GEORGE
TEL: +27 (0) 44 873 4923 **FAX:** +27 (0) 44 874 5953
EMAIL: info@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: 102 Merriman Street, George 6530
PO BOX: 9087, George , 6530

CAPE TOWN
TEL: +27 (0) 21 554 5195 **FAX:** +27 (0) 86 575 2869
EMAIL: betsy@sescc.net **WEBSITE:** www.sescc.net
ADDRESS: Tableview, Cape Town, 7441
PO BOX: 443, Milnerton, 7435

REVISED POST-APPLICATION DRAFT BASIC ASSESSMENT REPORT

FOR THE

PROPOSED ESTABLISHMENT OF A CREMATORIUM FACILITY AND ASSOCIATED INFRASTRUCTURE ON ERF 2433, MONTAGUE GARDENS, CITY OF CAPE TOWN MUNICIPALITY, WESTERN CAPE.

APPLICANT:	PLATINUM PRIDE CREMATORIUM CONTACT: MR SYBRAND TEUBES
ENVIRONMENTAL CONSULTANT:	SHARPLES ENVIRONMENTAL SERVICES CC AUTHOR: MISS AMEESHA SANKER REVIEWER: MRS BETSY DITCHAM (EAPASA 1480)
DEA & DP PROJECT REFERENCE:	16/3/3/1/A1/20/3027/22
SES REFERENCE NUMBER:	CT24/RDBAR/09/22
DATE:	September 2022

Western Cape Government
Environmental Affairs and Development Planning

FORM NO. BAR10/2019

BASIC ASSESSMENT REPORT

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

NOVEMBER 2019

(For official use only)	
Pre-application Reference Number (if applicable):	**16/3/3/6/7/2/A1/20/3065/22**
EIA Application Reference Number:	**16/3/3/1/A1/20/3027/22**
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

PROPOSED ESTABLISHMENT OF A CREMATORIUM FACILITY ON ERF 2433, MONTAGUE GARDENS, CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY.

GENERAL PROJECT DESCRIPTION

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

Sharples Environmental Services cc (SES) has been appointed by Mr Sybrand Teubes of Ikamva Green Holdings, trading as Platinum Pride Crematorium, to undertake the environmental assessment, in accordance with the National Environmental Management Act, 1998 (Act 107 of 1998), in terms of the Environmental Impact Assessment Regulations, 2014 (as amended 2017).

The existing warehouse facility is intended to be refurbished, to accommodate the crematorium and associated infrastructure. The proposed scope of works includes the renovations of the existing warehouse facility as follows:

- Installation of 6 x BA2 cremators (manufactured under a license from Johnson Thermal Engineering (JTE)) specifications include: Locally manufactured and distributed in South Africa; Chamber 1: starved combustion primary chamber cremator, ensuring gas velocities are reduced, resulting in lower particulate pickup; Chamber 2: cremation process begins, from 600°C rapidly rising to control at 850°C or higher to completely combust gases and odours before exiting the stack; Provides 2 seconds of high temperature exhaust gas residence time, to ensuring low carbon monoxide emission and total combustion of complex volatile organic compounds; Cremators: equipped with an ejector in base of the cremator stack to aid with the drafting to maintain a slight negative pressure within the primary chamber, to ensure that no gases or noxious fumes are emitted into the cremator machine room when the door is opened; designed to meet the Air Emission requirements for new plants as specified in NEM:AQA), (refer to Appendix L).
- LPG tanks (fuel source for furnaces), approximately 80m^3.
- 3 x reefer coolers and one cool room. Each reefer can take 60 units, in total.
- Superficial modifications to the inside of the interior and aged exterior (including 6 x chimney stacks approximately 0.35m diameter, approximately 6m's above the nearest building (maximum height is 12m's above ground level).

External and independent specialists have been sourced to provide input and this has been an integral part of informing this assessment. Specialist studies conducted are summarised below:

- *Final_Rapid Appraisal Health Impact Assessment* by Niara Environmental Consulting (Appendix G.3) concluded that the proposal poses negligible to **no risk to human health** and recommends that mitigation measures and monitoring be implemented where necessary. A summary of the conclusion is below:

Table 1: Conclusion of Health Specialist (Niara Consulting, 2022).

Conclusion extracted from the Specialist Report	*Simplified Explanation*
It is acknowledged that design and operations parameters play a significant role in ensuring reduced emissions caused by the cremating processes, as such we confirm that Johnson Thermal Engineering are the designers of the JTE BA1 and BA2 Cremator Machines, locally manufactured and distributed in South Africa by Engineered Thermal Systems (Pty) Ltd, which is the machinery that Platinum Pride intend to use in the proposed Platinum Pride Crematorium Project. **This machinery expected to significantly reduce emission and in turn reduces any health impact to the surrounding community which may occur due to the proposed Platinum Pride Crematorium Project. As per**	The technology is designed to reduce air emissions, to acceptable standards, and therefore, this in turn will reduce potential health impacts.

the details supplied on the technology, this machinery is expected to significantly reduce emissions and in turn may reduce potential health impact to the surrounding community which may occur due to the proposed Platinum Pride Crematorium Project.	
The Management and control measure of odour emissions and contaminants in crematorium may be reduced and / or eliminated through installation of ventilators and exhaust fans, considering practical conditions, such that low concentration odour emissions can be promptly diluted and discharged. Furthermore, equipment will be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.	Management and control measures do exist to address odour, this will be integrated into the BAR and EMPr, should it be necessary. However, the specialist did note, that odour is not expected to be a considerable nuisance for the proposed crematorium. Research shows that in a modern effectively functioning crematorium, after it all, there is nothing left to smell -little to no odour. The heat is high enough that everything that can be reduced to smoke is done. Considering that smoke is minute particles carried on hot gasses, even these particles are burned until they are almost completely broken down. There is hardly anything left to smell. Despite the technology being implemented on other sites, this has not been noted in any monitoring report.
In addition, depending on proximity to other criteria air pollutant emission sources, some of the pollutants of concern listed in this Report may already be present in ambient air at the point of impingement of the crematorium plume, contributing to exposure concentrations in excess of those estimated in the AQIA. Individuals in the surrounding industrial area may also be exposed to, for example, elemental mercury through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, for example. Crematorium installations should implement processes such as filters to reduce their atmospheric emissions to limit mercury emission. The effects of multiple sources of air pollution (considering that the proposed Crematorium is to be located in an existing industrial area, surrounded by several contributors to air pollution) and routes/ pathways of exposure (dermal, air, consumption etc.) should be considered in an assessment of individual risk associated with exposure to any perceived pollutants from the crematorium - people may also be exposed to the identified pollutants such as mercury for example, through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, etc. Section 10.1 of this Report has discussed impacts these	**Air pollutants may already be present hence the potential exceedances noted in the AQIA (Air Quality Impact Assessment).** Individuals in the surrounding industrial area may also be exposed to, for example, elemental mercury through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, for example. Mitigation does exist to reduce mercury in crematoriums. Mitigation is included in the BAR but only if necessary.

pollutants and their potential impacts to human health.	
The property is zoned as General Industry Zone 1 which permits a crematorium. It is of the opinion of the author that the proposed Project poses negligible to no risk to human health. The author does, however, recommend that the air quality emissions are monitored bi-annuallly upon operation of the crematorium and an analysis on those results should be conducted where a specific concern exists.	**The proposal poses negligible to no risk to human health.** **Air quality emissions are to be monitored biannually .**
To ensure that the proposed crematorium does not cause adverse health impacts to both the employees and the surrounding areas, the mitigation measure stipulated in the HIA and the air quality study should be implemented and the requirements stipulated in the National Health Act (Act 61 of 2003) should be adhered to.	**Implement all mitigation measures.**

The mitigation measures were integrated into the BAR and EMPr, to be applied where necessary, as the technology has already proven compliant. The air quality monitoring will be undertaken in line with the AEL conditions.

Atmospheric Impact Assessment (v5) by YellowTree (Appendix G.1):

Table 2: Conclusion of Air Quality Specialist (YellowTree, 2022)

Conclusion Extracted from the Specialist Report	*Simplified Explanation*
Ambient PM_{10} (using the Table View baseline data), $PM_{2.5}$, CO, mercury, and lead concentrations at the fence line of the site are predicted to remain in compliance with the NAAQS standards (and the international guideline for mercury) should the proposed crematorium be commissioned.	All pollutant concentrations (using the Table View baseline air emissions data), at the fence line of the site are predicted to **remain in compliance with the NAAQS standards and international guideline for air emissions**.
While the annual cumulative benzene concentration would have exceeded the NAAQS in 2019, this was also the case in the baseline data before the contribution from the proposed crematorium was considered. Thus, the benzene concentration as a result of the proposed crematorium does not change the overall compliance status.	The baseline data for benzene was already high before the crematorium was considered. Therefore, the proposal **will not change** the overall compliance status.
Maximum ambient hourly NO_2 concentrations at the fence line are predicted to exceed the hourly NAAQS standard. However, the concentration rapidly decreases with distance from the site, and no NAAQS exceedances are predicted in any of the surrounding residential areas. It must also be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, which would not be the case in reality. The ambient annual NO_2	The ambient annual NO_2 concentration at the fence line is predicted to comply with the annual NAAQS for NO_2. It is key to note that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, **which would not be the case in reality**. Therefore, it is vital to note that these are

concentration at the fence line is predicted to comply with the annual NAAQS for NO_2.	predictions and the technology guarantee and existing monitoring have indicated compliance with the NAAQS.
When PM_{10} data from the Edgemead monitoring station is used as a baseline, the daily PM_{10} concentrations are predicted to exceed the NAAQS standard at the facility's fence line. Again, it should be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality.	Daily PM_{10} concentrations are predicted to exceed the NAAQS standard at the facility's fence line. Its key to note that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, **which would not be the case in reality.** Therefore, it is vital to note that these are predictions, the technology guarantee and existing monitoring have indicated compliance with the NAAQS.
Although the engineering specifications of the cremators indicate that the stacks are to be 12 metres high, the AERMOD model was run using stack heights of up to 20 metres. The optimum height was determined to be 16 metres, which resulted in no NAAQS exceedances at the fence line for PM_{10} or NO_2, unless these exceedances existed in the baseline data (i.e. daily PM_{10} in 2021 using the Edgemead baseline data). It is recommended that higher stack heights be considered by the proponent in order to minimise the effect of the proposed crematorium on ambient air quality.	The Specialist has recommended that a 16m stack height must be considered to completely alleviate the exceedances predicted.

The stack height was considered as an alternative design in Section H of the BAR. The manufacturer has advised that the furnaces are specifically designed to only accommodate a stack height of 12m's, which would ensure that the technology is functioning optimally, to which their guarantee applies. Therefore, the 16m stack height was found to be unfeasible, as it must be recognized that if the technology is compromised, the air quality emissions and therefore health conditions can be exacerbated.

An application for an Air Emissions License will be submitted to the City of Cape Town: Air Quality department for approval by YellowTree (Pty) Ltd.

- *Aquatic Compliance Statement* – FEN Consulting (Appendix G.2):

Table 3: Conclusion by Aquatic Specialist (FEN Consulting, 2022).

