

MORTALITIEs IMMORTALITY

DESIGN BRIEF DOCUMENT FOR STONE BRIDGE MEMORIAL PARK

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DESIGN BRIEF INTRODUCTION

Towards the end of the movie “Out of Africa”, Karen Blixen’s lover Dennis unexpectedly dies in a plane crash. The penultimate scene of the movie is his burial, on a hillside in the Kenyan bush. A small group of people stand around the grave, as Blixen struggles through reading a poem to her dead lover, one wonders how she will get through each verse without breaking down, but she does. She then picks up a handful of sand to be the first to throw it on the grave – but that is the one thing she cannot do. Clutching the dirt, she walks off into the bush, leaving the others to bury Dennis.

This scene reminds me that, whatever else it is, a funeral or cremation must dispose of the body. The thud of earth on the coffin, the closing of the crematorium curtains, this is what mourners have come to witness. This moment is the turning point that mourners dread, yet are relieved to be over and done with. It is this moment that ends what Turner has called ‘the liminal period’, the time during which the deceased is no longer alive, but not yet buried or disposed of. [1]

I never got to know my paternal grandparents and the death of all my grandparents and not being able to attend their funerals in Portugal has left an unclosed chapter in my life. Visiting their gravesites did help, but attending a funeral offers a sense of closure and acceptance of what we all know is inevitable.

People have a built-in fascination with death. People want to see the suffering and misery of others, somehow reminding themselves ‘Thank God it’s not me’. We will stand around and watch the misfortunes of others. Web sites such as rotten.com are a good example of this, an entire site dedicated to the tragedy of others. We as a society have addressed death and tragedy with humour in an attempt to disguise our inherent fear of our own mortality.

Recently Mark Gillman from 5FM Radio spoke about the lack of burial space in South Africa and the fact that due to the Aids epidemic graveyards are being filled and exhausted at a rapid rate. This led me to start thinking about our future and cremation came to mind. If one cremates the amount of space needed would be more than halved for double the amount of people. In discussions with various spiritual leaders over the last few months this topic remains one of controversy due to the interpretations of the Bible, Quran and the Torah scriptures as well as African Rituals and culture towards death and the afterlife.

The topic of cremation is an uncomfortable one, with it comes a lot of religious beliefs and varied opinions on the subject. It stirs up a lot of emotions. It was these emotions that I would like to explore within my own religious beliefs on the subject utilising stonework as an architectural anchor. Religion, spirituality, myth and belief in relation to the emotional aspects of death within humanity and its relationship to stone will form the basis of the architectural language of the crematorium.

www.cartoons4fun.com



Figure 002: Death and humour

CLIENT PROFILE

Client Name: **Mr. Salvador Gomez**Consortium Name: **Stone Bridge Memorial Park**

The client is a **private developer** who worked for the Greater Metropolitan Local Council of Johannesburg for the last 15 years. He originally joined the council as a horticulturist taking care of all cemeteries in and around Johannesburg. He was promoted to Head of the Department overseeing cemeteries and crematoria in the Johannesburg region.

With Mr. Gomez's **association to the funeral industry** for so many years his knowledge and experience in this field provided him with the facts and figures for all the cemeteries and crematoria in South Africa. The figures of deaths in South Africa indicated that an ever-increasing amount of people were being cremated.

Mr. Gomez together with a group of private financiers believe that there is a need for an additional crematorium in the Gauteng area and thus prepared a business plan for a new crematorium. The idea that one can provide a cremation service complete with an emotional experience for the greater public at an affordable rate compared to what is currently being offered within Gauteng is what Mr. Gomez believes will set this development apart from the rest.

ASHES TO ASHES



This is what's left after a \$5,000 cremation



This is what's left after a \$2,000 cremation

Figure 003: Ashes to ashes

PROJECT RATIONAL

Mr. Salvador Gomez together with his consortium have undertaken a feasibility study and have deduced that it would be viable to construct a new crematorium within the Irene or Olifantsfontein areas, providing a service to a growing population in that region of Gauteng.

Over the last few years' **cremation has been preferred over burial** in the developed areas of South Africa and the generally accepted reasons according to Mr. Alan Buff [2] are:

- Vandalism, theft and general **crime** to and within existing cemeteries
- **Emigration**, family members not in the country to look after grave sites
- **Costs of funerals**, cremations are one tenth of the cost of burial
- **Shortage of suitable cemetery ground** for burial in Gauteng
- **Environmental damage** to soil and groundwater

People are opting for cremation over burial for these main reasons, hence the need for a modern crematorium.

The **majority of crematoriums** in Gauteng are older than 50 years and the average age of the cremators are around 10-20 years. The running costs of maintaining American built gas cremators are huge and **unsustainable**.

With the conclusion of the World Summit on Sustainability in Johannesburg in 2002, the need for more **sustainable** and long term **crematoriums** are needed to meet the needs of the environmentally conscious population of the twenty first century.

TRANSLATING DEATH INTO ARCHITECTURE

Death is defined by the physical; a body ceasing to function and funerals are defined by the need to dispose of that body. According to Coupe in Keselman's book death could be seen physically as "a necessary end, an unconscious sleep, a light that goes out, the body returns to the elements, matter passes into other combinations and transforms itself" [3].

Humans have an inherent fear of the unknown and death is the last great mystery. This moral significance led previous societies to venerate their dead, who were buried with dignity and remembered with the help of monuments.

"Stones are dead things sleeping in quarries, but apses of St. Peter's are a drama" – Le Corbusier [4].

Le Corbusier was implying that the stone now assembled into a built form became alive, polished stone sparkling as if to shine forth the grace of God. The volume and the architecture providing the language for people to experience a sense of immortality.

This is also true for cemeteries, such as Ermenonville outside of Paris, "thus the entire Ermenonville was a landscape of illusion intended to transport the viewer into an arcadian world. When death was encountered it appeared in a peaceful setting fraught with sweet melancholy and nostalgia" [5].

The architecture of death is about journeys of illusion, where one can experience emotions and believe in something intangible like faith. No one likes the idea of simply 'dropping into nothingness or fading away'. Not only ourselves but especially for our loved ones in these emotional times. The funeral and the time leading up to the funeral are social happenings, whether or not they are religiously based.

Death transcends all religions and social status and class; it is the one true mystery of life. The architecture becomes the symbolic value of the faith in its shape, size and material selection. Symbolism becomes the key into the unknown world of the 'afterlife'.

Footnote : [3] Keselman (1993:169),

[4] Holzman (2001:7).

[5] Etlin (1984:209).

INTERNATIONAL - ORIGINS OF CREMATION

Open-pyre cremation is thought to have originated during the Neolithic period , about 3000BC in the East and between 2500BC and 2000BC to have been brought to the Mediterranean basin. The Greeks are believed to have introduced cremation to the Western world about 1000BC.

During the roman occupation of Britain, cremation was the general practice and was the normal method of the Romans until the 5TH century AD. According to one source, the move away from cremation was caused by the decline of the Roman Empire and the consequent disrepair of the crematoria, coupled with the rise of Christianity, which placed a stigma on cremation as being a pagan practice. Persecuted Christians were often cremated both as a punitive measure and to mock their belief in the Resurrection.

In the 19th century a number of factors resulted in cremation again becoming popular. In 1817 a Dr. Jamieson presented a paper entitled 'The Origin of cremation' to the Royal Society in which he advocated cremation. The British in India were familiar with open-pyre cremation and the Victorians were becoming more interested in productivity and less concerned with art and this resulted in discussion on the disposal of the dead being argued more from a functional point of view.

Modern furnace cremation really received its impetus from Italy. On 23 January 1874 Alberto Keller died and his will not only specified cremation, but also left money for experimental studies on cremation. These studies resulted in the world's first furnace crematorium being built in Milan, and on 22 February 1876 the embalmed body of Keller was cremated [6] [7] [8].



Figure 003a: Photograph of the cremation of Dr. William Price 1888

Footnote : [6] Molyneux (1985:46-47)

[7] www.religiousetolerance.org/crematio.htm (2003), Access 3 March 2003.

[8] www.bampfa.berkeley.edu/exhibits/greek/death.html (2003), Access 3 March 2003.

