income increases.

Demolition is not considered as it is unlikely that it will occur.

(% of total households)	*Construction – 6 months*	*Operations – 30 years+*
Semi-skilled – Middle income	*12*	*8*
Unskilled – Low income	*4*	*4*
Stellenbosch	155 733 population	43 420 households

Table 20: Households' salaries from construction and operation of Memorial Park

The No Go option will have no impact.

Impact	**Increase in household income**
Nature of Impact	Construction Phase: The 16 members of households that found employment as a result of the proposed MP development will benefit as there will be a stable and most likely increased income for 6 months (construction). The increased income has a disposable income of R8 200 per month. Operational Phase: The 12 member(s) of households will be employed to landscape, maintain and to keep the MP for 20 - 30 years. The increased income has disposable component of R8 200 in the first 10 years.

Alternatives & Phases	**Construction**		**Operations**		**No Go**	
Extent of impact (A)	Local	4	Local	4	No impact	0
Duration of Impact (B)	Short term	1	Permanent	4	No impact	0
Probability of occurrence (C)	Probable	2	Probable	2	No impact	0
Intensity of Impact(D)	Medium, positive	2	Medium, positive	2	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low, positive	20	Medium, positive	68	No impact	0
Level of significance after Mitigation	None		None		None	
Residual Impacts						

Table 21: Impact on household income, Construction and Operational Phases

For both alternatives (South and North), the construction and operation of the MP will impact similarly: low and moderately positively on the income of some local households as a member(s) of these households find employment. The No Go option will have no impact. The proposed MP will improve the standard of living of those families benefitting from the income.

Increased Sales and GGP

The improvement of the economy will be measure by the change in Gross Geographical Product (GGP) of the Stellenbosch Municipal area. The proposed development's contribution will be spread over 1 year resulting in a contribution less than1% to Stellenbosch's ±R14.69 billion GDPR (34% 0f Cape Winelands GDP: R43.21 billion (2015)). Sales increase also as the increase in household income also results in more disposable income in the region.

Intensity of the change in sales and GGP will be measured according to the following scale:

Rating	***Low***	***Medium***	***High***	***Very High***
% change to Sales output	***<10%***	***11% - 30%***	***31% - 50%***	***51%+***
% change to GGP output	***<3%***	***3% -6%***	***>6%***	

Table 22: Changes in Sales and GGP Rating Scale

During the construction phase, it is likely that construction materials will be purchased locally.

Initial establishing costs for the total of 70ha (on completion):

c) Roads Internal and Intersection & Slipway: R15 million
d) Landscaping & Fencing: R20 million

Total: R35 million (of which R25 million will be spend whilst the balance will most likely be spend over several years)

Annual contribution:

- Selling of Graves (60% of deceased): R874 800/a
- Salaries (Total of 12 employees): R1 440 000/a
- Maintenance & repairs: R48 000/a

Total: R2.362 million/a

Changes to the local economy will be measured through increased activities i.e. small businesses initiatives and tourism opportunities. Investment should focus to build small businesses and tourism activities which are linked to the MP. This will benefit the local economy of Stellenbosch. The local economy will benefit as households will have more disposable income. As it is most likely that the income generated will benefit those at the lower end of the income range, local sales and indirectly GGP will increase slightly. The No Go alternative cause the status quo to remain and no changes will be experience in sales or GGP.

Sales related to burial space will contribute to the economy of the municipality. Burial spaces will either be leased or purchased for limited periods of time i.e. 25 years.

A summary of the impact follows in in the table below.

Impact	**Sales volume and GGP will increase**
Nature of Impact	<u>GGP & Sales increases</u> The GGP increases slightly given the capital expenditure during the construction phase. Direct and indirect sales volume will increase due to increased disposable income. It is unlikely that sales will be diluted to the benefit of the region. The small businesses likely operated by locals will increase.

Alternatives & Phases	Construction		Operations		No Go	
Extent of impact (A)	Local-Regional	2	Local	4	No impact	0
Duration of Impact (B)	Short term	1	Long term	3	No impact	0
Probability of occurrence (C)	Probable	2	Probable	2	No impact	0
Intensity of Impact(D)	Moderately positive	2	Moderately positive	2	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low, positive	12	Medium, positive	52	No impact	0

Mitigation measures **Construction Phase**:

- Contractor should be directed by tender criteria to purchase locally and to make use of local service providers.
- Spending money locally purchasing from locals and South African should benefit employees. The proposed development should leverage discount in the local economy of the municipal area and employees should be made aware of it.
- Small business should be supported (i.e. skills training, assistance and guidance to set up small businesses) and joint ventures with previous disadvantaged persons should be promoted.
- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business should be encouraged.

Mitigation measures **Operational Phase**:

- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business.
- Implement formal small business training and mentoring programmes.
- Promote recreational opportunities in the MP and link to recreational events.
- Market the tourism opportunities the MP offer and create links with other tourism activities through the local tourism office and its website.
- Develop a plan to intensify tourism and recreation.
- Provide dedicated space for flower and plants sellers.
- Regulate use of burial space and limit the duration of the use of grave spaces.
- Provide for subsidies for vulnerable communities.

Level of significance after Mitigation	Probability, High: 3	16	Probability, High: 3	54	No mitigation	
Residual impact	None					

Table 23: Impact on Sales, Construction and Operational Phases

For both alternatives (South and North) the impact on local and regional sales and GGP is low and moderate, but positive. Mitigation measures may prohibit sales to be diluted and benefitting the region. Mitigation measures will benefit the local population, yet the impact stays the same. The No Go alternative has no impact.

3.3 Residual Impacts

Residual impacts on population & family characteristics of the receiving community are evaluated below

Employment equity of vulnerable groups

Affording youth and women the opportunity to join the workforce, will improve the social well-being of these vulnerable groups. Given the higher youth unemployment rate (21.5%) than the unemployment rate of 15.2%, it is most likely that fewer young people will get employed. As the young people may not have many skills, they have little to aspire to and employment is limited to entrance level jobs should they get employed. Of the 12 jobs per annum, 7 jobs are earmarked to be taken up by people younger than 35 years of age and 4 jobs are earmarked to be taken up by women.

A summary of the impact follows in Table below.

Impact	**Youth and women's social well-being improves, as they find employment.**			
Nature of Impact	Young people may lack the skills required and may be excluded from the labour component to be employed at the MP. Should young people be employed it may assist to break the cycle of hopelessness. The self- image of the youth improves as well as the way the community views them. It is anticipated that 7 young people will be employed. Women may be viewed as not suitable for working in parks and gardens and may be excluded from the labour component to be employed at the memorial park. Should women be employed the self-image of the women and the way the community views them improves. It is anticipated that 4 women people will be employed. The employment opportunities will enable the few families of those employed at the MP to benefit from their employment. Self-esteem of young women/ youth increases.			
Alternatives & Phases	**Operations**		**No Go**	
Extent of impact (A)	Local	4	Status Quo remains	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Medium positive	2	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Medium, positive	68	Status Quo remains	0
Mitigation measures: • Municipality facilitate that youth and women gain equal access to training and education opportunities: Skills development and improvement of educational qualifications should be a project component and youth and women should gain equal access to training and education opportunities. • Reserve 60% of jobs for youth and 40% for women. • Municipality to facilitate access to employment for youth and women. • Pay youth and women market related prices for the job.				
Level of significance after Mitigation	Highly probable: 3	102	Status Quo Remain	

Table 24: Impact of employment of vulnerable groups on receiving community: All Phases

For both alternatives (South and North), the opportunity afforded to youth and women is similar and positive. Although the significance of the impact is medium, the change in social wellbeing of youth and women will change the social well-being of their families. After mitigation the residual impact changes to high. The impact is viewed as significantly positive, as it may assist in breaking the cycle of hopelessness within poorer communities.