Conclusion Extracted from the Specialist Report	*Simplified Explanation*
The Specialist confirmed that there are no natural watercourses identified within the study area, however a riparian watercourse was identified outside the northern boundary of the study area.	**No natural watercourses** are within the site. However there has been a watercourse identified along the northern outer boundary of the site.

Considering that the proposed refurbishment activities will be limited to the existing footprint within the study area and that the study area is bounded by a solid precast concrete fence, from a watercourse management perspective, impacts on the freshwater receiving environment due to the proposed refurbishment activities are unlikely to impact upon any watercourse services or functions.	There is unlikely to be impacts on the watercourse, as the refurbishment won't exceed the fenceline. This has been noted by DWS and CapeNature.
The Specialist noted that the study area may potentially be subject to the 100 m zone of regulation in accordance with GN509 as it relates to the National Water Act, 1998 (Act No. 36 of 1998). However, the EAP has been in consultation with DWS regarding the relevant authorisation process. Based on initial discussions, it is unlikely that Water Use Authorisation would be required (to be confirmed) with the condition that the control measures as provided in this letter be adhered to. Considering this and should DWS agree with the outcome of this letter, the stream is considered a watercourse of aquatic biodiversity importance, however due to the nature of the proposed operation, the study area can be considered of low aquatic biodiversity sensitivity.	The specialist advised that the DWS must be consulted to confirm the need for a Water Use Application. DWS responded during post-application public participation to indicate that no water use application is required at this stage (Appendix E3).

- EAP Summary:

Based on the pollutant quantities that may create health issues (extracted from theoretical papers and studies), when compared to the Air Quality findings, it was concluded that only PM may result in health concerns, if exceedances are experienced:

- Susceptible groups with pre-existing lung or heart disease, asthmatics, as well as elderly people and children, are particularly vulnerable.
- Short term exposure to PM (based on the daily predicted model result) at low concentrations of exposure below 100 µg/m^3 may include:
  - an increase in lower respiratory symptoms
  - medication use.
  - small reductions in lung function.

There are no annual exceedances. The Health Assessment has concluded that the proposed project poses negligible to no risk to human health, taking into consideration the air quality results and other factors. The Health Specialist further highlighted that they believe that the exceedances may be as a result of baseline data consisting of other existing pollutants in the surrounding area, and as noted by the Air Quality Specialist, the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. Despite the anticipated low impact, all specialist mitigation measures have been integrated into the BAR and EMPr for implementation, should it be necessary. The only exclusions being:

- Auditing frequency recommended from the Health specialist. Given that this is based on air quality monitoring the annual recommendation has been supported, as well as any further conditions based on the authorizing bodies recommendations.

- The stack height from the Air Quality report, has been considered, but found to not be feasible, as it would compromise the integrity of the technology, as the technology is designed to specifically perform as per the guarantee, with a 12m stack height.

Post Application Public Participation was conducted from the 11th of July 2022 – 11th of August 2022. Public participation undertaken is described in the BAR and detailed in Appendix F.

- All comments were compiled and responded to as per the Comments and Responses Table Appendix F.
- The main concerns raised were addressed comprehensively in the Comments and Responses Report (Appendix F).
- A clarification session was conducted with the City of Cape Town and the DEA&DP via MS Teams, on the Thursday, 25th of August 2022, at 15:00pm, to discuss their comments. Minutes of this meeting have been included in Appendix F. It should be noted that:
    - No further concerns were raised, however further information was requested in terms of the technology.
    - Requests were made by DEA&DP that the additional technology information be circulated, and an additional 30-day public participation period be undertaken.
- A clarification session was conducted via MS Teams, on Monday, at 15:30pm, 29th of August 2022. All other Registered I&AP's (in line with the I&AP Register, Appendix F1), were invited to attend the session so as to be informed of how their comments were addressed, and to raise any further concerns. Minutes of this meeting have been included in Appendix F. It should be noted that:
    - Approximately 35% of the Registered I&AP's attended, and there were no issues raised regarding inconvenient times, etc, from the remaining I&AP's.
    - No further concerns were raised, and I&AP's did not indicate that their comments were addressed inadequately.
    - The only lingering concern was the interpretation of the Listing Notice 2, Activity 6 exclusion, which was recommended by DEA&DP (Appendix E22) and supported by the national DFFE. On the 6th of September 2022, the IQ@DFFE provided clarity regarding this matter, stating: "The interpretation provided by the Western Cape Department of Environmental Affairs and Development Planning is correct. Where an activity, listed under Listing Notice (LN) 1 is triggered by a proposed development, which also triggers activity 6 of LN 2, the exclusion would indeed apply and activity 6 would not be applicable.

Figure 1: Locality Map.

Table 4: Location of the proposed preferred site.

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	MONTAGUE GARDENS	2433	0	33°51'4.58S	18°31'18.49E	Erven

The proposed development site is situated in Montague Gardens Industrial Area, Ward 4, on ERF 2433. The site is approximately 2 506.7m^2 in size, and is zoned as General Industrial Zone I, which does accommodate crematorium facilities. The site contains existing infrastructure, is fenced and has been transformed significantly, resulting in the majority of the site containing concrete or tar surfaces. A small area to the rear (north) of the site, has not been transformed into a hardened surface. This area is approximately 481m^2, and is predominantly sandy with sporadic vegetation, including alien invasive tree species. This area is disturbed and contains building waste and stormwater infrastructure. The site was occupied by Crous Chemicals cc., an organization that manufactured chemical products for a variety of industries, until August 2022. The site is now owned by A.S.A.P Pty Ltd, and is being rented by the proponent, Platinum Pride Crematorium.

The site is bordered by a drainage line to the north, existing industrial zoned buildings to the east and west, and Stella Road to the south, which also acts as the main access road for the two entrances located along each end of the southern fence line.

The transformation of the site has been depicted in Figures 2 - 7. As per Figure 2, the southern portion of the site abuts Stella Road and is transformed. The access and parking area is tarred, while the external pavement is paved. The eastern portion of the facility is built up to the eastern boundary fence line, therefore the northern portion of the site is inaccessible from this side.

Figure 2: Entrance to site off of Stella Road (southern portion of site), north facing.

Figure 3 depicts the only accessible portion to the northern end of the site, along the western boundary. The area is mostly transformed with concrete slabs and contains stored metal containers and other manufacturing and building materials from the current occupier.

Figure 3: Depicting the western boundary of the site.

As per Figure 4 and 5, the northern portion of the site has not been transformed as significantly as the rest of the site. However, this area does consist of sporadic vegetation, alien invasive trees, waste materials from manufacturing and building activities, and a stormwater manhole. This area is not

intended to be developed. The applicant will be responsible for the management of the site, including this area, in terms of NEMA Section 28, Duty of Care, and will be responsible for the removal of alien invasive species.

Figure 4: Northern portion of ERF 2433.

Figure 5: Northern portion of the site (east - facing).

Figure 6: Eastern extent of interior of building on ERF 2433.

Figure 7: Western extent of interior of building on ERF 2433.

Given the existing transformation on site, a clarification session was held via Microsoft Teams with Ms Taryn Dreyer of the Department of Environmental Affairs and Development Planning, Region 1, and Sharples Environmental Services' EAP's Mrs Betsy Ditcham and Miss Ameesha Sanker, on the 17th of May 2022. The following was concluded:

- Listing Notice 2, Activity 6 is applicable according to the details provided in the NOI, submitted on the 10th of May 2022.
- DEA&DP confirmed that no downgrading is permitted in terms of the updated EIA Regulations, 2014 (as amended 2017).
- However, as per the exclusion listed in terms of Listing Notice 2, Activity 6 (a), if an activity is applicable in terms of Listing Notice 1 of 2014, then Listing Notice 2, Activity 6 is no longer

applicable. If no other Listing Notice 2 trigger is applicable, then an EIA is not required, but a Basic Assessment is.

The applicant did confirm that LPG (Liquid Petroleum Gas), will be utilized as the main fuel source for the intended cremators, and considering the number of cremators planned to be accommodated, approximately 80m^3 of LPG will be stored on site, when functioning at full capacity, triggering additional listed activities from Listing Notice 1, as detailed below. The DEA&DP was notified of this in the Application Form, and according to the Acknowledgement of Receipt of the Application Form for Basic Assessment, from DEA&DP, dated the 14th of June 2022, DEADP Ref: 16/3/3/1/A1/20/3027/22, DEA&DP has noted the above, and has advised that as per point 4.3 of this letter, "A Basic Assessment process must be followed in order to apply for Environmental Authorisation. Only those activities applied for shall be considered for authorisation." Further to this the DFFE (National Department of Fisheries, Forestry and Environmental), IQ department was consulted for verification on the interpretation of this exclusion. The have advised the following, in an email on the 6th of September 2022, from IQ@dffe.gov.za:

"*The interpretation provided by the Western Cape Department of Environmental Affairs and Development Planning is correct.*

Where an activity, listed under Listing Notice (LN) 1 is triggered by a proposed development, which also triggers activity 6 of LN 2, the exclusion would indeed apply and activity 6 would not be applicable."

EIA TRIGGERED ACTIVITIES:

According to the National Environmental Management Act, 1998 (Act 107 of 1998), Environmental Impact Assessment Regulations, 2014 (as amended 07th April 2017), the following activities are applicable:

Table 5: Listed activities in terms of NEMA: EIA Regulations, 2017.

Activity No(s):	*Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1***	*Describe the portion of the proposed development to which the applicable listed activity relates.*
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	LPG gas will be stored on site for the operation of the furnaces, with a combined capacity of approximately 80m^3.
Activity No(s):	*Provide the relevant **Scoping and Environmental Impact Assessment Activity(ies)** as set out in **Listing Notice 2***	*Describe the portion of the proposed development to which the applicable listed activity relates.*
~~6~~	~~The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—~~	The proposal will involve the establishment of a crematorium, that will require an Air Emissions Licence.

	(i) activities which are identified and included in Listing Notice 1 of 2014; ~~(ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;~~ ~~(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or~~ ~~(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day~~	Due to the triggering of Activity 14 of Listing Notice 1, it can be determined that in terms of exclusion (i), **Listing Notice 2 is no longer applicable,** and the proposal is now subjected to a Basic Assessment. The Air Emissions License will be undertaken by YellowTree.

Based on the latest Department of Environmental Affairs Screening Tool report, dated 20th of January 2022, the following sensitivities were identified on site:

Table 6: Screening tool environmental themes.

THEMES	SENSITIVITY			
	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Paleontology Theme				X
Plant Species Theme				X
Defence Theme	X			
Terrestrial Biodiversity Theme	X			

Specialist input has been provided in the form of:

- An Atmospheric Impact Assessment and Atmospheric Air Emissions License by Yellow Tree.
- An Aquatic Compliance Statement by FEN Consulting.
- A Final Rapid Appraisal Health Impact Assessment undertaken by Niara Environmental Consultants.

All other themes were considered negligible considering that the site is significantly transformed, and there is limited disturbance to the natural area (from alien invasive clearance), nor will any expansion occur of the exterior footprint. DEA&DP has agreed with the EAP regarding the specialist input required, as per the acknowledgement of receipt of the application form from DEA&DP, dated 14th June 2022 (Appendix E22).