INTERNATIONAL - RELIGION & CREMATION

Judaism & cremation

Cremation is completely banned by traditional Jews, interment in a Jewish cemetery is mandated. The Torah commands burial as the accepted Jewish practice. Cremation was practiced by the Romans who destroyed the temple in Jerusalem and thus was associated with the enemies of the Jews. In addition cremation was the method used to dispose of millions of Jews during the holocaust [9].

Christianity & cremation

Today Christians have mixed thoughts to cremation. Until recently the Catholic Church had excommunicated anyone and their families who partook in cremation. However western Christians are favouring cremation as a means of disposing of Bodies in the more urbanised areas in lieu of burial. The church has now agreed to cremation, as do most Christian organisations. Reasons for Christians opting For cremation is economics, ecological sensitivity to the environment, the body is disposed of quickly rather than decay naturally [10].

Hinduism & cremation

The strongest believer in cremation their teachings dictate cremation, traditionally on a funeral pyre. Cremation is based on the belief that so long as the physical remains are present, the vital element of the real man will remain near it. Cremation causes their separation and permits the departure from terrestrial regions after death to occur more readily. [11].

Islamic & cremation

Similar to that of Judaism the ruling on cremation is banned, to a Muslim, the body is given in trust therefore the cutting of the body, the donation of organs and autopsies are prohibited. The Muslim believes that the soul remains in the body for a period of time after death. [12].

Traditional African religion & cremation

The African culture still believe in the ancestral world and the destruction of the Body will displease the ancestors and destroy the soul. Bodies must be buried whole [13].

Footnote : [9] www.qn.net/~cbt/quest1.html (2003), Access 3 March 2003.

[10] www.religioustolerance.org/crematio.htm (2003), Access 3 March 2003.

[11] Jaidev, Hindu Priest for Linasia, 4 February 2003, Personal Communication.

[12] Mohammed, Islamic Imaam for New Town, 19 February 2003, Personal Communication.

[13] Television Documentary, Special Assignment, SABC 3 (29 April 2003)

STATISTICS - INTRODUCTION

Market research and feasibility studies are the only sure way of verifying if a development or proposed project is actually required and if such a need exists for that facility or service. Over and above the analysis of the proposed site location that will follow later in this section the next and most accurate method of deriving facts on the feasibility for this type of socially driven development is through statistics. Both international and local statistics should be considered and verified fully prior to the evaluation of any potential site.

The following statistics provide a broad outline of Gauteng's population gender, population growth, death rates, financial income of households and cremation trends locally and internationally.

By understanding a statistical analysis for a particular subject over a period of time decisions can be derived from them to establish future trends and forecast possible requirements and needs within communities and for a city as a whole.

INTERNATIONAL STATISTICS

The predominant religion in the United States of America and Canada is Christianity, and as North America becomes progressively more secular it is expected that cremation will become the most favoured means of disposing of bodies. A second factor is ecological sensitivity. Over the last decade North America has seen a vast increase in the quantity of annual cremations. On average of 21% Americans and 36% of Canadians are cremated [14].

The pie charts indicate that the percentage of cremations in relation to deaths for both the USA and that of Canada by the year 2010 would have increased substantially. This indicates that cremation internationally within Christian countries is increasing steadily from figures recorded in 1998 and that cremation is becoming an acceptable means of disposal [15].

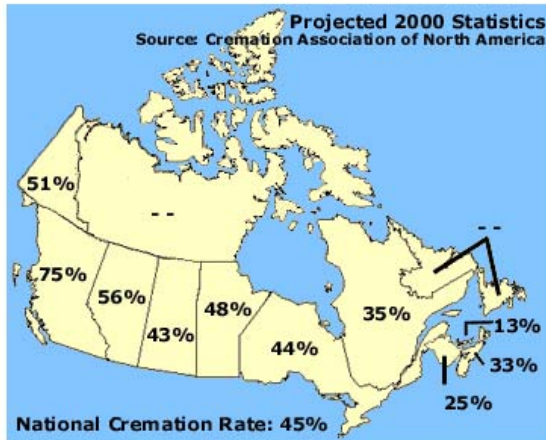


Figure 004 : Statistics of the Canada

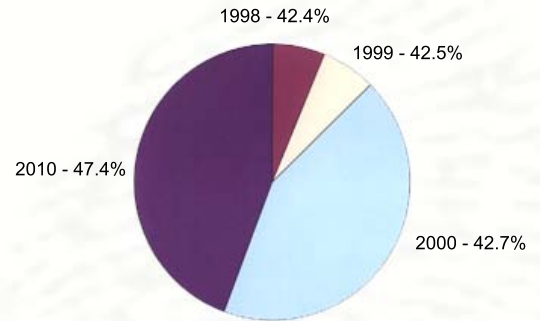


Figure 005 : Population Percentage Cremated in Canada



Figure 006 : Statistics of the USA

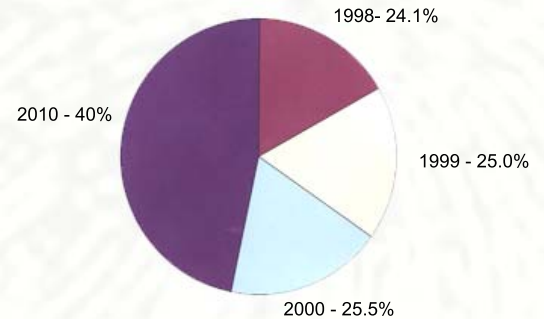


Figure 007 : Population Percentage Cremated in USA

Footnote : [14] www.cremation.org/stats.shtml (2003), access 3 March 2003.

[15] www.religioustolerance.org/crematio.htm (2003), access 3 March 2003.

LOCAL STATISTICS - GAUTENG CREMATORIA

Because our proposed site location falls within the Gauteng boundary one must look at the statistics for all crematoria in this region. Over a 10 year period the average number of cremations have increased by 6,8%. The number of crematoria has also increase from only 5 in 1991 to 8 crematoria in 2000, this is predominantly due to the temporary closure of Johannesburg's largest crematorium (Braamfontein) in 2000 and the poorly maintained cremators.

This indicates that the need for crematorium facilities within Gauteng has been increasing steadily over a 10 year period and that this indicates that cremation is slowly becoming an acceptable form of disposal within this province. The provision of an additional crematorium within Gauteng for the future becomes a viable proposition. [16].

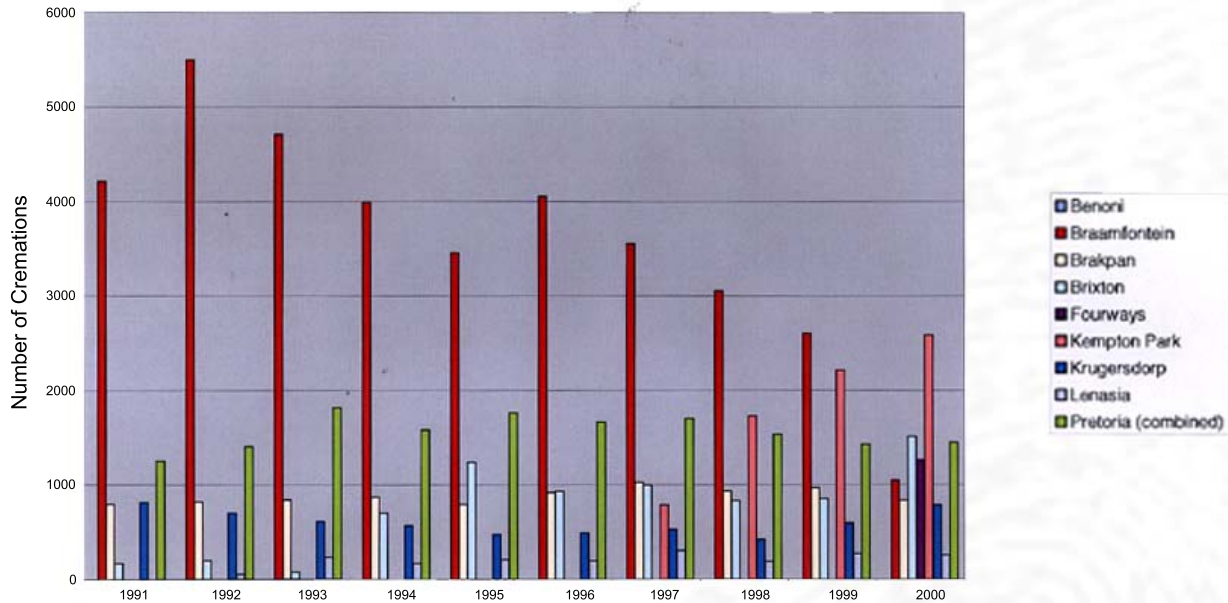


Figure 008: Statistics for Gauteng Crematoria

Footnote : [16] Buff, (2003). Personal Communication

LOCAL STATISTICS - KEMPTON PARK CREMATORIUM

The statistics for South African cremations versus the death rate are difficult to obtain as no single research has been undertaken comparing the mode of disposal versus deaths [17].