The use or enhancement of community resources impacts on the economic and material well-being of the receiving community. These residual impacts are now evaluated:

Biodiversity enhancement

From a biodiversity and botanical perspective, the site is considered degraded agricultural land suitable for the proposed development, but should be considered for as space linking the natural vegetation from Raithby to Annandale and Louw's Bos north. Surrounding ESA areas and wetlands and steams can benefit from the likely link to the Memorial Park for example the CBAs on the Louw's Bos North site are adjacent to a very important larger CBA on portion 10 of Farm 502 (immediately west of the airfield) and should continue to form a single complex of natural vegetation.

The Western Cape Biodiversity Spatial Plan does not recognise any critical biodiversity areas (CBA) or ecological support area (ESA) within the proposed area. However, since the site overlaps an area that would originally have been covered by the critically endangered Swartland Granite Renosterveld vegetation type a precautionary approach is advised. From a biodiversity perspective, the site chosen for the proposed Memorial Park is eminently suitable for the desired purpose.

A summary of the impact follows in table below.

Impact	**Biodiversity enhancement**					
Nature of Impact	Loss of biodiversity is unlikely as the site is considered degraded agricultural land and suitable for the proposed development. Creating a corridor between Raithby and Louw's Bos will benefit Surrounding ESA areas and wetlands and steams for example the CBAs on the Louw's Bos North site are adjacent to a very important larger CBA on portion 10 of Farm 502 (immediately west of the airfield) and should continue to form a single complex of natural vegetation.					
ALTERNATIVES	**South**		**North**		**No Go**	
Extent of impact (A)	Local & Regional	4	Local	3	Status Quo remains	0
Duration of Impact (B)	Permanently	4	Permanently	4	No impact	0
Probability of occurrence (C)	Probable	2	Probable	2	No impact	0
Intensity of Impact(D)	Moderately positive	2	Low positive	1	No impact	0
Degree of confidence (E)	Medium	2	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Medium, positive	68	Low, positive	28	Status Quo remains	0
Mitigation measures: • From a biodiversity and botanical perspective, the site should be considered as a link between the natural vegetation corridor from Raithby to Annandale and Louw's Bos north. Surrounding ESA						

	(ecological support area) areas and wetlands and steams can benefit from the likely link to the Memorial Park. The MP indirectly supports the rehabilitation of natural vegetation corridor. Louw's Bos North overlaps an ESA, which must be regarded as sensitive and should be considered for rehabilitation. This rehabilitation should form part of consolidating the larger landscape corridor and the memorial park					
Level of significance after Mitigation	Intensity: High Positive: 3	100	Intensity: Moderate Positive: 2	50	No mitigation	
Related results						

Table 25: Impact on biodiversity: Construction and Operational Phases

From a biodiversity perspective, both alternatives (South and North) are suitable for a memorial park. The MP operation will enhance natural vegetation and habitat and the use of this area would enhance the population of critically endangered Swartland Granite Renosterveld. The southern, unlike the northern site, will link ecological sensitive areas and plays a prominent part in the rehabilitation of the natural vegetation of the area. The northern site will contribute to the rehabilitation of the ESA and wetlands on the site, but does not provide the link to the south. Being adjacent to a very important larger CBA on portion 10 of Farm 502 (immediately west of the airfield) both the northern site and Portion 10 of Farm 502 should be operated as a single complex of natural vegetation. The significance of the impact of the proposed MP changes to highly and moderately positive respectively.

Public General Access to natural resources

For both alternatives (South and North), the MP has no impact on people's general access to natural resources i.e. wood, water and medicinal plants. The MP should enhance the use of natural resources and should not compete with the peoples access i.e. use of on-site sources to provide water, manage sewerage and generate alternative energy.

To mitigate the unlikely loss of general access a resource management plan should be compiled that support the cultivation and preservation of natural resources as a component of "urban agriculture"'

The water allocated to agricultural land will be transferred/ reallocated to continue to benefit agriculture.

The impact is not assessed in detail as the likelihood thereof is unlikely and the mitigation measures change it into enhancing the community's access to natural resources.

Increased taxes

For both alternatives (South and North) the long-term costs of maintaining large sites imply that the future lies with alternative less space consumptive practices. The large footprint of a conventional cemetery and memorial park implies higher operating costs which will have to be recovered either from the Municipal budget or from burial fees (high fees would imply an impermissible barrier to burial for the poor).

The maintenance cost will consist of the salaries of employees, maintenance materials (buildings, infrastructure (roads & fence). garden and park). Annual contribution of operations including maintenance:

	Items per Annum	**Expense**	**Income**
1	Salaries (total: 12 direct employees):	R1 440 000	
2	Maintenance materials:	R 24 000	
3	Cost of replacements:	R 24 000	
4	Selling of Graves (60% (or 486) of deceased): 486 x R 1800		R 874 800
		R 1488 000	R 879 800
	Short Fall	**R 609 000**	

Table 26: Memorial Park Budget

Sales related to burial space will contribute to the economy of the municipality. Burial spaces will either be leased or sold for limited periods of time i.e. 25 years maximum.

A summary of the impact follows in in the table below.

Impact	**Increased taxes**			
Nature of Impact	The maintenance costs will have to be absorbed by rates and tax payers.			
Alternatives & Phases	**Operations**		**All**	
Extent of impact (A)	Local	4	Status quo remains	0
Duration of Impact (B)	Long term	4	No impact	0
Probability of occurrence (C)	Probable	2	No impact	0
Intensity of Impact(D)	Moderately negative	-2	No impact	0
Degree of confidence (E)	Medium	2	No impact	0
Level of significance (AxBxD+E)xC	Low, negative	-60	Status quo remains	0
Mitigation measures • Develop joint initiatives and funding with Cape Nature and related institutions to care for the park. • Encourage recreation generating income. • Encourage tourism generating income.				
Level of significance after Mitigation	Intensity, Low positive: 1	36	No mitigation	
Residual impact	None			

Table 27: Impact on Sales, Construction and Operational Phases

The impact on rates and tax payers is low negative and change to low positive after mitigation. This means that the MP will be operated as an entity that has to generate its own operational funds. The No Go alternative has no impact.

3.4 No Go Alternative

Stellenbosch has limited burial space left (1 600 graves in 2015) and the lack of cemetery space may disrupt social networks which will bring about changes in social ethos of community. Community contentment (cohesion) most likely would be reduced as community members will be forced to bury elsewhere outside Stellenbosch. This may bring the Stellenbosch community in conflict with receiving communities.

3.5 Cumulative Impacts

Memorial parks tend to locate on specific soils and within specific environments. This facility is one of 2 memorial parks or cemeteries in the immediate vicinity of Annandale of which one is the existing Jamestown cemetery.

Should the memorial park be implemented, the intensity of the visual impact, from a local perspective would be higher than the impact on the visual character of the larger area that will be affected. From a sub-regional perspective the visual impact is not significant.

3.6 Summary

The moderate and high direct and residual socio-economic impacts associated the proposed MP are the following:

Impact	Type	Impact Level	After Mitigation
1. Increased crime and influx of non-Stellenbosch burials	Negative	High	Low
2. Sense of Place	Negative	High	Low
3. Increased traffic	Negative	Moderate	Low
4. Soil, groundwater and spring contamination/ Increased suspended solids in run-off	Negative	Moderate	Low (South) Moderate (North)
5. Land use change/ loss of agricultural land	Negative	High	Medium
6. Additional burial capacity for Stellenbosch inhabitants	Positive	Moderate	High
7. Employment of vulnerable groups	Positive	Moderate	High
8. Enhancement of Biodiversity	Positive	Moderate	Very High (South) Moderate (North)
9. Increased taxes	Negative	Low	Positive

Table 28: Significant Direct & Residual Impacts

The impacts, though highly and moderately negative, could be mitigated to become low negative or neutral. Impacts that rated as moderately positive changed to highly positive after mitigation. Only the land use change or loss of agricultural land cannot be mitigated. This loss is countered by the need for burial capacity for Stellenbosch inhabitants and the lack of suitable land for an amenity of this scale.