OTHER LEGISLATION

- *National Health Act, 2003 (Act No 61 of 2003)*

In terms of the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, Chapter 6, point 18 – *Minimum requirements for a cremation facility*. The proposal implemented as planned will ensure that the crematorium **is compliant with points 18(1)(a - f)**. In terms of point 18(1)(g), according to the guarantee provided by the manufacturer the technology is designed to be in compliance with the Air Emission Standards for New Plants, therefore it is recommended that air quality monitoring be undertaken in line with the AEL recommendations, and thereafter if exceedances are experienced, an exemption be undertaken in terms of Chapter 2 of the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, Chapter 6, point 18 – Minimum requirements for a cremation facility. Based on the technology, and its performance on other sites, these exceedances are not anticipated, particularly if coupled with the AEL conditions, Environmental Authorization conditions and EMPr,

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

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.

2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 19998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".

3. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.

4. All applicable sections of this BAR must be completed.

5. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.

6. This BAR is current as of **November 2019**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at http://www.westerncape.gov.za/eadp to check for the latest version of this BAR.

7. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.

8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.

9. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.

10. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.

11. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.

12. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.

13. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link https://screening.environment.gov.za/screeningtool to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

14. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('NEM:AQA"), the submission of the Report must also be made as follows, for-
Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office.

Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

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

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.

Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as **Appendix C**. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference
WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

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

The following checklist of attachments must be completed.

APPENDIX			**✓ (Tick) or x (cross)**
Appendix A:	**Maps**		
	Appendix A1:	**Locality Map**	✓
	~~**Appendix A2:**~~	~~**Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning**~~	**N/A**
	~~**Appendix A3:**~~	~~**Map with the GPS co-ordinates for linear activities**~~	**N/A**
Appendix B:	**Appendix B1:**	**Site development plan(s)**	Will be finalized if authorized
	Appendix B2	**A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;**	**X**
Appendix C:	**Photographs**		✓
Appendix D:	**Biodiversity overlay map**		✓
Appendix E:	**Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.**		
	Appendix E1:	**Final comment/ROD from HWC**	**N/A**
	Appendix E2:	**Copy of comment from Cape Nature**	✓
	Appendix E3:	**Final Comment from the DWS**	✓
	~~**Appendix E4:**~~	~~**Comment from the DEA: Oceans and Coast**~~	**N/A**
	~~**Appendix E5:**~~	~~**Comment from the DAFF**~~	**N/A**
	Appendix E6:	**Comment from WCG: Transport and Public Works**	✓
	~~**Appendix E7:**~~	~~**Comment from WCG: DoA**~~	**N/A**
	Appendix E8:	**Comment from WCG: DHS**	**X**

	Appendix E9:	**Comment from WCG: DoH**	X
	Appendix E10:	**Comment from DEA&DP: Pollution Management**	✓
	Appendix E11:	**Comment from DEA&DP: Waste Management**	X
	Appendix E12:	**Comment from DEA&DP: Biodiversity**	X
	Appendix E13:	**Comment from DEA&DP: Air Quality**	X
	~~**Appendix E14:**~~	~~**Comment from DEA&DP: Coastal Management**~~	**N/A**
	Appendix E15:	**Comment from the local authority**	✓
	Appendix E16:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	✓
	~~**Appendix E17:**~~	~~**Comment from the District Municipality**~~	
	Appendix E18:	**Copy of an exemption notice**	X
	Appendix E19	**Pre-approval for the reclamation of land**	X
	Appendix E20:	**Proof of agreement/TOR of the specialist studies conducted.**	✓
	Appendix E21:	**Proof of land use rights**	X
	Appendix E22:	**DEA&DP Communication**	✓
	Appendix E23:	**DFFE Interpretation of LN2_Activity 6 Exclusion**	✓
	Appendix E24:	**Proponent Commitment Letter**	✓
Appendix F:	**Public Participation**		
	Appendix F1:	**I&AP Register**	✓
	Appendix F2:	**Comments and Reponses Report**	✓
Appendix G:	**Specialist Report(s)**		

	Appendix G1:	**Atmospheric Impact Assessment**	✓
	Appendix G2:	**Aquatic Compliance Statement**	✓
	Appendix G3:	**Health Assessment**	✓
Appendix H:	**EMPr**		✓
Appendix I:	**Screening tool report**		✓
Appendix J:	**The impact and risk assessment for each alternative**		**Section H**
~~**Appendix K:**~~	~~**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**~~		
Appendix…..	**Any other attachments must be included as subsequent appendices**		
Appendix L:	**Appendix L1:**	**Technical Specifications for Furnace**	✓
	Appendix L2:	**Operational Evidence**	✓

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		GEORGE OFFICE:
	REGION 1 **(City of Cape Town, West Coast District**	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Garden Route District)

Duplicate this section where there is more than one Proponent Name of Applicant/Proponent:	Ikamva Green Holdings trading as Platinum Pride Crematorium	
Name of contact person for Applicant/Proponent (if other):	Mr Sybrand Teubes	
Company/ Trading name/State Department/Organ of State:	Platinum Pride Crematorium	
Company Registration Number:	K2020820888	
Postal address:	PO Box 791, Vredendal, Vredendal, Western Cape	
		Postal code: 8610
Telephone:	( )	Cell:
E-mail:	sybrand.teubes@platinumpride.co.za	Fax: ( )
Company of EAP:	Sharples Environmental Services	
EAP name:	Ameesha Sanker	
Postal address:	PO BOX 443, Milnerton	
		Postal code: 7435
Telephone:	(021) 554 5195	Cell: 072 126 0161
E-mail:	ameesha@sescc.net	Fax: (086) 575 2869
Qualifications:	BSc Geological Science and BSc (Hons) Environmental Management	
EAPASA registration no:	None, however, the Review EAP is Ms Betsy Ditcham (EAPASA Reg No: 1480)	
Duplicate this section where there is more than one landowner Name of landowner:	M. Arslanyurekli (A.S.A.P. PVC (PTY) LTD)	
Name of contact person for landowner (if other):	M. Arslanyurekli	
Postal address:	7 Plumbago Avenue Sagewood Estate	
		Postal code:
Telephone:	0215519470	Cell: 0721062842
E-mail:	arslanyurekli_2m@hotmail.com	
Name of Person in control of the land:	M. Arslanyurekli (A.S.A.P. PVC (PTY) LTD)	
Name of contact person for person in control of the land:	M. Arslanyurekli	
Postal address:	7 Plumbago Avenue Sagewood Estate	
		Postal code:
Telephone:	0215519470	Cell: 0721062842
E-mail:	arslanyurekli_2m@hotmail.com	

Duplicate this section where there is more than one Municipal Jurisdiction	City of Cape Town Metropolitan Municipality

Municipality in whose area of jurisdiction the proposed activity will fall:		
Contact person:	Ms S. Warnich-Stemmet	
Postal address:		
		Postal code:
Telephone	021 440 0598	Cell:
E-mail:	Sonja.Warnichstemmet@capetown.gov.za	Fax: ( )

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

1.	Is the proposed development (please tick):	**New**	✓	Expansion	
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
The proposed site, ERF 2433, is a **brownfield site**, as the site has been significantly transformed, and houses existing infrastructure, a fenced boundary, existing services including existing access.					
~~3.~~	~~**For Linear activities or developments**~~				
~~3.1.~~	~~Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:~~				
~~3.2.~~	~~Development footprint of the proposed development for all alternatives.~~				~~m²~~
~~3.3.~~	~~Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.~~				
~~3.4.~~	~~Indicate how access to the proposed routes will be obtained for all alternatives.~~				
3.5.	~~SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives~~				
3.6.	**~~Starting point co-ordinates for all alternatives~~**				
	~~Latitude (S)~~	~~°~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~°~~	~~'~~	~~"~~	
	~~Middle-point co-ordinates for all alternatives~~				
	~~Latitude (S)~~	~~°~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~°~~	~~'~~	~~"~~	
	~~End point co-ordinates for all alternatives~~				
	~~Latitude (S)~~	~~°~~	~~'~~	~~"~~	
	~~Longitude (E)~~	~~°~~	~~'~~	~~"~~	
Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3.					
4.	**Other developments**				
4.1.	Property size(s) of all proposed site(s):				2506.7m²
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):				Approximately 1877m²
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:				The proposed development will be contained within the

		existing 1050m^2 facility
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).	

The proposed site contains existing access, and services. The site is predominantly transformed with hardened surfaces, as it is currently utilized by a chemical manufacturer. The site is appropriately zoned to accommodate a crematorium, as it is zoned General Industrial Zone I.

All modifications are planned for the interior and exterior (superficial changes to enhance the aesthetics of the warehouse), however the existing footprint will not expand linearly, but vertically to accommodate for the new chimney stacks. The establishment of a crematorium at the site is to take place in two phases:

- Phase 1 will consist of the installation of two cremators that operate 24 hours per day. Each cremator has a maximum cremation capacity of 24 cadavers per day. Thus, in total, the site will have the capacity to cremate 48 cadavers per day.
- Phase 2 will consist of the installation of an additional four cremators, also operating 24 hours per day. After the completion of phase 2, the site will have the capacity to cremate 144 cadavers per day.

The proposed scope of works includes the renovations of the existing warehouse facility as follows:

- Installation of 6 x cremators and associated infrastructure.
- LPG tanks (fuel source for cremators), stored on site in excess of 80m^3, but less than 500m^3.
- 6 x Chimney stacks approximately 0.35m in diameter, and approximately 6m's above the nearest building.
- 3 x reefer coolers and one cool room.
    - Each reefer can take 60 units, in total with three reefers and one cool room, the business can stockpile.
- Associated infrastructure and services.
- Safety Plans:
    - Compilation of a fire management plan; and other safety plans (as is necessary);
- Modifications to the inside of the building includes
    - Resurfacing including flooring.
    - New offices.
    - Sterilization of the interior.
    - Servicing of roll-up doors.
- Modifications outside include:
    - New ABR sheets will be utilized on the outside.
    - Painting.
    - Erecting appropriate signage.

Services

Consideration is given to the current use of the site as manufacturing facility. The proposed development is anticipated to use far less water and electricity than the current site.

Water:

The City of Cape Town Water & Sanitation Department: Water Demand Management Branch confirmed that the site is served by a 200mm water supply at a peak pressure of 59m. The current water consumption of the property to be redeveloped is 2.88kl/day.

The AADD (Average Annual Daily Demand) for water has been calculated by the EAP using the think water calculator from the City of Cape Town. This estimation was based on there being

approximately 8 workers on site, during operational phase, this may include: cleaners, operators and office staff. Consideration was given to the following potential activities being conducted on site:

- One normal flush of the toilet
- Hygiene – wash hands (consideration is given to the use of sanitizer)
- Washing dishes
- Drinking – tea/coffee/water
- Washing fruit and veg and to cook
- Cleaning per week

The AADD was calculated to be 287,09l, which is well below the 2.88kl/day, that was being used by the previous occupier.

Bulk Water:

- The City of Cape Town Water & Sanitation Department: Water Demand Management Branch indicated that there is likely sufficient bulk water capacity. Considering that the anticipated daily demand is far lower than the demand by the previous facility, this is anticipated to be correct.

Sewer:
The City of Cape Town Water & Sanitation Department: Water Demand Management Branch indicated that the site is served by a 150mm sewer in Stella Street and a 225 mm sewer at the north Side of the site. Sewer flows to Koeberg Road Pump Station which has been identified for an upgrade over the next few years. They further confirmed that the proposed development drains to the Potsdam Wastewater Treatment Plant (WWTW). The Potsdam WWTW is currently at capacity and is being upgraded. Completion date for the upgrade is expected to be the 4th quarter of 2027.