The crematorium nearest our proposed development is the Kempton Park Crematorium. If one analysis their annual statistics for the last 5 years an increase in the number of cremations have occurred, again this indicates that more people are opting for this form of disposal. The number of deaths peak over the months of July, August and January. These can be attributed to the aged dying over winter and generally the youth dying over the December holidays is motor vehicle accidents

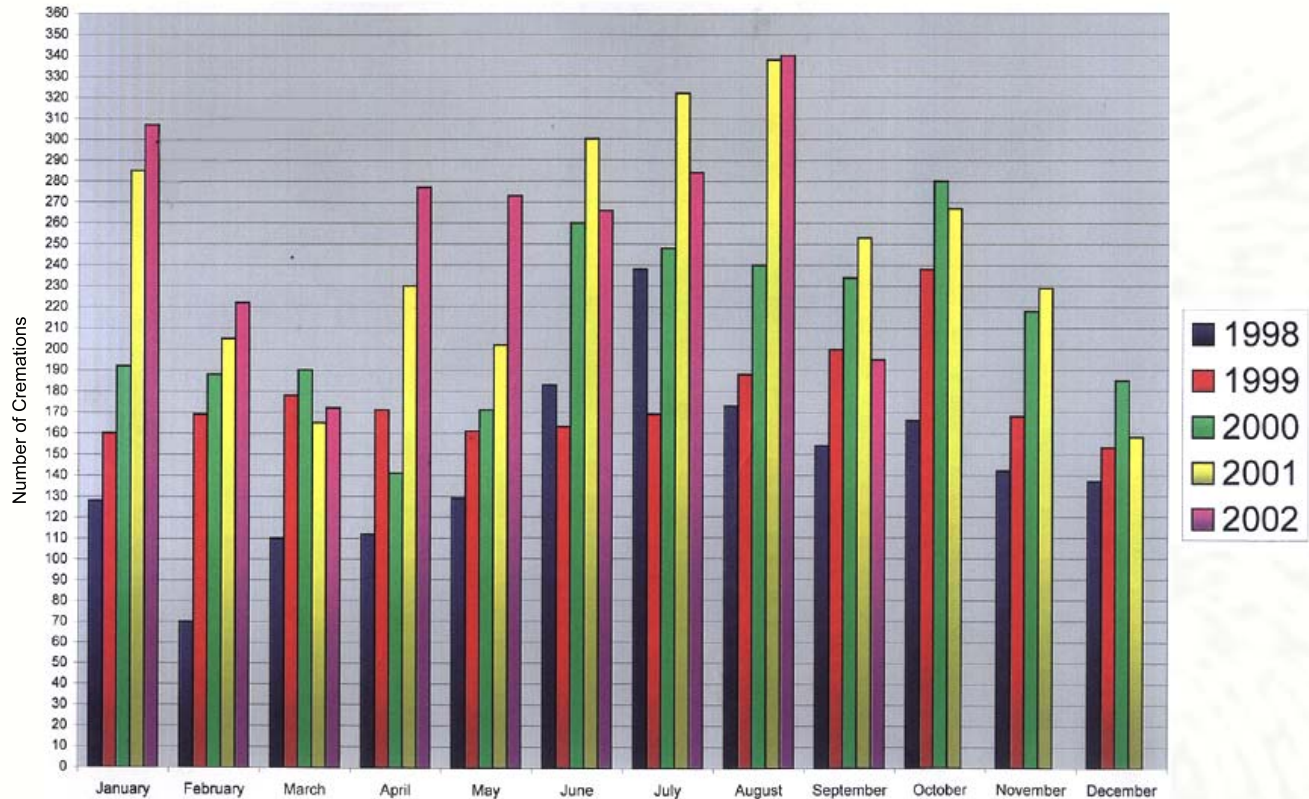


Figure 009 : Kempton Park Crematorium Statistics

Footnote : [17] Reenen, Ilse, Statistics South Africa, 19 February 2003, Personal Communication

LOCAL STATISTICS - PRETORIA CREMATORIUM

One must now look at the demographics of a single crematorium. The Pretoria Crematorium is the next closest crematorium to our proposed development. The statistics for the Pretoria crematorium for the month of October 2002 indicate that the white population group contributes to the majority of all cremations undertaken in this crematorium. However the largest population Group in South Africa namely Africans/blacks are being cremated. This is mainly due to the Local Governments Policy of not burying paupers but to have them cremated and finally disposed of in a mass grave for such individuals in an attempt to save on graveyard space. [18].

The main objection for Africans/blacks opting for burial versus cremation is based on their ancestral beliefs. The belief that cremation destroys the soul and thus the deceased person cannot join his or her ancestors in the afterlife even though they may be of a Christian faith [19].

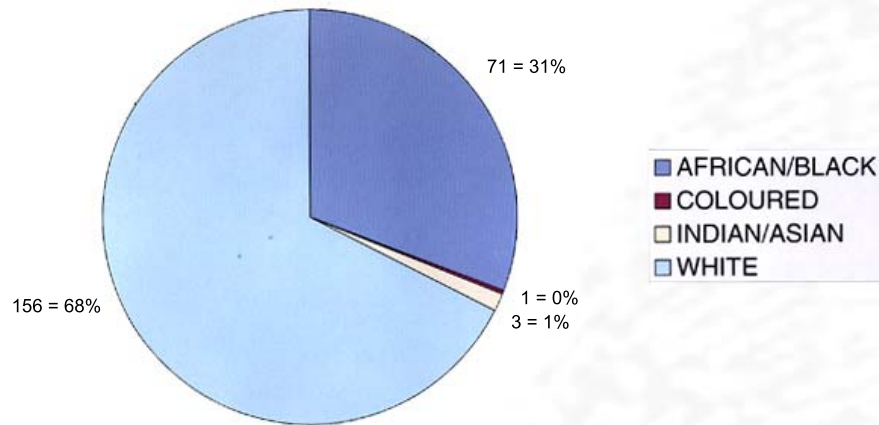


Figure 010: Pretoria Crematorium Statistic for October 2002

Footnote : [18] Pretoria Crematorium, 26 February 2003, Personal Communication
[19] Television Documentary, Special Assignment, SABC 3, 29 April 2003.

LOCAL STATISTICS - RELIGION

The following religious group statistics for the areas around the proposed Stone Bridge Memorial Park indicate that the majority of the population in this area are of the Christian faith, and the most likely to be cremated as Christianity and Hinduism are the only religions open to the idea of cremation, thus the construction of this form of facility could become feasible [20].