As for the alternative sites, the southern site has an advantage over the northern site as it is further removed from groundwater sources and enhance biodiversity by creating a link to CBAs.

4. Analysis of Alternatives

The purpose is to examine feasible alternatives to the proposed MP and highlight the benefits thereof that need to be considered against any potential socio-economic costs. Feasible land use options are compared in terms of lowest costs and most benefits criteria: environmentally, socially and economically. The land is zoned Agricultural Zone 1.

4.1 Options considered feasible and their costs and benefits.

The options considered follow together with a cost benefit analysis based on a rating scale that is explained under the next section *Cost Benefit Analysis*.

4.1.1 Proposed Use (Open Space: Cemetery & Recreational Park)

The development of a 70ha MP with the actual cemetery uses limited to a total of 34.5ha, which includes:

- A Memorial Park Centre - ±0.64 ha
- A Defined Zone - ± 1.38 ha
- A Columbarium Zone - ± 0.75 ha
- Traditional Graves ± 19.97 ha
- An Informal Zone: Lawn graves, Tree headstones & future expansion: ± 11.79 ha

This is a permanent land use and is expected to become a permanent part of the physical landscape. There have been public outcries against the establishment of a cemetery at this site, arising from fears of:

- Ground and surface water contamination by burial related pollutants.
- Traffic congestion.
- Losing the opportunity to cultivate crops (agricultural land)
- Dwindling safety and security.

The findings of this study do not support the perception that the MP and cemetery poses:

- A contamination risk to the groundwater and surface water resources in the area,
- A threat to traffic safety,
- A threat to safety and security

Or that there are any significant negative environmental or social impacts that cannot be cost-effectively mitigated.

The loss of the opportunity to cultivate crops needs to be evaluated against the need for a social amenity that provides cemetery space.

Should this development of the MP and cemetery proceed, the main socio-economic impacts of this would be:

Criteria	Rating	Impact
1 Highest economic yield land use	**3**	Graves will be sold. Policy should be adjusted to limit the period a grave can be utilised. The will guarantee

		the reselling of land.
2 Most earning opportunities for communities	**3**	Like the same number of earning opportunities. Entrepreneurship could be enhanced i.e. operating the nursery and producing burial items i.e. urns, flower wreaths etc.
3 Best effects on land use in the area	**4**	Although not an agricultural development, it is not an inconsistent development.
4 Most preservation of green space	**1**	Highly likely as it will form a link between the northern part Louws Bos and Raithby.
5 Best meets wider societal needs and economics	**1**	There is a dire and growing need for burial space.
1 Least use toxic substances, pathogens and nutrients	**3**	Impact limited as per specialist studies: See Freshwater & Geohydrological Reports
2 Least change to land surface and drainage	**3**	Contouring and drainage will be similar than for agriculture.
3 Least traffic impacts	**3**	Can be mitigated as per specialist studies.
4 Least deferred costs (increased taxes)	**4**	Will generate irregular income, deferred cost unlikely.
5 Least public outcry	**5**	Moderate: • Ground and surface water contamination by burial related pollutants. • Traffic congestion. • Losing the opportunity to cultivate crops (agricultural land) • Dwindling safety and security.

4.1.2 No Go

Should this option be selected, the development of the MP and cemetery would not proceed. This alternative would allow the site to lay fallow with 1x block of vineyards. The main socio-economic impacts of this would be:

Criteria	**Rating**	**Impact**
1 Highest economic yield land use	**3**	There will be no change in land value.
2 Most earning opportunities for communities	**3**	There is limited guaranteed earning opportunities and there will be none should the crop cultivation not proceed.
3 Best effects on land use in the area	**4**	There would be a loss of opportunity to provide burial spaces. There would still be a need in the near future to find environmentally sound burial grounds for Stellenbosch.
4 Most preservation of green space	**1**	
5 Best meets wider societal needs and economics	**1**	There would be no guarantee that crop cultivation will take place as the land, belonging to

		Stellenbosch Municipality, are leased and leases can be terminated giving one year notice. This cause uncertainty and the contribution to food security is thus in jeopardy.
1 Least use toxic substances, pathogens and nutrients	**3**	Fertilizer and crop sprays are applied.
2 Least change to land surface and drainage	**3**	Contours and drainage channels in place.
3 Least traffic impacts	**3**	No change in traffic volumes
4 Least deferred costs (increased taxes)	**4**	The agricultural property, with fallow lying fields, belonging to the municipality will not generate future taxes that may be deferred to rates and tax payers. In the unlikely event that it gets invested with alien vegetation, the removal will be done with funds from indirect taxes.
5 Least public outcry	**5**	There are inhabitants that are denied the opportunity to cultivate the fallow land.

4.1.3 Sub-Urban Residential Land Use

The development of a sub-urban housing project is not considered as feasible option for this site as there is land earmarked for residential development in the Stellenbosch SDF (2018) in various settlements. In the unlikely event of that a sub-urban housing project would proceed, the main socio-economic impacts of this would be:

Criteria	**Rating**	**Impact**
1 Highest economic yield land use	**1**	Land values will change significantly.
2 Most earning opportunities for communities	**4**	Earning opportunities would be generated (jobs, demands for local goods and services).
3 Best effects on land use in the area	**5**	There would be a loss of opportunity to provide burial spaces. There would still be a need in the near future to find environmentally sound burial grounds for Stellenbosch. There would a loss of opportunity to cultivate crops.
4 Most preservation of green space	**4**	With mitigation some preservation may be likely.
5 Best meets wider societal needs and economics	**5**	Meet the needs of higher income households
1 Least use toxic substances, pathogens and nutrients	**4**	Hardened surfaces and garden fertilizers and sprays will be used and dispersed by storm water which may be perceived as a threat.
2 Least change to land surface and drainage	**5**	Most change to land surface and drainage to accommodate housing development.

3 Least traffic impacts	**4**	The traffic will increase, particularly over peak times.
4 Least deferred costs (increased taxes)	**5**	The operation of the site may contribute to taxes as residents will pay rates and taxes. The location of the site may add to the burden on service delivery and increases in service cost might have to be carried by rates and tax payers.
5 Least public outcry	**5**	Likely high resistance from public.

4.1.5 Extension and cultivation of strawberries

This alternative provides for the area to be cultivated with strawberries. The socio-economic effects could include:

Criteria	**Rating**	**Impact**
1 Highest economic yield land use	**1**	Agricultural infrastructure will enable the crop yield. Very high land values.
2 Most earning opportunities for communities	**1**	Opportunity to generate seasonal earning opportunities arising from planting and harvesting strawberries. It is estimated by locals that 500 direct opportunities (translating to 125 full-time jobs for 12 months) can be created contributing to the prosperity of the Lynedoch community.
3 Best effects on land use in the area	**1**	Aligned with surrounding uses.
4 Most preservation of green space	**4**	Unlikely as crops are cultivated.
5 Best meets wider societal needs and economics	**2**	Greater demands on water supply than the cemetery. There would be a loss of opportunity to provide burial spaces. There would still be a need in the near future to find environmentally sound burial grounds for Stellenbosch
1 Least use toxic substances, pathogens and nutrients	**3**	Application of fertilizers and pesticides, which would also represent a perceived threat to ground and surface water resources.
2 Least change to land surface and drainage	**3**	Contours and drainage channels in place.
3 Least traffic impacts	**2**	Traffic related to transportation of produce.
4 Least deferred costs (increased taxes)	**1**	No additional taxes will be required and the rates and taxes will stay the same as for agricultural land.
5 Least public outcry	**1**	None

4.1.5 Extension of and cultivation of vineyards

This alternative provides for the area to be cultivated with vineyards. The socio-economic effects could include:

- Application of fertilizers and pesticides, which would also represent a perceived threat to ground and surface water resources.
- Greater demands on water supply than the cemetery.
- No change in land values.
- Traffic related to transportation of produce.
- There would be a loss of opportunity to provide burial spaces. There would still be a need in the near future to find environmentally sound burial grounds for Stellenbosch.
- Opportunity to generate earning opportunities arising from planting and harvesting of wine grapes. Approximately 8-12 full time permanent jobs will be generated.
- No additional taxes will be required and the rates and taxes will stay the same as for agricultural land.