Considering the water demand is far lower than was previously experienced on site, it is anticipated that this development will not have additional capacity strain on the sewer infrastructure.

Electricity:
Eskom has confirmed that there will be no impact on any Eskom existing or planned infrastructure. Considering that the proposal will involve LPG for the furnaces (the dominant energy consumer on site), the reliance on Eskom infrastructure will be from the lights, office computers, and reefer coolers.

Stormwater
The Water & Sanitation Department: Water pollution control unit cautioned that any wet-waste will be considered to be industrial waste. The disposal of industrial waste will have to comply with pollution control by-laws. Depending on the type of activities the water will be used for, and the pollutants in the runoff, pre-treatment may be required before the runoff is disposed into the sewer network.

In the event of the proposed development discharging any industrial type effluent into the municipal sewers, an application to discharge industrial effluent into municipal sewer system will be required. The business owner will essentially need to apply to Shahied Solomon (Shahied.Solomon@capetown.gov.za) or Molepana Ramonyai (Molepana.Ramonyai@capetown.gov.za) for permission to discharge. These City Officials will be able to guide the developer/owner with regards to the process. This will be undertaken should the environmental authorization be awarded.

General:
The City of Cape Town Water & Sanitation Department: Water Demand Management Branch confirmed that provided the water consumption is below the 2.88kl/day for the proposed

redevelopment water and sewer capacity could be accommodated (Appendix E). This has been confirmed, as above.

Technology:

The cremators/furnaces utilized are BA2 Cremators and are sourced from distributers, Engineered Thermal Systems (Pty) Ltd, and are manufactured under a license from Johnson Thermal Engineering (JTE) (see Appendix L).

The JTE Cremator design has the following benefits:

- The design has been around for more than a decade.
- Proven track record of successful operation that meets the Air Emission requirements for new plants as specified by the National Environmental Management: Air Quality Act (NEM:AQA).
- Design, manufacturing, testing and commissioning is done in accordance with SANS329 (Industrial Thermo-Processing Equipment) and conforms to SANS347 (Categorization and conformity assessment Criteria for all Pressure Equipment). Adherence to these Standards is required by SASOL and SAGA (South African Gas Association) of which Engineered Thermal Systems is a proud member of.

JTE has confirmed the following details on based on their BA2 cremators:

- Locally manufactured and distributed in South Africa.
- Accommodates two chambers:
  - Chamber 1:
    - starved combustion primary chamber cremator, ensuring gas velocities are reduced, resulting in lower particulate pickup.
  - Chamber 2:
    - cremation process begins, from 600°C rapidly rising to control at 850°C or higher to completely combust gases and odours before exiting the stack.
  - Provides 2 seconds of high temperature exhaust gas residence time, to ensuring low carbon monoxide emission and total combustion of complex volatile organic compounds.
  - Cremators are equipped with an ejector in base of the cremator stack to aid with the drafting to maintain a slight negative pressure within the primary chamber, to ensure that no gases or noxious fumes are emitted into the cremator machine room when the door is opened; designed to meet the Air Emission requirements for new plants as specified in NEM:AQA.

Cremator set-up has the following benefits:

- All controls arranged for ease of access at maintenance time.
- If managed and operated as per specifications, maintenance is not required for upto 5 years, minimum.
- Equipment is registered with the Safe Gas Equipment Scheme, per SANS requirement.
- The Combustion Air Fan is noise attenuated and located on top of the Cremator roof.
- There is a main shut-off isolation solenoid valve in case of emergencies.
- Contains a primary burner and secondary burner, to optimize incineration process.
- Actuators are accessible so as to control the air supply to the burner and secondary chamber.
- The hydraulic power is also accessible from the rear of the furnace.
- Cremator doors are controlled by two hydraulic cylinders to open and close doors, which also ensures an airtight seal by locking the Cremator door in a door surround seal during the Cremation process.

- The electrical/instrumentation box with PLC and fan VFD is located above the hydraulic power pack.
- The system has an HMI (touchscreen) at the front of the Cremator communicates with the PLC and the HMI affords the Operator full control of the Cremator.

Table 7: Average Emissions from an Operating JTE Cremator at an Existing Crematorium Site (2021)

Pollutant Name	Symbol	Normal	Emission Rate	Limits mg/Nm^3
		mg/Nm^3	Kg/hr	New Plant
Particulate Matter	PM	17.36	0.02	40
Carbon Monoxide	CO	62.40	0.06	75
Oxides of Nitrogen Expressed as NO_2	NO_X	243.56	0.23	500
Mercury	Hg	0.003	3 x 10^{-6}	0.05

All Emission values are being reported under normal conditions of 273 K, 101.3 kPa and referenced to 11% O_2 as per NEM:AQA Section 21 List of Activities: Category 8, Subcategory 8.2: Cremation of Human Remains, Companion Animals (Pets) and the Incineration of Veterinary Waste.

Table 7 depicts the emissions (Normal mg/Nm$^{3)}$ recorded during monitoring, at an existing site containing the JTE Cremator, as compared to the New Plant Standards in terms of NEM:AQA (Limits mg/Nm^3). It is clear that the emissions are below the recommended limits and are therefore compliant with the New Plant Standards. It is recognized that this outcome is influenced by the way the furnaces are operated and managed. However, this is a clear indicator that if operated and managed, as will be enforced through the adoption of the EMPr, according to the operating manual and specifications, the technology is designed to be compliant in terms of NEM:AQA.

4.5.	Indicate how access to the proposed site(s) will be obtained for all alternatives.

Access will be obtained via Stella Road. There are two access points located off Stella Road, that are currently being utilized, depicted in Figure 8 and 9, and will be utilized in future. No new access points will be created (temporary or permanent).

In terms of traffic, Stella Road is a busy main road leading to other industrial and commercial properties. Traffic impacts during construction are anticipated to be minor, and temporary. Traffic during the operational phase is anticipated to be minor, with approximately 2 -3 non-descript truck deliveries anticipated per day. Potentially only 8 employees are anticipated to be employed, during operational phase, and there vehicle movement is anticipated to be low. Mitigation for both phases have been integrated into the BAR and EMPr.

Figure 8: Western access gate off of Stella Road.

Figure 9: Eastern access gate off of Stella Road.

4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:	C01600360000243300000			
4.7.	Coordinates of the proposed site(s) for all alternatives:				
	Latitude (S)	33°	51'	4.43"	
	Longitude (E)	18°	31'	18.70"	

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

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

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

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

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

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.

- **SPATIAL PLANNING LAND USE MANAGEMENT ACT 16 OF 2013.**

The five founding principles as set out in Section 7 (a) to (e) of SPLUMA that apply throughout the country and to all SDFs are:
1. Spatial Justice: Redressing past spatial and other development imbalances through improved access to and use of land by disadvantaged communities.

The crematorium will address current and projected cremation service constraints in the City of Cape Town municipal area, without utilising greenfield land which could otherwise be used to advance spatial justice.

2. Spatial Sustainability: Relates to the need to promote spatial planning and land use management and land development systems that are based on and promote the principles of socio-economic and environmentally sustainable development in South Africa.

The proposed development is aligned with the above principles as it intends to utilise an existing warehouse on Erf 2433 in Montague Gardens industrial area and is acceptable in terms of the current General Industry Subzone GI1 zoning as provided by the City of Cape Town Municipal Planning By-Law, 2015.

3. Efficiency: The spatial efficiency pillar places significant importance on the optimization of existing resources and the accompanying infrastructure, including efficiency of development application procedures in order to promote growth and employment.

The proposed development is aligned with the above principles as it intends to utilise an existing warehouse on Erf 2433 in Montague Gardens industrial area and is acceptable in terms of the current General Industry Subzone GI1 zoning as provided by the City of Cape Town Municipal Planning By-Law, 2015.

4. Spatial Resilience: Relates to mitigation, adaptability and innovations to secure communities from spatial dimensions of socio-economic and environmental (climate change) shocks.

In terms of Section 8 of the By-law, the entire area of the jurisdiction of the City of Cape Town (COCT) is declared to be an air quality pollution control zone. In terms of Section 11 of the By-law, the proponent will undertake the relevant application to obtain an air emissions licence from the COCT to install and operate the furnaces.

An Air Quality Impact Assessment was undertaken by Yellow Tree, which provides mitigation measures for the control of airborne emissions. All mitigation measures as advised by the Air Quality Impact Assessment and the relevant air emissions licence to be obtained from the COCT must be complied with during the establishment and operation of the proposed crematorium facility to secure communities from spatial dimensions of socio-economic and environmental (climate change) shocks.

5. Good Administration: Spatial planning vision and objectives are not only highly dependent upon a strong co-ordinating role of central government, but is also predicated upon good governance mechanisms, incorporating meaningful consultations and coordination with a view to achieving the desired outcomes across the various planning spheres and domains.

In accordance with Sections 41 and 42 of the 2014 EIA Regulations (as amended 2017) and the Guideline on Public Participation (2013), the environmental assessment of the proposed development will be subjected to a 30-day public participation period which will allow for all registered interested and affected parties to comment on the proposed development.

- **NATIONAL HEALTH ACT (ACT 61 OF 2003)**

The National Health Act (Act 61 of 2003) (NHA) provides a framework for a structured uniform health system, taking into account the obligations imposed by the Constitution and other laws published by national, provincial and local governments with regards to health services. Promulgated under the NHA and of applicability to the proposed development are the Regulations Relating to the Management of Human Remains, 2013 (GN. R. 363 of 2013), and the National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners, 2015 (GN. R. 1229 OF 2015).

- ***Regulations Relating to the Management of Human Remains, 2013***

In terms of Section 68(1)(b) and 90(4)(c) of the NHA which govern preservation, use and disposal of bodies, the Regulations Relating to the Management of Human Remains (GN No. R. 363 of 2013) was promulgated. Of applicability to the proposed development, Regulation 18 provides: Minimum requirements for a cremation facility:

Table 8: Compliance with the Regulations Relating to the Management of Human Remains (GN No. R. 363 of 2013) .

Reference Point	*Description as per the Regulation*	*Development Compliance*
a	The site must be located at least 500m from any habitable dwelling;	Compliant. Discussed after the table.

b	The chimney must have a height of not less than 3 meters above the roof;	Compliant. The chimney stacks will be at least 12m's high, this is at least 6m's above the height of the roof.
c	No cremation shall take place until the minimum combustion temperatures of the urn has been reached;	Compliant. The technology is specifically designed to ensure this, see Appendix L.
d	The premises shall be kept in a clean, sanitary and in good repair;	Compliant. Housekeeping mitigation measures have been integrated into the BAR and EMPr.
e	The facility shall be adequately ventilated and illuminated;	Compliant. This has been accounted for in the proposed refurbishment.
f	The facility shall be operated and managed in a manner as to prevent the dispersion of ash into the atmosphere; and	Compliant. The technology is designed with an ash box, this ash box is easily removed and is accompanied by clean out tools, to efficiently remove the ash preventing dispersion.
g	Emissions levels shall conform to the ambient air quality emission standards as determined in terms of the National Environmental Management: Air Quality Act of 2004.	The manufacturer has provided a guarantee that the technology has been around for more than a decade and has a proven track record of successful operation that meets the Air Emission requirements for new plants as specified by the National Environmental Management: Air Quality Act (NEM:AQA). Air Quality Specialist (Appendix G) has predicted that: - Ambient PM_{10} (using the Table View baseline data), $PM_{2.5}$, CO, mercury, and lead concentrations at the fence line of the site are predicted to remain in compliance with the NAAQS standards (and the international guideline for mercury) should the proposed crematorium be commissioned. - The ambient annual NO_2 concentration at the fence line is predicted to comply with the annual NAAQS for NO_2. - The daily PM_{10} concentrations are predicted to exceed the NAAQS standard at the facility's fence line (when considering the Edgemead data). The specialist has advised that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality.