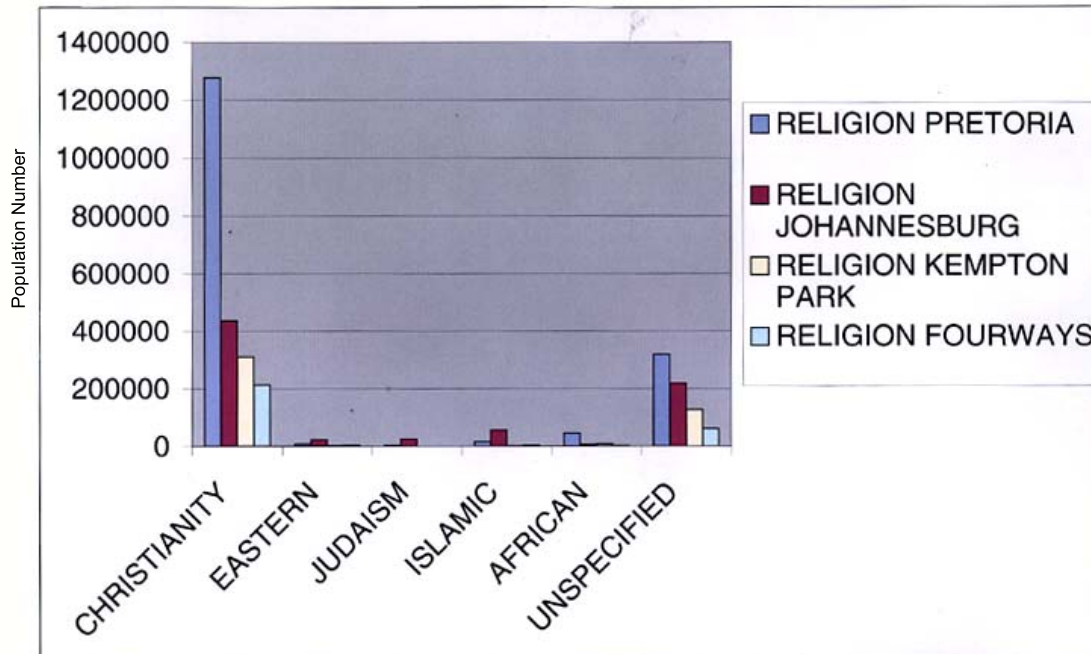


Figure 011: Combined Religious Group Statistics

Footnote : [20] Statistics South Africa, Pretoria, Sensus of 1996

LOCAL STATISTICS - POPULATION GROUP AND GENDER

The following population statistics for the areas around the proposed Stone Bridge Memorial Park indicate that the African/black population group make up the majority of the population in these areas. However due to they're ancestral belief systems are unlikely for the foreseeable future participate in the cremation of there dead. The white population group form the next majority and are most likely to be cremated as indicated in Figure 10 on page 20 [21].

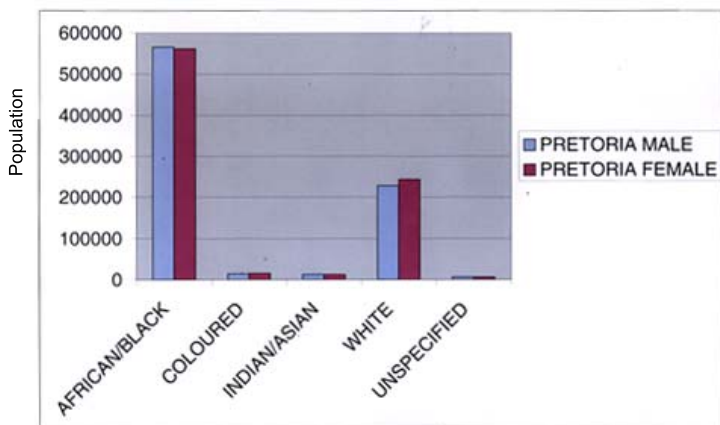


Figure 012: Pretoria Population Statistics

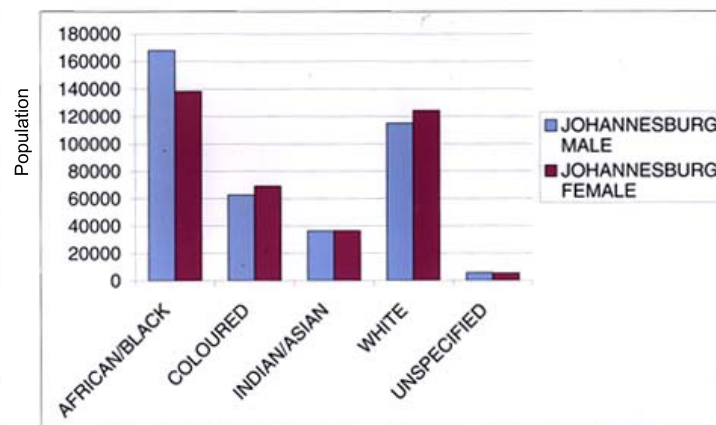


Figure 013: Johannesburg Population Statistics

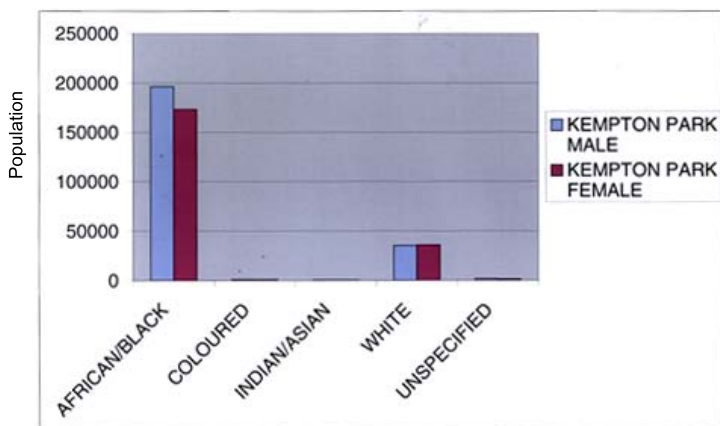


Figure 014: Kempton Park Population Statistics

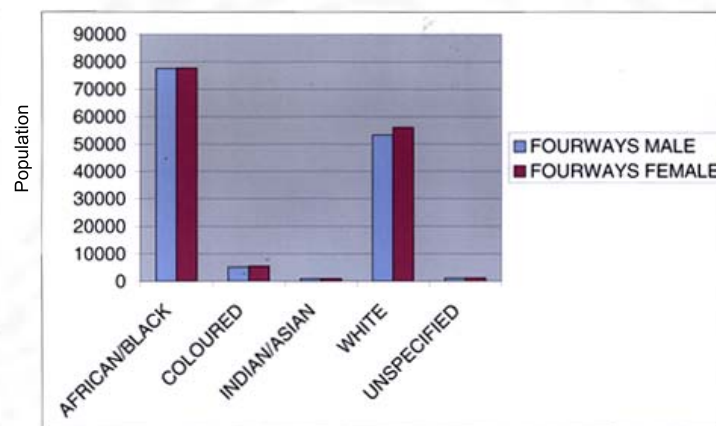


Figure 015: Fourways Population Statistics

Footnote : [21] Reenen, Ilse, Statistics South Africa, 19 February 2003, Personal Communication

LOCAL STATISTICS - POPULATION AGE

The following population age statistics for the areas around Irene and Olifantsfontein indicate that the majority of the population are in the working age group of 20 to 59 years. This population group is the most likely to be affected by accidents and HIV/Aids.

Refer to deaths by age on page 25 [22].

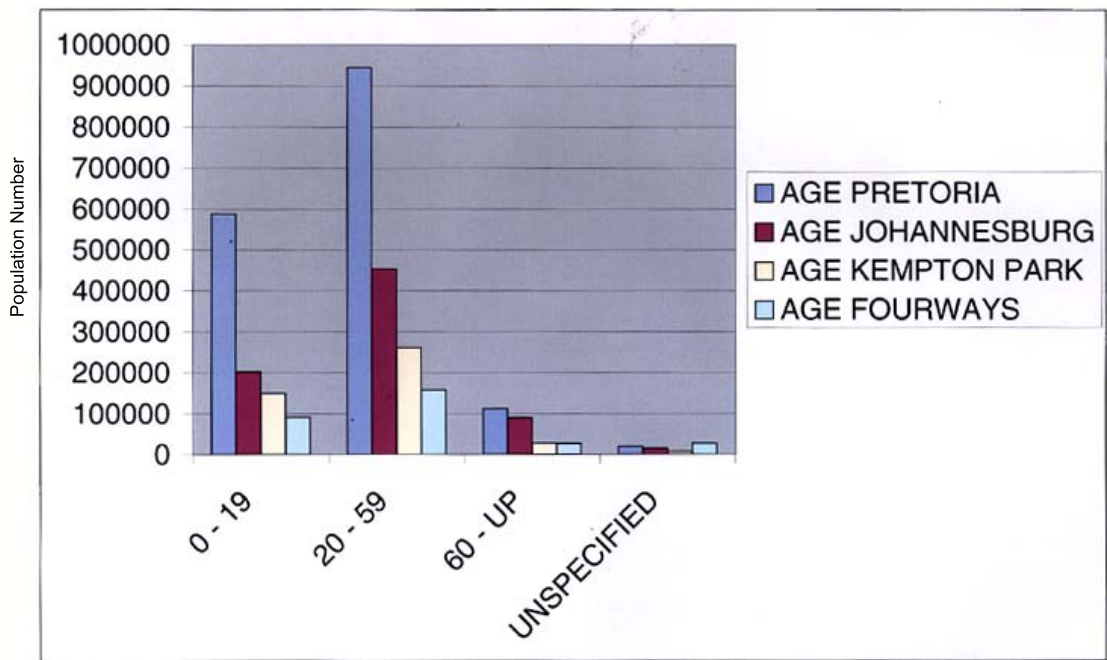


Figure 016: Combined Population Age Statistics

LOCAL STATISTICS - POPULATION INCOME

The following population income statistics for the areas around our proposed Stone Bridge Memorial Park indicate that the majority of the population live below an average income of R3,500.00 a month and hence the cost of a funeral becomes a costly expense [23].