Criteria	Rating	Impact
1 Highest economic yield land use	**2**	Agricultural infrastructure will enable the crop yield. High land values.
2 Most earning opportunities for communities	**3**	Opportunity to generate permanent and seasonal earning opportunities arising from planting, preparing and harvesting grapes.
3 Best effects on land use in the area	**1**	Aligned with surrounding uses.
4 Most preservation of green space	**4**	Unlikely as crops are cultivated.
5 Best meets wider societal needs and economics	**2**	Greater demands on water supply than the cemetery. There would be a loss of opportunity to provide burial spaces. There would still be a need in the near future to find environmentally sound burial grounds for Stellenbosch
1 Least use toxic substances, pathogens and nutrients	**3**	Application of fertilizers and pesticides, which would also represent a perceived threat to ground and surface water resources.
2 Least change to land surface and drainage	**3**	Contours and drainage channels in place.
3 Least traffic impacts	**2**	Traffic related to transportation of produce.
4 Least deferred costs (increased taxes)	**1**	No additional taxes will be required and the rates and taxes will stay the same as for agricultural land.
5 Least public outcry	**1**	None

4.2 Cost-Benefit Analysis

The five land use development options outlined above are compared in terms of most benefits and least costs using a range of factors or normative criteria given in the table below. This approach tries to evaluate the economic, social and environmental consequences of each option. These options are compared using a simple ranking system in relation to the normative criteria. A rank of number 1 indicates that the option is best suited to satisfying the normative criterion, and a rank of 5 indicates that the option is least suited to satisfying the normative criterion. The option scoring the lowest total score may be regarded as the most suited overall.

The criteria have been described by some qualifying elements. The contribution of these elements is scored and contributes to the total score per criteria. The total criteria score is used to rank the alternatives against one another. An element's total score represent a scale of 0 to 1 with 1 representing the option that is best suited and 0 being the option that is least suited. The total element score is then converted to the ranking scale used in relation to the normative criteria (See also Addendum A for a Detailed Score).

	CmMP	NG	RU	VY	SF
1 Highest economic yield land use	3	4	1	2	1
2 Most earning opportunities for communities	3	5	4	2[1]	1
3 Best effects on land use in the area	4	5[2]	5	1	1
4 Most preservation of green space	1	4	4	4	4
5 Best meets wider societal needs and economics	1	5	5	2	2
1 Least use toxic substances, pathogens and nutrients	3	3	4	3	3
2 Least change to land surface and drainage	3	1	5	3	3
3 Least traffic impacts	3	1	4	2	2
4 Least deferred costs (increased taxes)	4	1	5	1	1
5 Least public outcry	5	2[3]	5	1	1
Total	30	30	42	22	19
CmMP= Cemetery & MP; NG = No Go; RU = Sub-Urban Residential Use; VY = Vineyards SF= Strawberry Farm					

Table 29: Ranking of Most Benefits and Least Costs per Alternative

Based on these criteria, the "no go" alternative scored the same as the establishment of a MP. The alternatives to establish a vineyard or strawberry farm scored the lowest which means that it has the least costs for the receiving community and most benefits. The next unlikely alternative to the MP would be the residential land use, which scored the highest and thus have the highest cost and least benefits for the receiving community.

[1] This score has been adjusted. In the draft SEIA report the score was 3. The rating was scored more favourably as the number of direct and indirect employment opportunities were considered equal for growing wine grapes than for growing strawberries.

[2] This score has been corrected. In the draft SEIA report the score was 1 as the rating scale was incorrectly reversed. The rating should have indicated the lowest contribution to the criteria *best effects on land use*.

[3] This score has been adjusted. In the draft SEIA report the score was 1. The rating was scored less favourably as the public participation process highlighted that there are members of the community that would like to farm the land instead of it being fallow.

The cemetery, although having the greatest level of public outcry, would have moderate costs and benefits, and would be most consistent with the landowner's responsibility to provide for amenities such as cemeteries.

5. Management guidelines to address socio-economic impacts

In order to ensure that the disadvantages are managed to maximize positive impacts, specific management strategies and mechanisms need to become part of the operation of the MP. These strategies and mechanisms need to be implemented through development conditions and are outlined below. It needs to be noted that some of these management guidelines are required by legislation applicable to the MP and its operations:

5.1 Preferential procurement of goods, services and labour

- Contractor and SM employ and reserve100% of jobs for HDI locals; If not suitably qualified, institute and provide budget for training and development
- Reserve jobs for youth and women.
- The municipality should inform the local community of potential job opportunities
- The service provider database of local companies or individuals (including small businesses owned and operated by HDIs that qualify as service providers etc.) should be used to appoint service providers. Should a local company not be registered on the municipal service providers list, the company should be assisted to register and comply prior with the commencement of the project. These firms should be invited to render services where required.
- Contractor (establishing the park) should be directed by tender criteria to purchase locally and to make use of local service providers.
- The promotion of joint ventures between small business (owned by previous disadvantaged persons) and more established business should be encouraged.

- Municipality facilitate that youth and women gain equal access to training and education opportunities: Skills development and improvement of educational qualifications should be a project component and youth and women should gain equal access to training and education opportunities.
- Reserve 60% of jobs for youth and 40% for women.
- Municipality to facilitate access to employment for youth and women.
- Pay youth and women market related prices for the job.

.

5.2 Skills transfer

- The proposed development should enhance formal and informal skills transfer:
- Facilitate and afford youth and women opportunities to enhance their skills and/ or improve their education
- SM should implement a training and skills development programme or learnerships to enhance skills and competencies. Measures should be put in place to ensure successful training and development i.e. structured job shadowing and learnerships. Such a programme should be offered in liaison with an accredited Further Education and Training College or an University of Technology;

5.3 Safety & Security Management

- Erect impermeable parameter fence
- Operate a controlled entrance gate
- Conduct regular paroles (on bicycle or horseback)
- Control all persons entering:
    - Tight control of burial ceremonies and grave visits
    - Tight control of recreation activities

5.4 Traffic Regulation

- Develop an amenity information brochure marketing the facility and the different components thereof i.e. the chapel. Encourage users of the MP to hold services on site.
- Processions should not be allowed on provincial roads.

5.5 Dust and Noise control

During construction, establishment of the park and operations

- Dust creation must be controlled as per construction management and control code.
- Noise creation should be controlled as per construction management and control code.
- Dust suppression measures must be implemented;
- Budget and provide for dust suppression equipment and procedures have to be supplied and be in place.
- Access to and in park must be on recognized routes.

5.6 Increased income

- SM and contractor to liaise with existing or future projects to enhance employment opportunities for locals.
- Pay youth and women market-related salaries and wages.

5.7 Increase in small business

- Allow for limited economic opportunity i.e. flower sellers and a nursery to operate at the MP. Disadvantaged and vulnerable members of the community should partake in such an opportunity.
- Implement formal small business training and mentoring programmes.

5.8 Increase in tourism

- Promote recreational opportunities in the MP and link to recreational events.
- Develop a plan to intensify tourism and recreation.
- Market the tourism opportunities the MP offer and create links with other tourism activities through the local tourism office and its website.
- Strengthening heritage resources and recreation to build tourism.
- Create links with other tourism activities in Stellenbosch through a website and the local tourism office.
- Celebrate the history of the trek-paths and commonage as part of this space.

- Develop a marked trail telling the story of the different ages. Access to such a trail and opening it to the public are dependent on the security measures related to the facility. Such an endeavour could become one of the local youth driven businesses.
- Entrance control of the site and control of allowable activities will enhance the celebration of life. Entrance to the cemetery should be controlled during the day and the cemetery should be closed at night.
- Linking the site to a network of recreation routes i.e. walking or cycling will expand the celebration of life. Recreational activities should be encouraged.
- Encourage leisure and recreational activities i.e. develop park calendar. Create links with existing trails.