In terms of the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, Chapter 6, point 18 – Minimum requirements for a cremation facility. The proposal implemented as planned will ensure that the crematorium is compliant with points 18(1)(b - f). The Air Quality model predicted some concern related to the PM_{10} levels, when considering the Edgemead data, however the specialist has confirmed that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. Coupled with the manufacturers guarantee, it is predicted that the emissions levels shall conform to the ambient air quality emission standards as determined in terms of the National Environmental Management: Air Quality Act of 2004. It will be recommended that after a year of monitoring the actual results will need to be reviewed, and if found to be non-compliant an exemption from compliance with 18(g) will be applied for in terms of Chapter 2, of the Regulations Relating to the Management of Human Remains, 2013 (GN. R. 363 of 2013).

Concern was raised regarding point 18 (a).

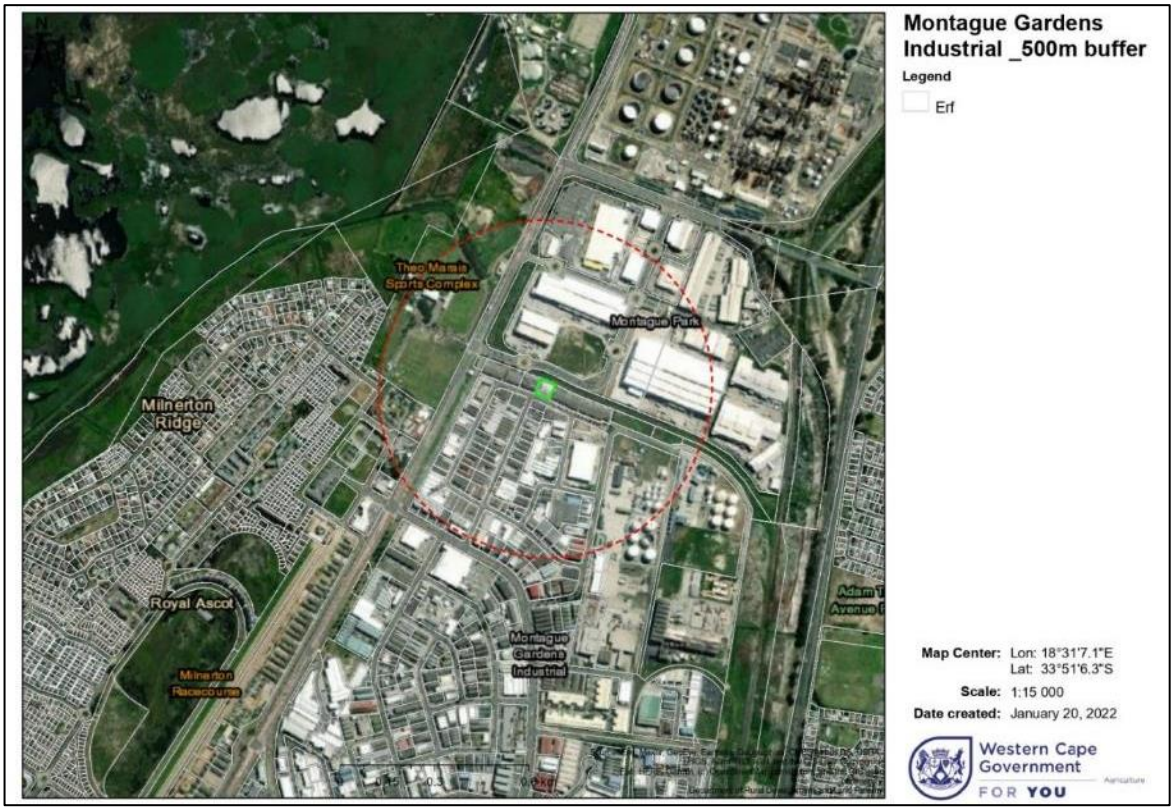


Figure 10: 500m buffer from ERF 2433 (Google Earth, 2022)

According to Figure 10, all areas to the north, east and south are developed for commercial or industrial purposes. The area to the west of the site, has been identified as a residential area by the Air Quality Specialist. As per Figure 11, this western portion encompasses a main road, the sports ground of Theo Marais Sports Complex. To the south-west, is the Milnerton Fire Station and Milnerton Traffic Department. Just west of the Fire Station are buildings. It is unclear what these buildings are being utilised for, but it is clear that they form a part of the Fire Station property, as they share a controlled entrance.

Figure 11: Fire Station and Sports Complex along the western boundary of the 500m radius (Google Earth, 2022).

Figure 12 is an extract from the City of Cape Town's GIS, available to the public. The area in which the Fire Station, Traffic Department and buildings, west of the fire station, within 500m radius, are indicated to be zoned as a Utility Zone, which does not permit residential housing as a primary use, nor as a consent use, according to the City of Cape Town's Municipal By-Law, and confirmed during the meeting with the City of Cape Town, minutes included in Appendix F2.

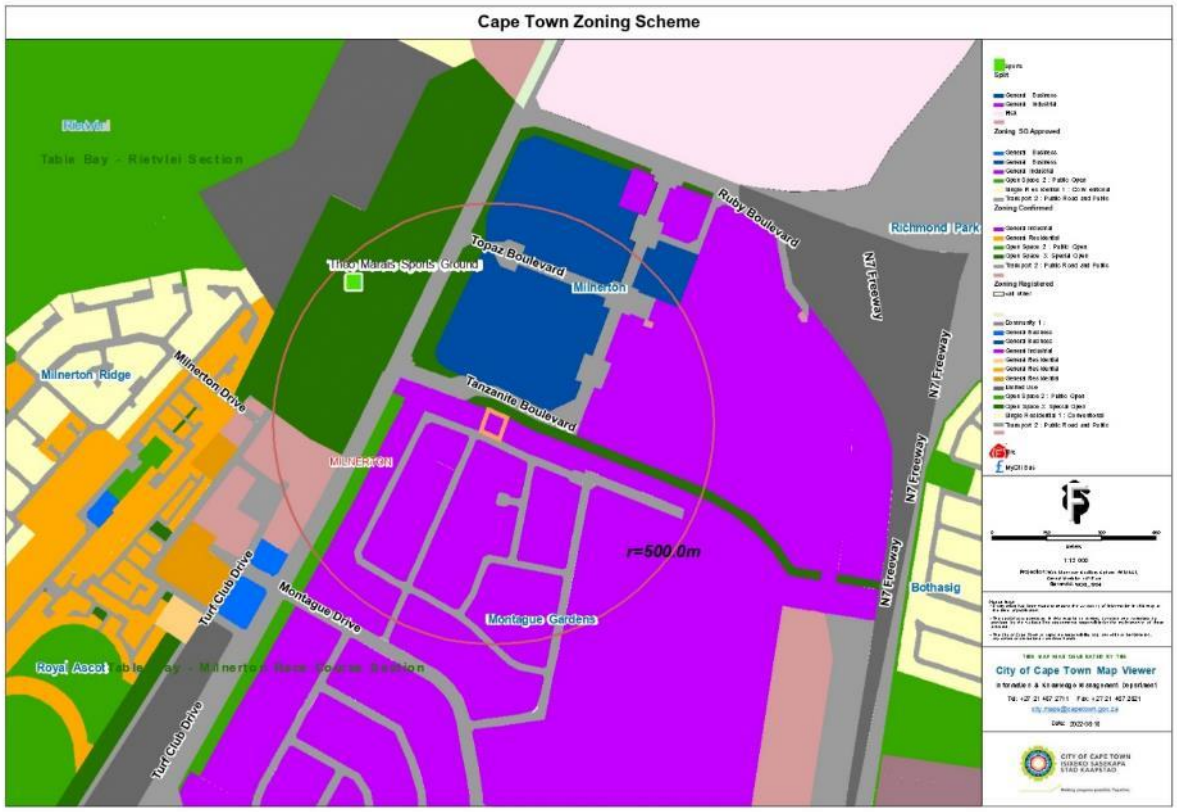


Figure 12: Extract from the City of Cape Town GIS Map Viewer.

The term "habitable dwellings" is not defined in the National Health Act. However, the EAP engaged with various I&AP's as follows:

City of Cape Town and DEA&DP were invited to a clarification session on the 25th of August 2022, minutes have been included in Appendix F of the BAR.

- City of Cape Town's Air Quality Department advised that 'habitable dwellings' from their perspective would be "any residential area where people stay and sleep, not where people work or occupy business or industrial areas".
- The Environmental and Heritage Management Department indicated that the fire station is zoned as a utility zone and does not appear to be residentially zoned, so there should not be residential dwellings within this area.

- The Western Cape Department of Health was contacted for comment and did not supply a comment.
- However, Ms Jamie Cloete, intern EAP at Sharples Environmental Services, requested clarity on the term "habitable dwelling" from an Inspector of Anatomy at Western Cape Government: Department of Health, on the 26th of August 2022, who confirmed the following:
  - "Unfortunately, the Department of Health does not have an individual definition of an habitual dwelling as we are subject to the terms found in all national legislation and regulations as it pertains to health."
  - The Officer advised that from their understanding and in relation to the establishment of a crematorium, the term habitual dwelling refers to a place where people live such as a house but in South Africa could also be informal dwellings. The Officer advised that if this is not

helpful at all then they suggested that SES speak to the local municipality where the crematorium is planned specifically environmental health and the "zoning" departments.

As per the advice of the Western Cape Department of Health Officer, and considering the advice provided by the Air Quality and Environmental and Heritage Management Branches of the City of Cape Town, **the proposed development is in compliance with the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, Chapter 6, point 18 (a).**

Legal Compliance:
It is recommended that after a year of air quality monitoring during operational phase, the actual results will need to be reviewed, and if found to be non-compliant an exemption from compliance with 18(g) will be applied for in terms of Chapter 2, of the Regulations Relating to the Management of Human Remains, 2013 (GN. R. 363 of 2013).

Regulation 19 (GN No. R. 363 of 2013), further requires that a cremation register be maintained at the facility including:

- Date of cremation;
- Name, identity number, address, occupation, age, sex, and marital status of each deceased person cremated therein;
- The date of death of each cremated person;
- The name, identity number and address of the person in whose name the crematorium is registered;
- The name, designation and address of the person issuing the certificate of the cause of death of each cremated person;
- The cause of death and the registration number of the death certificate of each cremated person; and
- The manner in which the ashes of the person was disposed.

The requirement for a cremation register containing the above information will be included into the EMPr for compliance during the operation of the proposed crematorium facility.