As part of the African/black culture the family of the deceased must host all visitors who come to their home, and serve them well with food and drink. This ritual can last for a week or as long as a month. Further to the stigma of cremation in the African black culture, funerals have become costly affairs from the actual funeral to the additional expense of a massive wake [24].

Cremation is a cost effective means of disposal alleviating the burden of frequent and expensive funerals.

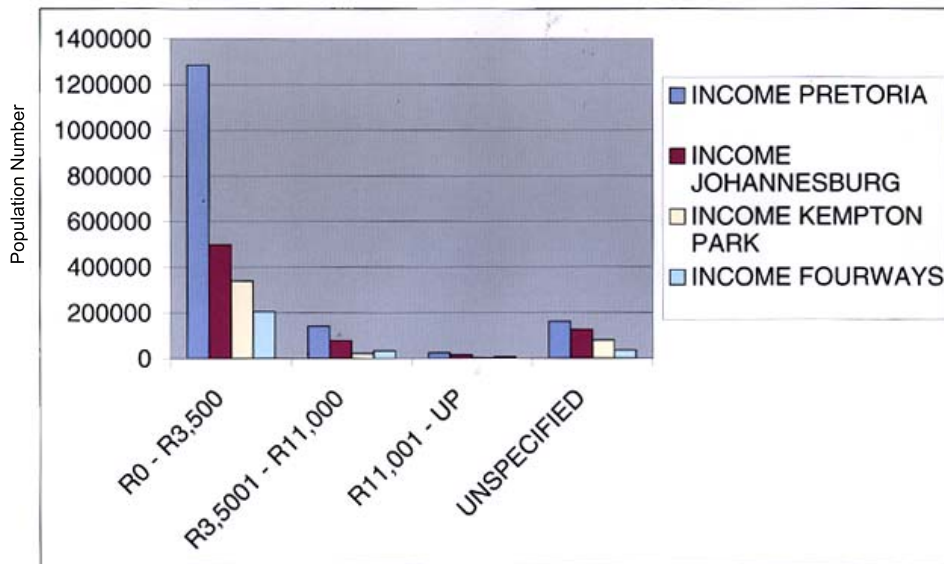


Figure 017: Combined Income Statistics

Footnote : [23] Statistics South Africa, Pretoria, Sensus of 1996.
 [24] Television Documentary, Special Assignment, SABC 3, 29 April 2003.

LOCAL STATISTICS - DEATHS BY AGE

The statistics for deaths over a single year in 1996 within the areas of Irene and Olifantsfontein indicate a high percentage of deaths amongst children and the reproductive and economically active sector of the population group aged 15-49 [25].

From Figure 16 this indicates that on average one sixth of the population died in that year consuming vast areas of cemetery space on an annual basis.

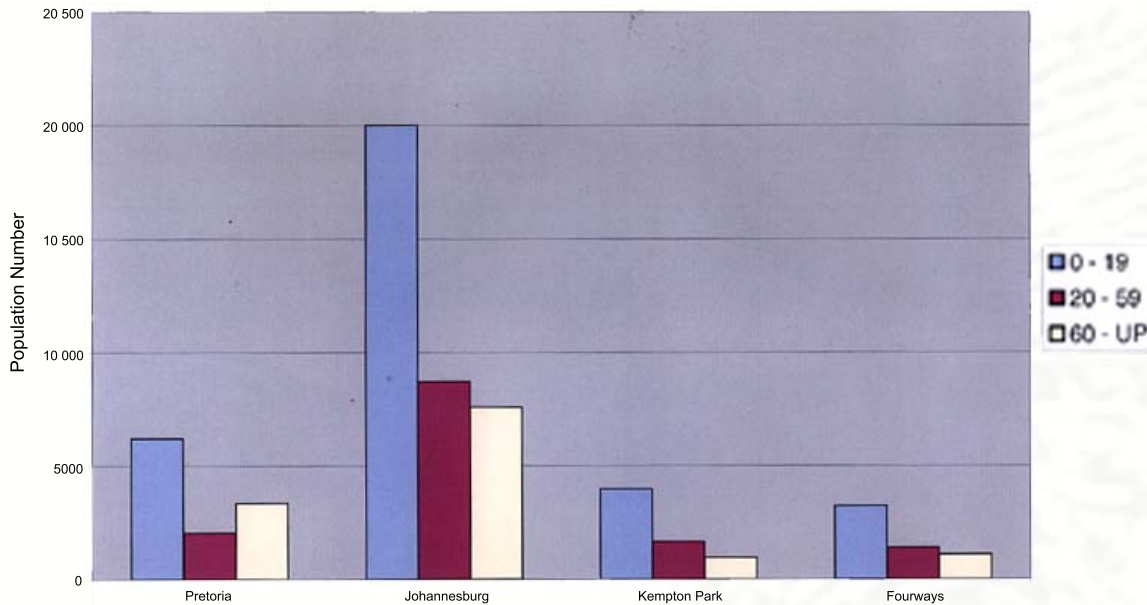


Figure 018: Statistics for Deaths in 1996

STATISTICS - OVERVIEW

The trend for cremating the dead is increasing steadily internationally as indicated in Figures 4-7 on page 17. From the range of statistics presented, the feasibility of cremation as a means of disposal over burial not only for Gauteng but also for South Africa is slowly indicating that this trend is starting to become a reality.

The populations' perception of cremation is changing and this is evident from the statistics in Figure 8 that indicates that over a period of 10 years an increase of 6,8% was achieved in Gauteng alone. However the largest population group in South Africa are still against the option of cremation. This in turn is putting strain on our land resources as cemeteries are filled at a rapid rate due to a predominantly high rate of HIV/Aids sufferers in South Africa [26].

Our environment is under threat of destruction from the rate of deaths sustained in our population over any given year. High mortality rates due to disease and un-natural causes deplete our land resources. Our nation struggles for survival economically and cremation offers a cost effective alternative of disposal at a fraction of the cost of a traditional burial [27].

Footnote : [26] Television Documentary, Special Assignment (29 April 2003)

[27] Buff, Alan, Head of Cemeteries and Crematoria, Metropolitan Council of Johannesburg,
28 February 2003, Personal Communication

SITE SELECTION

An analysis was undertaken to evaluate the geographic locality of each crematorium in Gauteng versus its community coverage using a 30 kilometer radius. Two zones were identified as being potential areas for the placement of a new crematorium.

The criteria for assessing the potential of any given area are its direct population size, its proximity to an urban area, accessibility and development potential for future population growth in that given area.

Zone option 'A'

This area is located to the north east of Gauteng and has had over the last few years a **substantial population increase** that is still growing. The population profile fits in with the type of person who ultimately has his or her body cremated. The Olifantsfontein and Irene areas are ideal areas for this purpose as it is **situated centrally between Tembisa and Centurion** within an economically growing area.

The placement of a crematorium in this area falls within the proposed Gauteng urban edge.

Zone option 'B'

This area is located to the south west of Gauteng and would be ideal for a crematorium, however the **very low rural population numbers** do not justify the construction of a crematorium. This area also falls outside the Gauteng urban edge recommendations.

Conclusion

The placement of a crematorium in Zone 'A' would be ideal as it offers a service to a new community and would be economically located to assist the local Tembisa inhabitants with employment and finally an alternative means of disposal of bodies.