5.9 Maintaining Sense of place

Construction & Park Preparation Phase

- *Utilize existing roads and tracks to the maximum extent possible.*
- *Outdoor lighting must be strictly controlled so as to prevent light pollution.*
- *Sources of light must as far as possible be shielded by physical barriers such as trees and buildings or structures*
- *All lighting must be installed at downward angles.*
- *Use only minimum wattage light fixtures. '*
- Litter and littering must be strictly controlled.

Operations phase

- The use of lighting has to be monitored over the entire life of the project to minimize light pollution and the same measurements as during the operational phase apply.
- **Landscape the park in such a way that** memorial park forms part of the agricultural landscape**.** Links should be created to the natural vegetation and agricultural cultivation of the surroundings of the park.

- The park should draw people to spend time at the park. The landscape design of the MP should enhance the scenic and historic landscape.
- Where possible, greenery should be maximized and natural vegetation should be protected..
- Preferably, use permeable paving.
- The park should be managed as a park and not as a cemetery.
- Voluntary manicure and maintenance programmes should be managed involving educational institutions.
- Monitor the landscape, soils and vegetation to keep the agricultural and natural feel.
- From a biodiversity and botanical perspective, the site should be considered as a link between the natural vegetation corridor from Raithby to Annandale and Louw's Bos north. Surrounding ESA (ecological support area) areas and wetlands and steams can benefit from the likely link to the Memorial Park. The MP indirectly supports the rehabilitation of natural vegetation corridor. Louw's Bos North overlaps an ESA, which must be regarded as sensitive and should be considered for rehabilitation. This rehabilitation should form part of consolidating the larger landscape corridor and the memorial park.

- Taller built structures should be set back from the road.
- Landscape the buffers along the edges and roads (should be well planted).
- Manage lighting carefully to prevent excessive lighting.
- Colouring of structures and fences should be subtle.
- Prevent pollution.

- Change from vineyards to memorial park: Prohibit the potential loss of vineyards to Soverby in terms of its current setting and screening. Extend proposed portions under vineyards into cultivated land south of the site to retain the existing vineyards as part of this historic farm and contain the homestead in an appropriate heritage context.

- Commonage Interpretation: Prepare the historic Commonage's sites should and provide interpretive information and signage about the history of the Common. Consider possible development of a trek path-outspan trail on the remainder of R502.

5.10 Water: Access to and Quality

- As the park will be implemented in phases, precincts will be implemented from the lowest to the highest point. The phased approach should mitigate leachate from the graves.

- The water allocated to agriculture to be reallocated to continue to benefit agriculture.
- Runoff from agricultural irrigations should be managed as to not travel through the cemetery sections.

5.11 Mitigate loss of agricultural land and opportunity to produce food

- Multi scale and – functionality are two guiding principles to be promoted. All land in the MP will not be lost to agricultural cultivation at once
  - As the park will be implemented in phases, some precincts could continue to be cultivated. Whilst burials are taking place in established MP precincts, others could be cultivated. The tree lanes could include edible fruit or nut trees.
  - Replace some memorial gardens with memorial blocks of vineyards.
  - Encourage urban agriculture in the park.
- Curtail the extent of the land required and encourages alternative burial options in the MP. Families have to be encouraged to consider different burial options which are less land dependant.
- Develop a burial alternative campaign.
- Manage graves and burial sites in MP with zero waste of space.
- To mitigate the unlikely loss of general access, a resource management plan should be compiled that support the cultivation and preservation of natural resources and indigenous plants (an initiative similar to "urban agriculture")'

:

- Regulate use of burial space and limit the duration of the use of grave spaces. Regulate the use of grave space and rent out space for a specific period i.e. 25 years or even shorter time periods: Adjust by-law to address access to resources i.e. burial space.
- Provide for subsidies for vulnerable households/ individuals.
- Provide a MP in each of the major municipal areas i.e. north and south

5.11 Conclusion

The above management guidelines have been presented in terms of the specific social costs that might result due to the proposed MP and related infrastructure. These guidelines aim to change the social costs of the proposed development into benefits in favour of the inhabitant of Stellenbosch Municipality.

Addendum A: Assessment Measures

The assessment departs from a factual description of the nature of the impact. This description is followed by an appraisal including a description of the effect the activity has on the environment. The description should include what is being affected and how it is affected. Assessment Measures are then applied to refine the results.

Extent (A)

This assessment measures the geographical scale of the impact

Extent of the Impact		
Rating	**Definition of rating**	***Score***
Local	Extending only as far as the activity, Will be limited to the site and its immediate surroundings	*4*
Regional	Will have an impact on the region	*3*
National	Will have an impact on a national scale	*2*
International	Will have an impact across international borders	*1*

Usually the scores are in ascending order from 1 to 4 (local to international) but given the levels of poverty and remoteness the scores for this project has been changed to a descending order of 4 to 1 (local to international).

Duration (B)

This assessment measure indicates the lifetime of the impact.

Duration of the Impact		
Rating	***Definition of rating***	***Score***
Short term	*0-5 years*	*1*
Medium term	*e.g. 5-15 years*	*2*
Long term	The impact will cease after the operational life of the activity, either because of natural process or by human intervention	*3*
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient	*4*

The duration of some of the impacts during construction is considered mainly short term, whilst the duration of the impacts during the operational phase is considered long term.

Intensity (C)

Here it should be established whether the impact is destructive or benign and should be indicated as:

Intensity of the Impact		
Rating	***Definition of rating***	***Score***
Low	The impact affects the environment in such a way that natural, cultural and social functions and processes are not affected	***1(±)***
Medium	The affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; and	***2(±)***
High	Natural, cultural or social functions or processes are altered to the extent that it will temporarily or permanently cease.	***3(±)***

The intensity of some of the impacts of the proposed project varies. In the case of the proposed project the criteria was customize and refined to their particular study (e.g. a positive impact of "high" significance is when the project could reduce local employment by 5% or more).

Probability (D)

This should describe the likelihood of the impact actually occurring indicated as:

Probability of the Impact		
Rating	***Definition of rating***	***Score***
Improbable	The possibility of the impact to materialize is very low either because of design or historic experience;	***1***
Probable	There is a distinct possibility that the impact will occur	***2***
Highly probable	It is most likely that the impact will occur	***3***
Definite	The impact will occur regardless of any prevention measures	***4***

Significance

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

Significance of the Impact: (F)= (A*B*D+E)*C			
Rating	***Definition of rating***	***Score***	
Low		**0 to – 40**	**0 to 40**
Medium		**- 41 to - 80**	**41 to 80**
High		**- 81 to - 120**	**81 to 120**
Very High		**> - 120**	**> 120**
The above significance bands have been determined through calculating a maximum potential score of 156 (e.g. positive or negative) applying the above criteria. This was then subdivided into broad bands as indicated above to provide a comparative assessment of all impacts in relation to the maximum possible significance score. The overall status of the impact (after mitigation) for the preferred alternative are also assessed applying the above criteria.			