In terms of Regulation 3(1) no person shall prepare, or store human remains except on approved funeral undertaker's premises or mortuary in respect of which a certificate of competence has been issued by the COCT and is in effect.

Legal Compliance
The proponent must complete and submit the applicable application form (as per Appendix G of this regulation), for a certificate of competence in respect of Regulation 3(1), from the local authority.

- **NATIONAL ENVIRONMENTAL HEALTH NORMS AND STANDARDS FOR PREMISES AND ACCEPTABLE MONITORING STANDARDS FOR ENVIRONMENTAL HEALTH PRACTITIONERS, 2015**

The National Environmental Health Norms and Standards (GN. R. 1229 OF 2015) were promulgated to strengthen the delivery of Environmental Health Services as a critical programme of preventive and developmental Primary Health Care services. The Norms and Standards are applicable to provincial and municipal levels of government where environmental and municipal environmental health services are rendered.

In terms of Point 8, the Municipal Environmental Health Service must, at minimum, conduct Environmental Health Inspection of crematorium facilities once a quarter.

Point 14(5) provides the norms and standards for the reception of dead bodies on the premises:

- must comply with the requirements of the Regulations relating to the Management of Human Remains, R363 of 22 May 2013 published in terms of the National Health Act, 2003 (Act 61 of 2003), as amended.
- Suitable trained staff should be available and responsible for duties in the mortuary and ensure that the Hygiene Standards are adhered to.
- A cleaning program for the mortuary should be in place. A register and records must be kept and maintained of the information regarding the handling of corpses; including the record of refrigeration facilities and temperatures must be taken daily.
- The infection control staff member should regularly monitor whether the policy regarding the handling of corpses is followed and whether the mortuary is operated in an acceptable manner and in consideration of the Norms and Standards document.
- Adequate protective clothing (comprising of waterproof aprons, light coloured overalls and protective gloves) should be provided and utilized for employees working in the mortuary.
- Approved methods of waste collection, storage, transportation and disposal should be adopted for the handling of infectious waste in the mortuary, in compliance to the SANS 10248.

Point 14(9)

- provides that premises where boilers and incinerators are used must comply with the National Environmental Air Quality Act (Act 39 of 2004) with regards to the use of incinerators. Point 14(9) further provides that "incinerators should be monitored regularly to ensure effective operations in terms of permit conditions and the applicable local authority's by-laws."

Point 14(10) provides the 'General Hygiene Requirements' as follows:

- The premises must be maintained clean, free from offensive odours, unsightly accumulation of debris, litter and miscellaneous waste at all times.
- Cleaning staff should be trained and competent on cleaning techniques and processes to be utilized for various areas in the health facility.
- Cleaning material and detergent required to ensure a hygienic environment in the health facility must be available and properly stored at all times.
- A cleaning schedule should be kept and maintained for cleaning of all areas in the facility.
- Appropriate cleaning material and equipment should be available on the premises.

The requirements in terms of Point 14(5), (9) and (10) will be translated into the EMPr for compliance during the operation of the proposed development.

Point 16 of the Norms and Standards provides 'Standards for Funeral Undertakers, Mortuaries, Crematorium Premises' which states that these premises must comply with the requirements of the Regulations Relating to the Management of Human Remains, GN. R. 363 of 22 May 2013 published in terms of the NHA. These Regulations (GN. R. 363 of 2013) have been addressed in the preceding section.

HEALTH ASSESSMENT

A Final Rapid Appraisal Health Impact Assessment Report was compiled by Niara Environmental Consulting, and the author is Ms Vumile Ribeiro (Appendix G3).

Based on the pollutant quantities that may create health issues (extracted from theoretical papers and studies noted in the Health Assessment), when compared to the Air Quality findings (from the model), it was concluded that only PM (Particulate Matter) may result in health concerns, if exceedances are experienced:

- Susceptible groups with pre-existing lung or heart disease, asthmatics, as well as elderly people and children, are particularly vulnerable.

- Short term exposure to PM (based on the daily predicted model result) at low concentrations of exposure below 100 µg/m3 may include:
  - an increase in lower respiratory symptoms.
  - medication use.
  - small reductions in lung function.

There are no annual exceedances. This is potentially why the Health Assessment has concluded that the **proposed project poses negligible to no risk to human health**, taking into consideration the air quality results and other factors. The Health Specialist further highlighted that they believe that the exceedances may be as a result of baseline data consisting of other existing pollutants in the surrounding area (those highlighted in the Air Quality Report such as the refinery situated to the noth of the site), and as noted by the Air Quality Specialist - the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. All specialist mitigation measures have been integrated into the BAR and EMPr for implementation, should it be necessary. The only exclusions being:

- Auditing frequency recommended from the Health specialist. Given that this is based on air quality monitoring the annual recommendation has been supported, as well as any further conditions based on the authorizing bodies recommendations.
- The stack height from the Air Quality report, has been considered, but found to not be feasible, as it would compromise the integrity of the technology, as the technology is designed to specifically perform as per the guarantee, with a 12m stack height.

The Health Specialist has concluded the following (As per the Report):

- It is acknowledged that design and operations parameters play a significant role in ensuring reduced emissions caused by the cremating processes, as such we confirm that Johnson Thermal Engineering are the designers of the JTE BA1 and BA2 Cremator Machines, locally manufactured and distributed in South Africa by Engineered Thermal Systems (Pty) Ltd, which is the machinery that Platinum Pride intend to use in the proposed Platinum Pride Crematorium Project. **This machinery expected to significantly reduce emission and in turn reduces any health impact to the surrounding community which may occur due to the proposed Platinum Pride Crematorium Project**. **As per the details supplied on the technology, this machinery is expected to significantly reduce emissions and in turn may reduce potential health impact to the surrounding community which may occur due to the proposed** Platinum Pride Crematorium Project.
- The Management and control measure of odour emissions and contaminants in crematorium may be reduced and / or eliminated through installation of ventilators and exhaust fans, considering practical conditions, such that low concentration odour emissions can be promptly diluted and discharged. Furthermore, equipment will be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.
- In addition, depending on proximity to other criteria air pollutant emission sources, some of the **pollutants of concern listed in this Report may already be present in ambient air at the point of impingement of the crematorium plume, contributing to exposure concentrations in excess of those estimated in the AQIA.** Individuals in the surrounding industrial area may also be exposed to, for example, elemental mercury through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, for example. Crematorium installations should implement processes such as filters to reduce their atmospheric emissions to limit mercury emission. The effects of multiple sources of air pollution (considering that the proposed Crematorium is to be located in an existing industrial area, surrounded by several contributors to air pollution) and routes/ pathways of exposure (dermal, air, consumption etc.) should be considered in an assessment of individual risk associated with exposure to any perceived pollutants from the crematorium - people may also be exposed to the identified pollutants such

as mercury for example, through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, etc. Section 10.1 of this Report has discussed impacts these pollutants and their potential impacts to human health.

- The property is zoned as General Industry Zone 1 which permits a crematorium. It is of the opinion of the author that the proposed Project poses negligible to no risk to human health. The author does, however, recommend that the air quality emissions are monitored bi-annually in the first year of operations, then annually for the rest of the duration of the operational phase of the crematorium and an analysis on those results should be conducted where a specific concern exists.

  To ensure that the proposed crematorium does not cause adverse health impacts to both the employees and the surrounding areas, the mitigation measure stipulated in the HIA and the air quality study should be implemented and the requirements stipulated in the National Health Act (Act 61 of 2003) should be adhered to.

General Health Concerns (considering all Crematoriums):

- *Noise*

General Concern from Specialist	***Specialist Analysis of the Proposal***	***Technology Specifications***
Potential health effects identified include hearing loss or loss of hearing sensitivity, sleep disturbance, cardiovascular and physiological effects, mental health effects and behavioural effects, including poor performance by school children (Stansfield and Matheson 2003, WHO 1999, Health Evidence Bulletins 1999)	According to the design of the furnaces, the Combustion Air Fan noise is attenuated and located on top of the Cremator roof, thus the physical effect of hearing loss and impairment due to noise exposure is not a community health risk but is an important workplace occupational health consideration. The noise levels required to induce hearing loss only occur at levels above 85 dB(A) which would be intolerable for any community.	The manufacturer has assured that the attenuation specifications are sufficient to ensure that workers are not at risk. The technology is currently functioning on other sites across South Africa.

- *Air Quality*

Cremation is a combustion process whereby a casket and human cadavers are incinerated at a high temperature in a closed chamber. Cremation is normally fuelled by gas and will produce emissions associated with fossil fuel combustion as well as emissions related to the material being combusted (Domingo, 2010). This can include:

- Combustion gases: carbon monoxide (CO), nitrogen oxides (NOx), sulphur dioxide (SO_2) and volatile organic compounds (VOC);
- Particulate matter and fine dust: PM_{10} and $PM_{2.5}$;
- Organic pollutants: Compounds resulting from incomplete combustion processes or formed when organic compounds react with chlorine in materials such as plastics. These pollutants can include polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) and polycyclic aromatic hydrocarbons (PAH) amongst others;

- Heavy metals: Mercury (Hg) arising from volatilization of Hg in dental amalgam in fillings and a small quantity of various metals in tissues of the individual, or personal memorial items included in the casket.

The pollutants of most concern are those known to be toxic to humans and which can bioaccumulate in tissues (e.g., PCDD/Fs and Hg) as well as fine particulate matter ($PM_{2.5}$), which can negatively impact the heart and lungs and is associated with some chronic illnesses and adverse birth outcomes (NCCEH, 2020). Evidence on the release of radioactive particles, following cremation of deceased patients who had been treated with radioactive substances (e.g., cancer treatments) has not been widely studied but has been raised as an emerging area of public interest and concern.

Table 9: General health risks related to pollutant emissions (Niara Environmental Consultants, 2022).