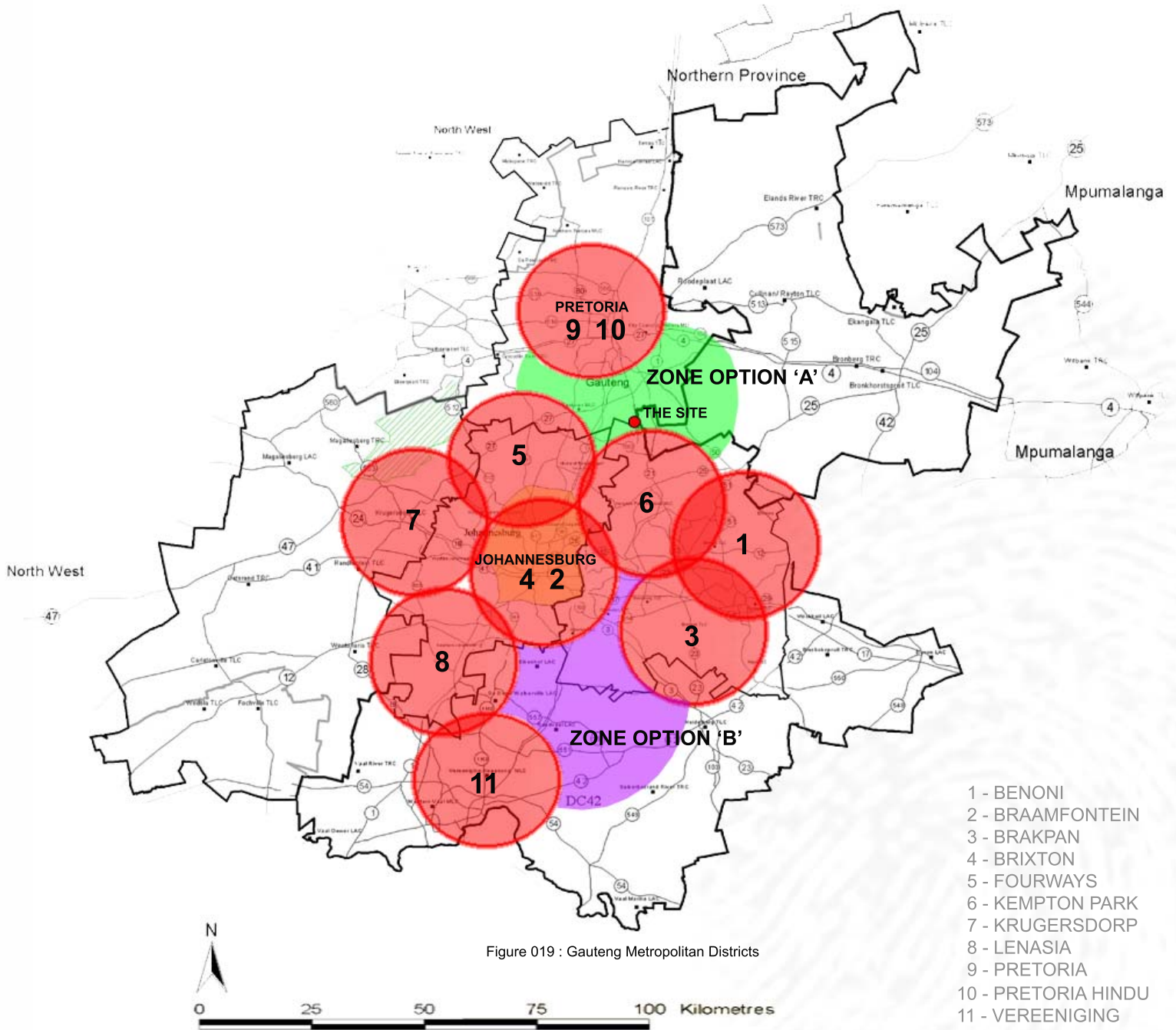


Figure 019 : Gauteng Metropolitan Districts

- 1 - BENONI
- 2 - BRAAMFONTEIN
- 3 - BRAKPAN
- 4 - BRIXTON
- 5 - FOURWAYS
- 6 - KEMPTON PARK
- 7 - KRUGERSDORP
- 8 - LENASIA
- 9 - PRETORIA
- 10 - PRETORIA HINDU
- 11 - VEREENIGING

SITE SELECTION

The site situated in zone 'A' is located along the proposed Emerging Economic Development Corridor linking Kempton Park and Centurion as envisaged by the Centurion Metropolitan Council. This further aids the placement of this facility along a highly trafficable route.

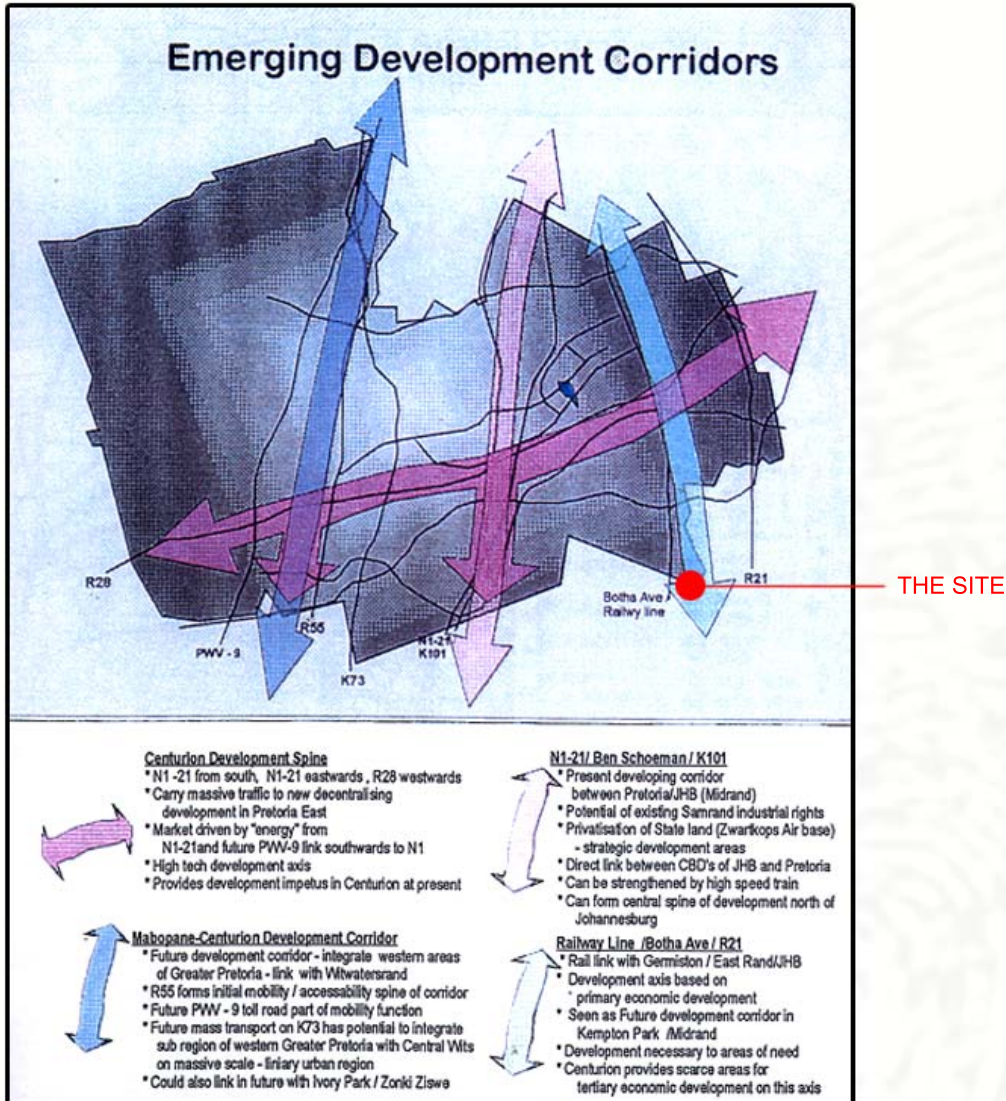


Figure 020: Emerging Development Corridors

KEY USER MAP LAYOUT

As mentioned the site is located between the Local Councils of Centurion and Olifantsfontein. The communities envisaged to make use of this crematorium would be the immediate suburbs of Irene to the north and Clayville / Olifantsfontein to the south. Spreading slightly further afield within a 30 kilometer radius we find the suburbs of Irene Estates and Centurion to the north and Tembisa to the south. It is envisaged by the Centurion Council that the majority of growth for the future would be to the northeast enlarging the suburb of Irene Estates.