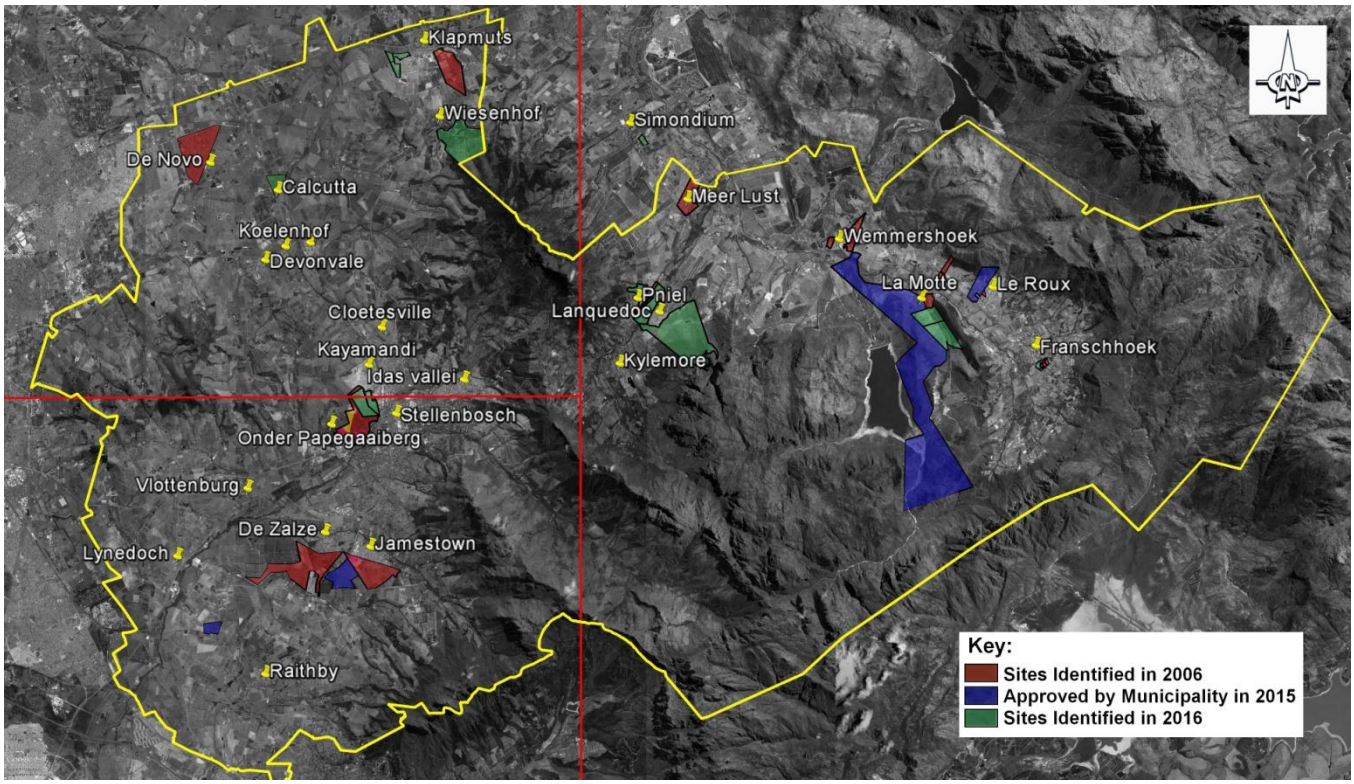
The above rating scales will be applied to assess the impacts during the construction, operational and demolition phase.

Addendum B: Cemetery and Memorial Park alternatives

The strategy Stellenbosch adopted to provide burial space were twofold: Expanding local cemeteries and establishing regional cemeteries in Stellenbosch Municipal Area.

The following three regions were identified and sites per region were identified and assessed according to the criteria in Addendum A.

Region 1: Northern Stellenbosch
Region 2: Eastern Stellenbosch (Franschhoek Valley)
Region 3: South Stellenbosch



The site for Eastern Stellenbosch has not been promoted as yet as most of the area is located within the Berg River flood plain.

Site Identification

Selection was informed by several studies and activities i.e.

a) a 2006 Cemetery Feasibility Study conducted by Dennis Moss Partnership.
b) site visits by CK Rumboll and Partners in May and June 2016.
c) Sites identified by the Property Management Department of Stellenbosch Municipality.
d) Sites approved on a Stellenbosch Council meeting, various dates 2015 – 2018.

Initial Assessment

The preliminary scan of 50 sites considered the following:

a) Ownership, Use, Zoning and Proximity

b) Value (intrinsic, instrumental, systemic), Environment (Fauna & Flora, Ecological Rehabilitation, Geology, Pedology, Hydrology) and Policy Assessment (Access, Competing uses, SDF & IDP aligned)

c) Digging graves: Soil excavatility, permeability (distance from domestic water sources, drainage features and soil type), drainage features, gradient, basal buffer, grave stability, soil workability and cemetery size

Sites were separated into cemeteries that can expand and new cemeteries smaller than 30ha, regional cemeteries and full cemeteries that cannot expand.

Cemeteries that can expand and new cemeteries smaller than 30ha

This category were further divided into

- Extensions identified on land belonging to Stellenbosch Municipality: At Franschhoek and Stellenbosch (Onder Pappagaaiberg) (expand graveyard sites), Kylemore, Pniel (develop new cemeteries on erven adjacent to existing cemetery).
- New cemeteries identified on land belonging to Stellenbosch Municipality: at Pniel (open space across existing cemetery)
- Extensions identified on state land within the jurisdiction of Stellenbosch Municipality at De Novo.
- A new cemetery identified on state land at La Motte (existing cemetery does not have the appropriate zoning).
- Extensions identified on private land at Le Roux (Dennegeur), Franschhoek, Languedoc, Klapmuts and Pniel.
- New cemeteries identified on private land at Klapmuts and Pniel.

Regional cemeteries

Regional cemeteries were identified in Jamestown, Lyndoch, Klapmuts, La Motte, Maasdorp (on R45 to Franschhoek), Meerlust (T junction of R45 (Paarl to Franschhoek) and R310 (to Stellenbosch)), Wemmershoek (R301) & Wiesenhof (R44).

Identification of regional cemeteries was narrowed down on land belonging to Stellenbosch Municipality at or close to James Town, Koelenhof and Wemmershoek. Only state land is available for a regional cemetery in Eastern Stellenbosch or the Franschhoek Valley in La Motte, Maasdorp and Meerlust and in Northern Stellenbosch in de Novo.

Regional cemeteries on **private land** within the jurisdiction of Stellenbosch Municipality, have been identified at Jamestown, Klapmuts and Lyndoch.

Full cemeteries

Seventeen (17) Cemeteries are **fully occupied** and need cleaning, remarking of graves, fencing and upkeep.

There were sites that were not further considered as they did not meet the environmental and policy assessment criteria i.e.

- Proximity to the settlement
- Entire site earmarked for housing
- Earmarked for recreation and youth development
- Undesirable slopes
- Earmarked for road and infrastructure upgrades
- Watercourses, water quality and soil characteristics

Site Selection Criteria

These sites were subjected to a set of selection criteria:

a) Initial (Ownership and Proximity) Assessment

The purpose of this assessment is to determine which identified portions of land can be utilized as a local or regional cemetery and to determine the time frames involved in obtaining the appropriate rights and authorizations.

1. Ownership: Does the property belong to Stellenbosch Municipality, a State Department or a private person.
2. Zoning: What is the official zoning of the property?
3. Current Land Use: What is the property used for?
4. Lease: Is the property leased. If yes, for how long is the duration of the lease.
5. Transfer: If the property is not owned by Stellenbosch Municipality, it has to be transferred.
6. Location: Is the proposed development an extension of the existing cemetery or is it a completely new cemetery.
7. Proximity: Is the cemetery accessible for the region or only for the settlement in which it is located?

This assessment was done according to information as per the following documentation and site visits: ownership records, zoning certificates and diagrams.

b) Environmental and Policy Assessment

The purpose of this assessment is to determine if there are any policies or natural aspects that may prohibit the expansion or development of cemeteries.

8. Intrinsic Value: What is good for the property? (Use & Heritage Value)
9. Instrumental Value: What is the property good for? (SDF alignment)

10. Systemic Value: Does the property contribute to the health of any eco system and or habitat? Is the property important for conservation purposes (does it form part of a sensitive ecological corridor which may include part of stream, drainage systems & wetlands and may be subject to ground water pollution.

11. Current status: Is there any indigenous Fauna and Flora habitats on the property and are there occurrence high or are there stands of rare endemic plants.

12. Ecological Rehabilitation: What should the property look like if restored to its pristine form? How did it look like? What are the likelihood/ potential of the property being rehabilitated?