Pollutant	*Short-term exposure*	*Long-term exposure*
Particulate matter (PM)	➢ Lung inflammatory reactions ➢ Respiratory symptoms ➢ Adverse effects on the cardiovascular system ➢ Increase in medication usage ➢ Increase in hospital admissions ➢ Increase in mortality	➢ Increase in lower respiratory symptoms ➢ Reduction in lung function in children ➢ Increase in chronic obstructive pulmonary disease ➢ Reduction in lung function in adults ➢ Reduction in life expectancy ➢ Reduction in lung function development
SO_2 - originates from the combustion of sulphur-containing fossil fuels in applications such as residential heating, industries, stationary power generation, ships and motor vehicles	➢ Effects of SO_2 exposure are short-lived with lung function returning to normal within a few minutes to hours (WHO, 2000; WHO, 2005). The proposed development will utilize LPG which has far lower emissions than other fossil fuels	➢ An exacerbation of respiratory symptoms and a small reduction in lung function in children in some cases. ➢ In adults, respiratory symptoms such as wheezing, and coughing are increased. The Hong Kong "intervention" study (Hedley, et al., 2002) indicated significant health benefits, both immediate and long-term, in reducing SO_2 from a daily average of 44 µg/m3 to 21 µg/m3
Nitric oxide (NO) - is a primary pollutant emitted from combustion at stationary sources (heating, power generation, industrial incinerations) and from motor vehicles.	➢ Decreases in pulmonary function. ➢ Asthmatics are potentially the most sensitive subjects although various studies of the health effects on asthmatics have been inconclusive.	➢ No evidence is provided for the association of long-term exposures with health effects in adults (WHO, 2005).
Ozone - in the atmosphere is a secondary pollutant formed through a complex series of	➢ Respiratory symptoms, pulmonary function changes, increased airway responsiveness and inflammation.	➢ There is limited information linking long-term O_3 exposure to chronic health effects, however, there are suggestions that cumulative O3 exposures may be linked with

photochemical reactions between NO2 and VOCs in the presence of sunlight. Sources of these precursor pollutants include motor vehicles and industries.	➢ Ozone exposure has also been reported to be associated with increased hospital admissions for respiratory causes and exacerbation of asthma (WHO, 2005).	increasing asthma severity and the possibility of increased risk of becoming asthmatic (Katsouyanni, 2003).
Carbon monoxide (CO) - is one of the most common and widely distributed air pollutants. Anthropogenic emissions of CO originate from the incomplete combustion of carbonaceous materials. The largest proportion of these emissions is produced from exhausts of internal combustion engines, in particular petrol vehicles. Other sources include industrial processes, coal power plants and waste incinerators.	➢ The adverse health effects of CO vary, depending on the concentration and time of exposure. Clinical symptoms range from headaches, nausea and vomiting, muscular weakness, and shortness of breath at low concentrations (10 ppm) to loss of consciousness and death after prolonged exposure or after acute exposure to high CO concentrations (>500 ppm). ➢ Poisoning may cause both reversible, short-lasting neurological deficits and severe, often delayed, neurological damage. Neuro-behavioural effects include impaired co-ordination, tracking, driving ability, vigilance, and cognitive ability at carboxyhaemoglobin levels as low as 1.5 – 8.2% (WHO, 2005). ➢ High risk patients with regards to CO exposure include persons with cardiovascular diseases (especially ischaemic heart disease), pregnant mothers and the foetus and new-born infants. Epidemiological and clinical studies indicate that CO from smoking and environmental or occupational exposures may contribute to cardiovascular mortality (WHO, 2005).	
Benzene - is a volatile organic compound (VOC). Benzene is a natural component of crude oil, and petrol contains 1 – 5% by volume. Benzene is produced in large quantities from petroleum sources and is used in the chemical synthesis of ethyl benzene, phenol, cyclohexane, and other substituted aromatic hydrocarbons. Benzene is emitted	➢ Information on health effects from short-term exposure to benzene is fairly limited. The most significant adverse effects from prolonged exposure to benzene are haematotoxicity, genotoxicity and carcinogenicity. Chronic benzene exposure can result in bone marrow depression expressed as leukopenia, anaemia and/or thrombocytopenia, leading to pancytopenia and aplastic anaemia. Based on this evidence, C6H6 is recognized to be a human and animal carcinogen. An increased mortality from leukemia has been demonstrated in workers occupationally exposed (WHO, 2005).	

from industrial sources as well as from combustion sources such as motor engines, wood combustion and stationary fossil fuel combustion. The major source is exhaust emissions and evaporation losses from motor vehicles and during the handling, distribution, and storage of petrol.	

As indicated by in the Air Quality Assessment, the Ambient PM_{10} (using the Table View baseline data), $PM_{2.5}$, CO, mercury, and lead concentrations at the fence line of the site are predicted to remain in compliance with the NAAQS standards (and the international guideline for mercury) should the proposed crematorium be commissioned. The benzene concentration as a result of the proposed crematorium does not change the overall compliance status.

Although CO_2 and PM prove to exceed the hourly NAAQS standard. CO_2 concentration rapidly decreases with distance from the site, and no NAAQS exceedances are predicted in any of the surrounding residential areas. It must also be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, which would not be the case in reality. The ambient annual NO_2 concentration at the fence line is predicted to comply with the annual NAAQS for NO_2.

Based on the pollutant quantities that may create health issues (extracted from theoretical papers and studies from the Health Assessment - concentrations of exposure below 100 µg/m^3), when compared to the Air Quality findings (daily concentration is predicted to be 18.12408 µg/m^3), it was concluded that only PM (Particulate Matter) may result in health concerns, if exceedances are experienced:

- Susceptible groups with pre-existing lung or heart disease, asthmatics, as well as elderly people and children, are particularly vulnerable.
- Short term exposure to PM (based on the daily predicted model result) at low concentrations of exposure below 100 µg/m^3 may include:
  - an increase in lower respiratory symptoms
  - medication use.
  - small reductions in lung function.

There are no annual exceedances.

SO_2 originates from fossil fuels. The preferred fuel source for the development is LPG, which is known to have low carbon emissions and is recorded to emit small amounts of SO_2.

As per Section B, point 4.4 of the BAR, the technology has proven to comply with the Air Emission Standards during operational phase.

- *Mercury*

Table 10: General mercury health risk concerns (Niara Environmental Consulting).

Pollutant	*Short-term exposure*	*Long-term exposure*
Mercury - Mercury occurs in the environment as a result of natural processes (e.g., volcanic outgassing) and human activities like mining and burning of fossil fuels	➢ Acute exposure to high concentrations of elemental mercury vapour, such as workers who were exposed to 0.79 mg/m3 for 1.5 years, 0.9 mg/m3 for over 5 years, and 0.014–0.076 mg/m3 for over 15 years, or in cases that are exposed for a longer period such as in occupational settings, may be followed by chest pains, dyspnea, coughing, hemoptysis, and sometimes interstitial pneumonitis leading to death (Piagno & Afshari, 2020).	➢ Due to the long-term low-dose exposure, crematoriums are sources of air pollution, particularly mercury emissions, which have the potential to have subtle, chronic health consequences. From a health standpoint, describing the type and intensity of the evidence of causation and dose-response evaluation are required

According to the Health Assessment, it has been found that **mercury emissions from crematoriums account for an insignificant percentage of the total emissions in the atmosphere. A risk assessment revealed no evidence that ground-level exposure to elemental mercury vapour from crematoriums posed a serious danger to human health** (Piagno & Afshari, 2020).

- ***Health Impacts Associated with the Handling and Storage of Cadavers***

Pathogens – (such as HIV/Hepatitis)

The Health specialist noted that cadavers may pose hazards to those handling them. The recently dead may have been infected by a wide range of pathogens. Once the host is dead, most pathogenic microorganisms cease multiplying and die rapidly as a result of microbial competition as the body decomposes.

The risk of infection hazards of human cadavers can be greatly reduced by:

- Covering cuts or lesions with waterproof dressings;
- Careful cleansing of any injuries sustained during procedures;
- Wear single-use gloves and impervious single-use aprons;
- Take care not to contaminate their instruments or their working environment;
- Wash their hands carefully after touching the cadaver(s) and before eating, drinking, or smoking;
- Good personal hygiene; and
- Use of appropriate protective clothing

This has been included in the BAR. Despite this, its key to note that the bodies will not be handled excessively, as bodies are prepared prior to cremation at a funeral home/morgue, **and this is not a funeral home.**

Pathogens – (SARS-CoV-2 (COVID-19))

The Health specialist noted that the normal route of transmission of SARS-CoV-2 is via respiratory droplets and aerosols, with the bronchial and conjunctival epithelia as the probable main points of entry. The virus can affect many organs of the body and persist for long periods in infected individuals. SARS-CoV-2 can remain viable on inanimate surfaces for up to nine days under laboratory conditions (CDC, 2020), but the importance of such contamination as a source of infection remains unclear. With regards to preparation for burial or cremation of those who have died of SARS-CoV2 infection, the bereaved are advised to avoid rituals or practices that bring them into close contact with the deceased. If religious observance requires such contact (for example viewing, embalming, cosmetic enhancement or hygienic preparation) it should be limited to those who are wearing PPE, under the supervision of someone who is trained in the appropriate selection and use of PPE.

Guidance on the safe handling of those who have died with or from SARS-CoV-2 infection, including full autopsy procedures and the collection of specimens from cadavers, is available from several national and international sources and those dealing with such individuals are advised to follow the guidelines most relevant to their location.

It's key to note that the bodies will not be handled excessively, as **this is not a funeral home/morgue, the bodies will be prepared prior to cremation.**

- *Odour*

The Health Specialist report advises that although unlikely, foul odour may be emitted at the crematorium due to continuous incineration of organic matter. The problem is intensified if proper mitigation measures are not adopted. Odour is also emitted at the collection points if quick removal of wastes is not practised.

The specialist advised that odour, however, **is not expected to be a considerable nuisance for the proposed crematorium**. Research shows that in a modern effectively functioning crematorium, after it all, there is nothing left to smell -little to no odour. The heat is high enough that everything that can be reduced to smoke is done. Considering that smoke is minute particles carried on hot gasses, even these particles are burned until they are almost completely broken down. There is hardly anything left to smell. In most cases, cremated remains are odourless. They may have a slightly metallic odour or some people say they smell somewhat like incense in some cases. However, it is common for ashes to have no distinct smell. Nonetheless, they can take on the smell of the container or cremation urn they are in.

As per the manufacturers guarantee the technology is designed to be odourless. Therefore there is no risk of odour for the employees or surrounding community.

Mitigation

According to the Specialists Report, the best available techniques to avoid crematorium associated air pollution are those that consider both technology and management. Control of persistent organic pollutants would comprise the following items and considerations (UNEP, 2008):

Items and Considerations to Control Persistent Organic Pollutants	***Compliance***
A cremator meeting the minimum temperature, residence time and oxygen requirements and demonstrated to meet those requirements;	See Appendix L for technology details and compliance.
Suitable air pollution control equipment (for control of persistent organic pollutants this would need to include temperature	

management to control residence time in reformation window, carbon injection and fabric filtration or equivalent) along with culturally and environmentally appropriate burying of any collected material;	
Combustion chambers and casings should be made as airtight as possible and operate under reduced pressure to minimize release of furnace gases;	
Gas temperatures should be monitored to allow control systems to maintain minimum temperature criteria (through use of support fuel burners) and provide interlocking to stop charge when temperature falls below minimum;	
Flue gas oxygen and carbon monoxide levels should be monitored and linked to the control system to ensure adequate control of air supplies and address any combustion problems;	
Mechanized loading and handling of coffins to minimize exposure to operators;	
Coffin storage facilities to be refrigerated, lockable and rodent and bird proof and have odour control;	3 x reefer coolers are to be included in the proposed upgrade as per the scope of works.
Coffin and coffin fittings should be made of combustible material. Avoid use, or inclusion, of articles containing PVC, metals and other chlorinated compounds;	The proponent has confirmed that alternative coffin materials will be encouraged, such as cardboard coffins, etc. however ultimately this is the choice of the family of the deceased.
Effective operation control, inspection and preventive maintenance of components whose failure could impact on the environment by releasing persistent organic pollutants;	See Appendix L for monitoring system of technology. Monitoring of air quality emissions is a recommendation, as well as compliance with all other relevant regulations.
Operator competencies to be identified and met by suitable training;	Training is provided by the manufacturer.
Application of emission limit values and monitoring of emissions to demonstrate emission compliance for persistent organic pollutants.	Monitoring has been recommended.
Best available techniques for other pollutants have not been considered and it should be recognized that other factors will also impact on the definition of best available techniques for a facility (e.g. water and energy use considerations).	The proposed technology will utilize LPG and will not require water.