This votes well for the placement of a crematorium complex in this area of Gauteng as future expansion in an urban environment equates to a population growth and ultimately an increase in mortality rates.

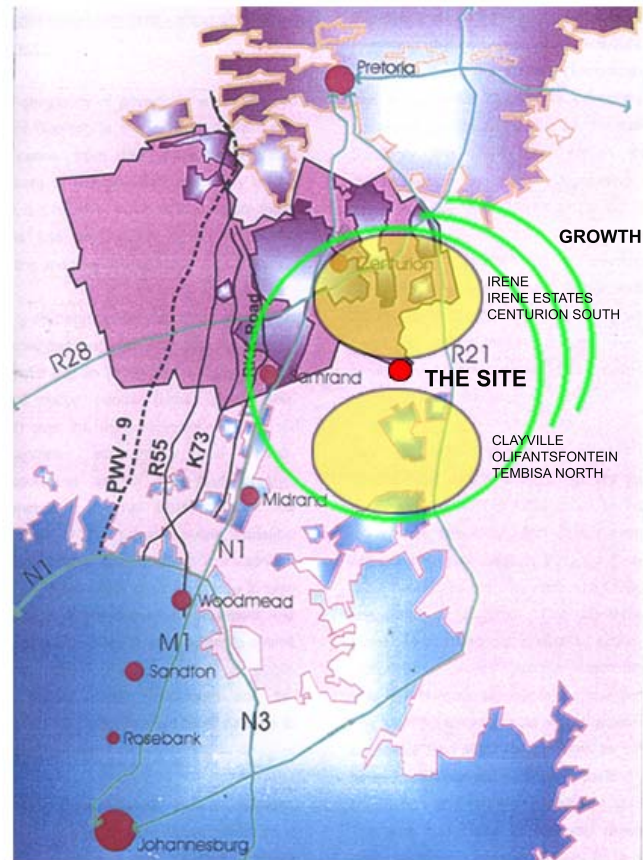


Figure 021: User Map Layout



KEY ROLE PLAYERS

The client before undertaking this project must employ the services of a number of consultants, some with very short involvement periods to those who see the project from its inception through to the final completion. All these consultants, no matter the involvement, are all key role players in making this project a reality.

CLIENT : STONE BRIDGE MEMORIAL PARK



ARCHITECT : AMANDIO CASTANHEIRA



QUANTITY SURVEYOR : SBDS



TOWN PLANNER : F. POHL & PARTNERS

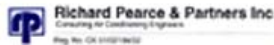
ENVIRONMENTAL CONSULTANT : GWEN BREEDLOVE



STRUCTURAL ENGINEER : PURE CONSULTING










ELECTRICAL ENGINEER : BELL PAGE & PILLING



MECHANICAL ENGINEER : RICHARD PEARCE & PARTNERS

KEY ROLE PLAYERS

	<p>TRAFFIC ENGINEER</p>	<p>: INNOVATIVE TRAFFIC SOLUTIONS</p>
	<p>GEOTECH ENGINEER</p>	<p>: THEMBA CONSULTING</p>
	<p>FIRE ENGINEER</p>	<p>: FIRE SAFETY CONSULTING</p>
	<p>LAND SURVEYOR</p>	<p>: BUCKLEY & STRYDOM</p>
	<p>LANDSCAPE ARCHITECT</p>	<p>: GREEN INC.</p>
	<p>LEGAL CONSULTANT</p>	<p>: STRAUSS SCHER</p>
	<p>BRANDING CONSULTANT</p>	<p>: ENTERPRISE IG [JOHANNESBURG]</p>

Key role players are not only confined to the professional team, but the immediate community would also become a key member of the entire process as interested and affected parties of this development. Thus a representative for the community would also form part of the overall project team.

PROJECT BRIEF

CHARACTER AND RELATIONSHIP BETWEEN COMPONENTS

As a memorial park, the aesthetics must be an expression of newness, upliftment and innovation. At the same time it must not be intimidating or alienating to ordinary people. It is a site where people must feel welcoming and inviting.

It is important for the design to accommodate for experiential tours throughout the site. It needs to allow people to physically and emotionally travel a journey between the living world and that of the spiritual world.

The area parallel to the Oifantspruit is environmentally sensitive. as is evidenced by the scarred mining landscape. Therefore, a major requirement is that the development be designed in an environmentally sensitive way in order to compliment its location. In this regard, all landscaping must be indigenous and must be sensitive to the existing climate and natural environment of the site.

The relationship of the components to each other, to the spatial frameworks of both the Tshwane and Ekurhuleni Metropolitan Councils and to the environment around is also critical.

The aesthetic and architectural character of the proposals must reflect that the complex is located in South Africa.

The site for the memorial chapel, crematorium and gardens of remembrance is an area which must be focused on the pedestrian, this is to maximise the emotional experience of the links and paths in and around the memorial gardens and buildings. Only service vehicles and crematorium vehicles will be allowed on limited portions of the site.

The materials used and the manner in which the buildings and spaces relate to the Site contours and key features should be carefully considered in the design [28].

PROJECT BRIEF GENERAL DESIGN ISSUES

The design must take into account the following basic requirements. These are elements of the building that the client feels strongly about. All buildings and spaces are to comply with national building regulations in terms of their structural integrity and are to conform to all minimum standards as set out by the National Building Code. All buildings and spaces are to comply with legislative bylaws. All buildings and spaces are to be designed to cater for physically disabled persons so that all who visit Stone Bridge Memorial Park may join in the experiences offered. The design must also take the climate conditions of the area into account and minimize the use of unsustainable energy users such as air-conditioners [29].

MATERIAL REQUIREMENTS

The main design requirement for both the chapel the crematorium and elements of the memorial garden is that they are to be constructed from stone. One of the financiers to this development owns two quarry sites in the Pietersburg and in the Vereeniging area. Sandstone or stone should form the basis of the external building envelope finish. This finish will complement the emotional aspects associated with death. As the site is rich in dolomite, this stone will also be used where ever possible in a non structural manner. A nearby lime quarry due to its close proximity to the site could be used to supply all the lime required for the production of concrete and mortar.

PROJECT BRIEF

CREMATORIUM DESIGN REQUIREMENT

The client has a strong environmental conviction and believes that the only way for mankind to survive in harmony with the planet is to utilize sustainable means of energy use. He recalls the story of Archimedes who set fire to enemy ships using large solar mirrors, utilising the energy of the sun to convert radiated light into fire.

An entrepreneur has patented a solar energy crematorium in the United States and this is the main design approach to be followed for the crematorium. Alternative energy sources for the cremator needs to be investigated before opting for a standard gas cremator. The Figure below indicates and envisaged design option for solar cremation.

The new development must conform and exceed current environmental standards and be sustainable in all factors of its construction, detailing and ultimate running. The new crematorium must be designed to cater for the twenty first century as well as the next century.

The new development is to be called 'Stone Bridge Memorial Park'.

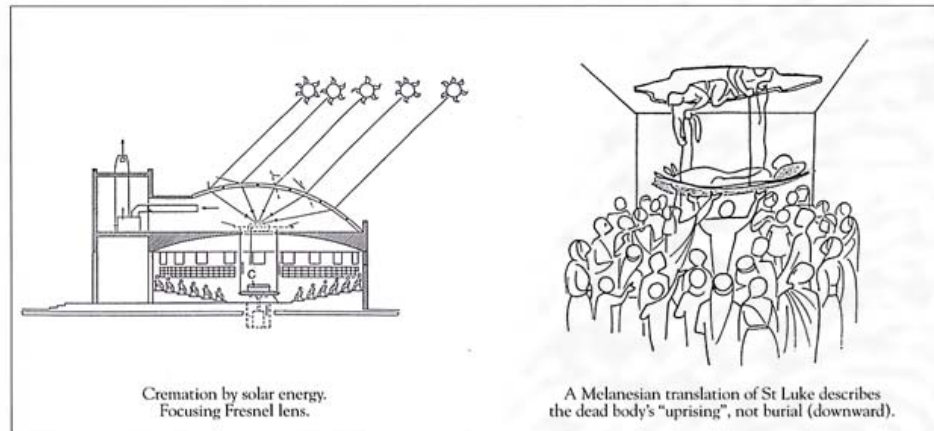


Figure 023: Solar Crematorium

PROJECT BRIEF MEMORIAL CHAPEL DESIGN REQUIREMENT

The memorial chapel should facilitate the process of celebrating the life of the deceased, preserving the memory of that person in a holistic way.