13. Geology: What are the Solid features of Earth

14. Pedology: Status of soils in their natural environment

15. Hydrology: Are there any drainage lines

16. Accessibility: Is there physical access to the site? How easily can the site be accessed? What modes of transport can be used to reach the site? What modes of transport are available?

17. Land Availability: What are the competing uses in the area?

This information was gathered as per data available, site visits, previous studies conducted (see Reference List) and a meeting with municipal officials representing different departments; Data available included zoning maps, ecological and hydrological data, geological data, roads network data, programmes & projects from other municipal departments.

c) Soil Scan

The purpose of this assessment it to determine if the site will be functionally appropriate to dig graves and burry people.

18. Soil excavatility: Is the soil medium dense and firm

19. Soil permeability: Safe distance from domestic water sources (No – too close; Conditional - Certain forms of burials only i.e. walls of remembrance; Developable)

20. Soil permeability: Soil type (Clay Gravel, Silty Sand, Clay Sand, Silt) and permeability ranges. Poor subsurface conditions, either high water table or clay layers - grave surface flooding or perched water tables

21. Soil permeability: Safe distance to drainage features and sources (No – too close; Conditional - Certain forms of burials only i.e. walls of remembrance; No - Adequate surface drainage difficult - flat topographical features)

22. Drainage features: Present, Partial or Absent

23. Topography: Gradient 2° - 6°. No when slope exceeds 9°.

24. Basal Buffer Zone: 2.5m between grave & water table. No when basal buffer is absent.

25. Grave Stability: Verges & Sides to stand up.

26. Soil Workability: Ability of soil to compact on return to grave

27. Cemetery Size: Justify engineering geological &geotechnical investigation

This information was gathered as per data available, site visits and previous studies conducted and meetings with the Directorate Community Services. Data available included hydrological data, geological data and a full assessment of Wemmershoek as a housing development.

All Sites Investigated

No	Property Number & Settlement (Alphabetic)	**Existing** Cemeteries	**Identified**			**Approved** by Municipality (February 2015)
			Feasibility Study 2006 (Dennis Moss)	Site Visits & Scan, 2016 (CK Rumboll)	Property Management: Stellenbosch Municipality 2016	
1	RE 10/727 De Novo					
2	RE/3666 Franschhoek, DenneG					
3	Erf 1219 Franschhoek, Le Roux					
4	Erf 516 Franschhoek					
5	Erf 423 Franschhoek					
6	Erf 41 Franschhoek					
7	Erf 428 Franschhoek					
8	Erf 42 Franschhoek					
9	Erf 16 Franschhoek					
10	Erf 739 Franschhoek					
11	Erf 2885 Franschhoek					
12	Erf 2886 Franschhoek					
13	RE/502 Jamestown					
14	1166 Jamestown					
15	RE/527 Jamestown					
16	RE 13/1674 Languedoc					
17	RE 1/619 Lyndoch					
18	Farm 342 Klapmuts					
19	8/744 Klapmuts					
20	RE/2/744 Klapmuts					
21	7/748 Klapmuts					
22	3/748 Klapmuts					
23	40/748 Klapmuts					
24	Erf 9 Kylemore					
25	Erf 21 Kylemore					
26	Erf 71 Kylemore					
27	Erf 35 Kylemore					
28	Erf 36 Kylemore					
29	RE1/1339 La Motte					
30	1653 La Motte					
31	1/1158 La Motte					
32	RE/1158 La Motte					
33	Farm 7/1041 Maasdorp					
34	Farm 28/1041 Maasdorp					
35	1/1006 Meer Lust					
36	RE/1 Pniel					
37	9/1173 Pniel					
38	2/1647 Pniel					
39	1357 Pniel					
40	RE1/1176 Pniel					
41	17/1685 Pniel					
42	4/941 Simondium					
43	Farm 2/81 Kayamandi					
44	181 Stellenbosch					

45	RE/33/175 Stellenbosch					
46	RE/183 Stellenbosch					
47	RE/1/1024 Wemmershoek					
48	202 Wemmershoek					
49	23/747 Wiesenhof					
50	Farm 29 Koelenhof (Calcutta)					

Full cemeteries

Cemeteries that are **fully occupied** and need cleaning, remarking of graves, fencing and upkeep are listed below:

	Property	Owner	Zoning
24	Erf 1219 Franschhoek, Le Roux	Mun Gebied van Farnschhoek	Local Authority Zone
25	Erf 41 Franschhoek	Ned Ger Sendingkerk Franschhoek	Local Authority Zone
26	Erf 42 Franschhoek	Ned Ger Kerk Franschhoek	Local Authority Zone
27	Erf 423 Franschhoek	Roux David Marais	Local Authority Zone
28	Erf 428 Franschhoek	Congregational Church Franschhoek	Local Authority Zone
29	Erf 16 Franschhoek	Ned Ger Franschhoek	Local Authority Zone
30	RE/527 Jamestown (Unregistered Portion 6/527)	Mun Stellenbosch	Agriculture Zone 1 (Local Authority (Cemetery))
31	7/748 Klapmuts	Volle Evangelie Kerk van God in Suidelike Afrika Klapmuts	Agriculture Zone 1
32	3/748 Klapmuts	Volle Evangelie Kerk van God in Suidelike Afrika Klapmuts	Agriculture Zone 1
33	Erf 9 Kylemore (re use western side)	Mun Stellenbosch	Open Space II
32	Erf 21 Kylemore	Mun Stellenbosch	Subdivisional Area for Residential Zone 1 and Transport Zone II (public road)
33	Erf 71 Kylemore	Old Apostolic Church of Africa	Open Space II
34	Erf 35 Kylemore	Mun Stellenbosch	Open Space I
35	RE/1 Pniel	Gemeenskap van Pniel	Open Space for Pniel Cemetery Authority Use for rest of property
36	Farm 190, Stellenbosch	Mun Stellenbosch	Local Authority (Cemetery)
37	Farm 191, Stellenbosch	Mun Stellenbosch	Local Authority (Cemetery)
38	Farm 285, Stellenbosch	Mun Stellenbosch	Local Authority (Cemetery)

ADDENDUM C: BURIAL ALTERNATIVES

Mausoleum • Monumental graves. • Family groupings. **Tradition/ Believe**	**Required Space** A secure building with rows of crypts Above-ground burial space option Crypts are large enough to accommodate a coffin holding a full body or remains.	**Required Terrain** Rocky terrain or ground which may be unsuited to conventional. Examples Headstone Graves	
Cost Designed to any size and specification. Are a practical and cost-effective alternative to conventional tombstones.	**Decomposition Time** Once a crypt is sealed, it is ventilated to promote rapid body decomposition.	**Maintenance** Generally clad with hardwearing stone or granite and are weather-resistant and maintenance-free. Crypts are sealed at the front with a concrete panel which is cemented closed.	
Multi- interments • Traditional graves. **Tradition/ Believe**	**Required Space** Municipal by-laws allow for burial of more than one family member in a grave. Up to three bodies from the same family can be placed in the same grave.	**Required Terrain** This allows for cemeteries that are theoretically full – i.e. with a body in each grave – to continue being used.	 Monumental headstone graves
Cost Cost decreased with the number of burials per grave.	**Decomposition Time** A period of time, usually two years, is given before graves are re-opened and a new body can be placed on top of the previous remains, before being covered up again.	**Maintenance** High, similar than traditional burials.	

<table>
<tr>
<td>Cremation

Tradition/ Believe
Common amongst Christians/ West.
Standard practice amongst Hindus.
Forbidden in Muslim and Orthodox Jewish faiths.
African cultures, traditionally viewed as undesirable although not prohibited.</td>
<td>Required Space
The deceased body is burnt to ash, which greatly reduces the mortal remains. Ashes are kept in an urn. Options of disposing of the ashes after a cremation include:
- Memorial walls
- Gardens
- Ash graves</td>
<td>Required Terrain
Any
• Indigenous landscape.
• Option of plaque.
• Benches are positioned throughout the cemetery in sheltered positions.</td>
<td rowspan="2"> 
Memorial Garden
 
Memorial tree and plaque
 
Natural burial (Green burial)</td>
</tr>
<tr>
<td>Cost
Low</td>
<td>Decomposition Time
None</td>
<td>Maintenance
Cremation is offered as a burial option along with traditional burials. Cremations are cheaper than traditional burials.</td>
</tr>
</table>

Reduction burial **Tradition/ Believe**	**Required Space** The buried body is later exhumed and reinterred in a smaller casket, allowing for burying more family members in the same grave.	**Required Terrain**	 Lawn cemetery
Cost	**Decomposition Time** Shorter than traditional burials	**Maintenance** Lower than traditional burials	
Columbarium **Tradition/ Believe** Can house many people of different religions. Religious décor often adorns individual niches and/or urns for ashes.	**Required Space** Take a variety of forms and are, occasionally quite elaborate structures. But, more often, they follow elegant-but-simple architectural designs and are part of large, urban cemeteries.	**Required Terrain** Many churches have Columbaria built into their structures or erected onto their grounds. Examples - Room or building with niches for funeral urns to be stored. - Niche and Wall of Remembrance. - A wall structure with ashes placed within and covered with a plaque.	 
Cost	**Decomposition Time**	**Maintenance** Low	

Promession (freezing) **Tradition/ Believe** Similar to cremation	**Required Space** Promession is when the body is frozen with liquid nitrogen and then vibrated to disintegrate. The pieces are freeze dried and placed in a biodegradable casket.	**Required Terrain**	
Cost High due to irregular usage.	**Decomposition Time** Caskets are interred in the top layers of soil, where aerobic bacteria cause complete decomposition in six to 12 months.	**Maintenance** Low	

ADDENDUM D: COST BENEFIT ANALYSIS SCORES

Rating Scale 0.00 – 0.20 = 5 0.21 – 0.40 = 4 0.41 – 0.60 = 3 0.61 – 0.80 = 2 0.81 – 1.00 = 1	**Cemetery &Memorial Park**	**No Go Alternative**	**Residential Use**	**Vine yards**	**Strawberry Farm**
1. Highest economic yield land use	**3**	**4**	**1**	**2**	**1**
- Capital expenditure	Moderate (2)	Low (1)	Most (4)	Moderate (2)	Mod – High (3)
- Yield or Return	Moderate, Irregular (2)	Moderate –Low Annual (1.5)	Highest Once Off (3)	Moderate - High Annual (3)	High Annual (3)
Criteria Score	0.57	0.36	1	0.71	0.86
2. Most earning opportunities for communities	**3**	**5**	**4**	**2**[4]	**1**
- Opportunities to work: - Number of jobs: no direct, no indirect - Sustainability: once off, irregular (seasonal) , regular (seasonal), permanent	(2) Few Direct Moderate Indirect Permanent & irregular seasonal	(1) Few Direct Moderate Indirect Regular Seasonal	(1) Moderate Direct Moderate Indirect Semi Regular Seasonal	(3) Moderate Direct High Indirect Permanent & regular Seasonal	(3) Moderate Direct High Indirect Permanent & regular Seasonal

[4] This score has been adjusted. In the draft SEIA report the score was 3. The rating was scored more favourably as the number of direct and indirect employment opportunities were considered equal for growing wine grapes than for growing strawberries.

- Opportunities to trade informally	(0)	(0)	(0)	(0)	(1)
- Opportunities to sell produce	Burial space (1)	Wine (0.5)	Property (1)	Wine (1)	Strawberries (1)
Criteria Score	0. 43	0.	0.29	0.43	1
3. Best effects on land use in the area	**4**	**5**[5]	**5**	**1**	**1**
- Intrinsic Value: What is good for the property? (Soil type, Use & Heritage Value)	0	0	0	1	1
- Instrumental Value: What is the property good for? (SDF alignment)	0	0	0	1	1
- Systemic Value: Does the proposed use of the property contribute to the health of any eco system and or habitat? (does it form part of a sensitive ecological corridor which may include part of stream, drainage systems & wetlands and may be subject to ground water pollution – CBA and wetland environment analysis)	1	0.5	0	0.5	0.5
Criteria Score	0.33	0. 16	0	0. 83	0.83
4. Most preservation of green space	**1**	**4**	**4**	**4**	**4**
- Systemic Value: Is the property important for conservation purposes and can its preservation mitigate climate	3	1	1	1	1

[5] This score has been corrected. In the draft SEIA report the score was 1 as the rating scale was incorrectly reversed. The rating should have indicated the lowest contribution to the criteria *best effects on land use*.

change.					
- Current status: Is there any indigenous Fauna and Flora habitats on the property and are their occurrence high or are there stands of rare endemic plants (vegetation and CBA analysis).	0	0	0	0	0
- Ecological Rehabilitation: What are the likelihood/ potential of the property being rehabilitated? (CBA and wetland environment analysis)	0	0	0	0	0
Criteria Score	1	0.33	0.33	0.33	0.33
5. Best meets wider societal needs and economics	**1**	**5**	**5**	**2**	**2**
- Food security Basic food vs other foodstuff	0	0	0	3	3
- Social Amenity(ies): Hospitals (health) Prevent decease/ Sickness/ Justice Social Amenity (Risk if not provided)	4	0	0	0	0
- Housing/ Shelter Subsidized & GAP vs high income	0	0	1	0	0
- Water Preserve natural source vs treated source	0	1	0	0	0
Criteria Score	1	0.2	0.2	0.8	0.8

1. Least use toxic substances, pathogens and nutrients	**3**	**3**	**4**	**3**	**3**
2. Least change to land surface and drainage	**3**	**1**	**5**	**3**	**3**
3. Least traffic impacts	**3**	**1**	**4**	**2**	**2**
4. Least deferred costs (increased taxes)	**4**	**1**	**5**	**1**	**1**
5. Least public outcry	**5**	**2**[6]	**5**	**1**	**1**
Total	**30**	**30**	**42**	**21**	**19**
CmMP= Cemetery & MP; NG = No Go; RU = Sub-Urban Residential Use; VY = Vineyards SF= Strawberry Farm					

[6] This score has been adjusted. In the draft SEIA report the score was 1. The rating was scored less favourably as the public participation process highlighted that there are members of the community that would like to farm the land instead of it being fallow.

List of References

Dennis Moss Partnership Inc. October 2006: *Cemetery Feasibility Study, October 2006*

Dennis Moss Partnership Inc. February 2005: Municipal Land Management Policy Framework, February 2005.

Dennis Moss Partnership Inc. *Papagaaiberg Spatial Development Plan, October 2006, For Stellenbosch Municipality*

Dirk Hatting and Associates. *June 2003: Strategic analyses: municipal apartment buildings known as Aurora, Lavanda and Phylaria situated in the wc24 municipal area* (24 June 2003) (IDP 2002 – 2006, working document for Piet Smit).

Eitzen, B, (New World Associates) 2018: Louw's Bos Memorial Park, Heritage Impact Assessment,

Eitzen, B, (New World Associates) 2018: Louw's Bos Memorial Park: Visual Impact Assessment

Municipality of Stellenbosch: *Appendix 2: draft by-law relating to the management and administration of Stellenbosch municipality's immovable property*

Municipality of Stellenbosch: *Franschhoek Urban Design Study, July 2005: Addendum to the GAPP urban design framework study produced in 1997*

Municipality of Stellenbosch: *Towards a municipal land management policy, a discussion document, Stellenbosch Municipality: Municipal Land in process of alienation:*

Planning Partners. *Strategic Framework for Affordable Housing in the Franschhoek Valley.*

Smit, P. February 2008: *Stellenbosch municipality, land summit, a strategic analysis of Stellenbosch municipality's property portfolio (land and buildings) compiled by: Piet Smit, manager: property management and administration.*