The memorial chapel is a spiritual centre of the site. This spirituality derives from the human experience that transcends all religious denominations and divisions. This is a space for private reflection, acknowledgement, remembrance, mourning and inspiration. The visitor should experience emotions deeply personal.

The symbolism used in the memorial chapel area to portray reflection of memory will play a crucial role in reinforcing a sense of contemplation.

The chapel should be located to the north of the site, with access off Glen Avenue, connected via pathways to the chapel structure [30].

GARDEN OF REMEMBRANCE DESIGN REQUIREMENT

An indigenous garden will form the external environment of Stone Bridge Memorial Park. The garden will extend from the north of the site, across the Olifantspruit river and enclose the crematorium with gathering areas and rest areas.

The garden will provide spaces primarily for private reflection and spiritual fulfillment creating a sense of relaxation within a natural environment. It will link to the main pedestrian paths joining the memorial chapel and the crematorium.

The garden areas must also acknowledge and retain its mining history and the scar it left in the landscape [31].

Footnote : [30] Freedom Park Architectural Competition Manual (2002), this document was used as an example on how to set up my brief.

[31] Freedom Park Architectural Competition Manual (2002), this document was used as an example on how to set up my brief.

ACCOMODATION SCHEDULE						
	Room Name	Room Function	Room Size	Occupancy Class	Design Population *	Population No.
1	Main Chapel	Memorial Service	20m x 25m	Worship - A4	1 Person / 1m ²	50 people
2	Secondary Chapel	Memorial Service	10m x 15m	Worship - A4	1 Person / 1m ²	20 people
3	Tertiary Chapel	Memorial Service	10m x 15m	Worship - A4	1 Person / 1m ²	20 people
4	Viewing Room	Family Room	5m x 5m	Exabition Hall - C1	1 Person / 10m ²	5 people
5	Admin Office	Clerical	5m x 3m	Offices - G1	1 Person / 15m ²	5 people
6	Christian Priest Room	Sacristy	3m x 3m	Offices - G1	1 Person / 15m ²	2 people
7	Hindu Priest Room	Sacristy	3m x 3m	Offices - G1	1 Person / 15m ²	2 people
8	Managers Office	Clerical	3m x 3m	Offices - G1	1 Person / 15m ²	2 people
9	Public Entrance	Circulation	10m x 5m	Worship - A4	1 Person / 1m ²	20 people
10	Circulation Hall	Circulation	10m x 10m	Worship - A4	1 Person / 1m ²	50 people
11	Female Public Toilet	Ablutions	5m x 5m	Worship - A4	Per Table 6 #	Per Table 6 #
12	Male Public Toilet	Ablutions	5m x 5m	Worship - A4	Per Table 6 #	Per Table 6 #
13	Crematorium	Disposal Room	10m x 10m	Moderate Risk Industrial - D2	1 Person / 15m ²	4 people
14	Crematorium Lobby	Circulation	10m x 5m	Moderate Risk Industrial - D2	1 Person / 15m ²	2 people
15	Crematorium Managers Office	Clerical	3m x 3m	Offices - G1	1 Person / 15m ²	2 people
16	Mortuary	Storage	6m x 2m	Moderate Risk Storage - J2	1 Person / 50m ²	1 person
17	Referee Room	Medical Doctor	3m x 3m	Offices - G1	1 Person / 15m ²	2 people
18	Cremulator Room	Refinement of Ashes	2m x 2m	Low Risk Storage - J3	1 Person / 50m ²	2 people
19	Ash Store	Storage	2m x 2m	Low Risk Storage - J3	1 Person / 50m ²	1 person
20	Tool Store	Storage	2m x 2m	Low Risk Storage - J3	1 Person / 50m ²	1 person
21	Female Staff Change Room	Ablutions	5m x 5m	Moderate Risk Industrial - D2	Per Table 6 #	Per Table 6 #
22	Male Staff Change Room	Ablutions	5m x 5m	Moderate Risk Industrial - D2	Per Table 6 #	Per Table 6 #
23	Memorial Ash Room	Internment of Ashes	30m x 30m	Low Risk Storage - J3	1 Person / 50m ²	20 people
24	Staff Canteen	Staff Relaxation	10m x 5m	Entertain & Public Assembly - A1	1 Person / 1m ²	10 people
25	A/C Plant	Services	5m x 3m	Plant Room - D4	1 Person / 50m ²	2 people
26	Electrical Substation Room	Services	5m x 3m	Plant Room - D4	1 Person / 50m ²	2 people
27	Sewer Disposal Room	Services	3m x 3m	Plant Room - D4	1 Person / 50m ²	2 people
28	Refuse Recycle Room	Services	5m x 5m	Plant Room - D4	1 Person / 50m ²	2 people
29	Vehicle Parking Areas	Storage	100 Vehicles	Open Parking	None	None
* National Building Regulations SABS 0400 - Design Population Requirements						
# National Building Regulations SABS 0400 - Design Ratio of Sanitary Fittings to Population						

[32]

Table 001: Accomodation Schedule Part 1

ACCOMMODATION SCHEDULE						
Room Name	Fire Requirements *	Lighting	Ventilation #	Acoustics \$	User	
1 Main Chapel	30 minutes	Natural	3,5 l/s per person	Yes	Public	
2 Secondary Chapel	30 minutes	Natural	3,5 l/s per person	Yes	Public	
3 Tertiary Chapel	30 minutes	Natural	3,5 l/s per person	Yes	Public	
4 Viewing Room	60 minutes	Natural	5 l/s per person	Yes	Public	
5 Admin Office	30 minutes	Natural	5 l/s per person	Yes	Staff	
6 Christian Priest Room	30 minutes	Natural	5 l/s per person	Yes	Staff	
7 Hindu Priest Room	30 minutes	Natural	5 l/s per person	Yes	Staff	
8 Managers Office	30 minutes	Natural	5 l/s per person	Yes	Staff	
9 Public Entrance	30 minutes	Natural	3,5 l/s per person	Yes	Public	
10 Circulation Hall	30 minutes	Artificial	3,5 l/s per person	Yes	Public	
11 Female Public Toilet	30 minutes	Artificial	25 l/s per person	No	Public	
12 Male Public Toilet	30 minutes	Artificial	25 l/s per person	No	Public	
13 Crematorium	30 minutes	Natural	7,5 l/s per person	No	Staff	
14 Crematorium Lobby	30 minutes	Natural	7,5 l/s per person	No	Staff	
15 Crematorium Managers Office	30 minutes	Natural	7,5 l/s per person	Yes	Staff	
16 Mortuary	60 minutes	Artificial	7,5 l/s per person	No	Staff	
17 Referee Room	30 minutes	Artificial	5 l/s per person	Yes	Staff	
18 Cremulator Room	60 minutes	Artificial	5 l/s per person	Yes	Staff	
19 Ash Store	60 minutes	Artificial	1 l/s per person	No	Staff	
20 Tool Store	60 minutes	Artificial	1 l/s per person	No	Staff	
21 Female Staff Change Room	30 minutes	Artificial	25 l/s per person	No	Staff	
22 Male Staff Change Room	30 minutes	Artificial	25 l/s per person	No	Staff	
23 Memorial Ash Room	60 minutes	Natural	5 l/s per person	Yes	Staff	
24 Staff Canteen	30 minutes	Natural	17,5 l/s per person	Yes	Staff	
25 A/C Plant	30 minutes	Artificial	1 l/s per person	Yes	Staff	
26 Electrical Substation Room	30 minutes	Artificial	1 l/s per person	No	Staff	
27 Sewer Disposal Room	30 minutes	Artificial	1 l/s per person	No	Staff	
28 Refuse Recycle Room	30 minutes	Artificial	1 l/s per person	Yes	Staff	
29 Vehicle Parking Areas	No Requirement	No Requirement	No Requirement	No Requirement	Public & Staff	
* National Building Regulations SABS 0400 - Structure Stability for Fire Design Requirements						
# National Building Regulations SABS 0400 - Minimum Requirements for Air Changes per Person						
\$ Minimum Requirement with regards to Acoustics in various rooms						

[33]

Table 002: Accommodation Schedule Part 2