- Mitigation for Workers in the Crematorium

According to Cui et al., (2021) cremators, incinerators, and post-processing devices are all installed in cremation workshops and operated indoors. Consequently, a large quantity of unorganized odour emissions accumulates inside the workshop and impact the health of the workshop staff. Several studies have highlighted the potential risks of inhaling radioactive ashes by crematorium staff or members of the public. Due to the prolonged half-life of some radioisotopes, if the patient dies soon after

implantation, then the cremated remains would also remain radioactive (Smith et al.,2012). This causes a hazard to the staff and those who handle the remains, until placed into a metal urn. Pacemakers and expandable orthopaedic nails are also two potential dangers to cremation staff. Studies conducted by Korczynski (1997) and Maloney et al., 1998) exposure to Hg to be higher amongst crematoria staff than in a control population, and exposure to fine particulates may occur, particularly where there are no operational and engineering controls to reduce exposure to dust.

The manufacturer has confirmed that the technology is odourless and smokeless, and removal of the ash tray is undertaken using cleaning tools that minimize the potential for dispersion. It is a recommendation of the BAR and EMPr that employees utilize masks when removing/handling the ash trays.

General mitigation measures recommended:

- Assessing and ensuring hygiene is maintained in line with funeral parlour legislation, regulations relating to the management of human remains, Government Notice No. 363 of 22 May 2013 - Condition of the Environmental Authorization.
- Training: Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions;
- Maintenance: Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained;
- Bi-annual air quality monitoring for the first year of operations, then annually for the rest of the duration of the operational phase of the Project;
- Air quality monitoring should be conducted by appropriately trained operating staff;
- Exhaust flow rates should be installed. These should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.
- Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion;
- Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings;
- Monitoring of gas temperature and flue gas O_2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient air quality in the proximity of crematoria;
- The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic;
- Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized.
- Operational controls, inspection and preventive maintenance;
- Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge;
- Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere;
- All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded, and remains should not be scattered until 20 months after the date of implantation;

- Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants.
- Carbon dioxide emissions from gas usage are the main greenhouse gas component of a crematoria's carbon footprint. The applicant may wish to note that the development of an energy reduction strategy will have the benefits of saving money and reducing their carbon footprint. A measure as simple as recording of gas consumption (e.g., comparison of quarterly gas bills) is a first step in managing energy use and therefore CO_2 emissions.

Table 11: As extracted from the Specialist Health Assessment (Table 11.1) Measures for pollutants of most concern from crematoria emissions (O'Keeffe, 2020)

Control Measure(s)	Pollutants			
	PCDD/Fs	Hg	$PM_{2.5}$	Radioactivity
Source Control				
Removal of plastics	*		*	
Non-toxic and eco-friendly coatings or materials in caskets	*			
Removal of Hg fillings		*		
Removal of medical devices containing radioactive material				*
Operational Control				
Minimum 850°C (2^{nd} chamber)	*		*	
Minimum residence time of 2 s (2^{nd} chamber)	*		*	
Adequate O_2 in combustion chamber	*		*	
Monitoring CO releases	*		*	
Air tightness of combustion chambers and casings	*	*	*	*
Maintenance	*	*	*	*
Operator training	*	*	*	*
Emission controls				
Dust control (filters and scrubbers)	*		*	
Activated carbon treatment	*	*		
Hg removal technology (binding, precipitation etc.)		*		
Adequate chimney height	General dispersion and dilution of pollutants higher into atmosphere			

The table above indicates the measure which can help reduce emissions may be employed in order to monitor the various control on the key pollutants associated with the crematorium.

For comprehensive management and control of unorganized odour emissions in workshops, workshop ventilation should be improved, and exhaust fans should be installed considering practical conditions, such that low-concentration unorganized odour emissions can be promptly diluted and discharged. Additionally, equipment should be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.

The following table provides a summary of the best available techniques that can be used to control the cremation process (as provided by the specialist report):

Release	Substance	Control techniques	Technology compliance
Flue gas	Nitrogen oxides	No control	Technology has taken this into consideration, and has been designed accordingly. See Appendix L.
	Odour	Good combustion and a secondary combustion	
	Carbon monoxide	Good combustion and a secondary combustion	
	Volatile organic compounds	Good combustion and a secondary combustion	
	PAH	Good combustion and a secondary combustion	
	Mercury and its compounds	Abatement, or contribute via burden sharing scheme	
	Particulate matter	Good combustion, slow gas velocities and a secondary combustion zone. Abatement further minimises emissions*	
	Hydrogen chloride	Minimise halogens combusted, avoid excessive temperature in primary chamber. Abatement further minimises emissions*	
	PCDD/F	Minimise chlorine combusted and particulate matter emitted, good combustion and a secondary combustion zone, Abatement further minimises emissions*	
	Carbon dioxide	Measure gas consumption, good cremator design	

Cremated remains size reduction machine	Particulate matter	Filter on machine or external dispersion and filter if needed.	Ash is removed from ash tray, with cleaning tools (part of the technology), with minimal dispersion.
Spent gas-cleaning materials	Particulate matter, mercury	Keep containers tightly lidded	This will be included in the mitigation measures.
* if fitted for mercury abatement purposes			

- **<u>NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (ACT 39 OF 2004)</u>**

National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEM:AQA) provides for the listing of activities that have or may have a detrimental impact on the environment and require an Air Emissions Licence. These activities and associated minimum emission standards are listed in GN No. 893 of 2013. In terms of the GN No. 893 of 2013 for installations related to cremations of human remains, companion animals (pets) and the incineration of veterinary waste, an AEL must be undertaken for compliance with Subcategory 8.2: Crematoria and Veterinary Waste Incineration.

- ***The Atmospheric Impact Report by Yellow Tree***

As indicated by the DFFE Screening Tool Report (20 January 2022), specialist input was required. YellowTree (Pty) Ltd was appointed to conduct a Specialist Air Quality/Atmospheric Impact Assessment and undertake the Air Emissions License. The Atmospheric Impact Report was conducted by Caitlin Morris, of Yellow Tree, in accordance with the Regulations Prescribing the Format of the Atmospheric Impact Report (GN. R. 747 of 2013), the Regulations Regarding Air Dispersion Modelling (GN. R. 533 of 2014), and Appendix 6 of the 2014 EIA Regulations, as amended (GN. R. 326 of 2017).

Table 12: NEM:AQA Minimum Emission Standards for Subcategory 8.2: Crematoria and Veterinary Waste Incineration

Description:	Cremation of human remains, companion animals (pets) and the incineration of veterinary waste		
Application:	All installations		
Substance or mixture of substances		**Plant status**	**mg/Nm^3 under normal conditions of 11% O_2, 273 Kelvin and 101.3 kPa.**
Common name	**Chemical symbol**		
Particulate matter	N/A	New	40
		Existing	250
Carbon monoxide	CO	New	75
		Existing	150
Oxides of nitrogen	NO_X expressed as NO_2	New	500
		Existing	1 000
Mercury (Applicable to human cremation only)	Hg	New	0.05
		Existing	0.05

The City of Cape Town City Health: Specialised Environmental Health Services: Air Quality Management Branch confirmed that this report (based on Appendix G1 of the original DBAR, distributed for public participation (11th July 2022 – 11th August 2022), fulfilled the requirements for both the Specialist Air Quality Impact Assessment and the AIR and was conducted in accordance with the Regulations Prescribing the Format of the Atmospheric Impact Report (G.N.R. 747 of 2013), the Regulations Regarding Air Dispersion Modelling (G.N.R. 533 of 2014) and Appendix 6 of the EIA Regulations (G.N.R. 982 of 2014). This report has been updated incorporating the comments raised in the initial public participation and has been included in Appendix G1 of the BAR).

According to the Air Quality Report, the Minimum Emission Standards (GN 893 of 2013) (MES) and National Ambient Air Quality Standards (GN 1210 of 2009) (NAAQS), both regulatory mechanisms to govern emissions that may impact on human health, have been published under NEM:AQA and provide air quality and emissions standards for nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), sulphur dioxide (SO_2), and mercury (applicable to human cremation only). It is noted that according to the National Ambient Air Quality Standards, the following exceedances are permitted:

- For PM_{10} and $PM_{2.5}$, daily average and annual average standards are specified. Four exceedances of the daily average standard are permitted in each calendar year.
- For CO, hourly and 8-hourly average standards are specified. 88 exceedances of the hourly standard are permitted, and 11 exceedances of the 8-hourly standard are permitted in each calendar year.

- For NO_2, hourly and annual standards are specified, with 88 exceedances of the hourly standard permitted in each calendar year.

Consideration was given to he surrounding land use (within a 5 km radius)

- The proposed crematorium is to be located at 55 Stella Road in Montague Gardens, Cape Town. Within a 5 km radius of the site, numerous suburbs are zoned for various land uses.
- In the immediate area surrounding the site is the Montague Gardens industrial area.
- Approximately 2 km NNE of the site is the industrial area of Killarney Gardens. Approximately 3 km NNE of the site is the Dunoon informal settlement. Approximately 2.3 km NE of the site are the Richwood and Burgundy Estate residential areas.
- Approximately 1 km E of the site is the Bothasig residential area. Approximately 3 km E of the site is the Durbanville Hills agricultural area.
- Approximately 2.6 km SE of the site is the Edgemead residential area. The residential area of Summer Greens is located approximately 2.9 km SSE of the site, with the residential area of Acacia Park located 4 km to the SSE.
- Century City's commercial and residential area is located approximately 5 km SSW of the site, with the informal settlement of Joe Slovo Park approximately 2.2 km SW of the site, and the residential areas of Sandrift and Tijgerhof 3.5 km to the SW.
- The boundary of the Milnerton residential area is located 300 metres to the Wof the site (A previously confirmed there is no habitable dwelling within 500m radius of the site).
- The residential suburbs of Flamingo Vlei, Table View and Parklands are located approximately 1.5 km, 3 km and 5 km, respectively, NW of the site.

Locations of hospitals, clinics and health care centres were considered, and none were identified within 500m radius of the site. 140 schools were identified in the 10 km surrounding the site, **but none are located in the industrial area** of Montague Gardens in which the crematorium is to be located. The closest schools are those in the residential areas surrounding Montague Gardens (approximately 900m away, as per Table 13). The closest points to the proposed crematorium on the boundaries of the surrounding residential areas have been identified as discrete sensitive receptors in the air dispersion model. The fence line of the site acts as the boundary for surrounding businesses.

Table 13: Schools surrounding the proposed crematorium (Extracted from the Atmospheric Impact Assessment, 2022).

School	Distance
CBC St Johns	4.8 km N
Curro Academy Sandown	5 km N
Shelanti Private School	5.3 km N
Oakview Academy	2.7 km NE
Silverleaf Primary School	3.8 km NE
Sophakama Primary School	3.8 km NE
Dunoon Primary School	3.8 km NE
Du Noon Educare	4. km NE
Inkwenkwezi Secondary School	4.7 km NE
Vissershok Primary School	9.4 km NE
Wolraad Woltemade Primary School	1.4 km E
ACVV De Grendel Creche	1.7 km E
Cayden's School	2.0 km E
Tafelberg School	2.1 km E
Piccolo Montessori School	2.2 km E
The Learning Tree Educare	2.6 km E
Curro Burgundy Primary School	2.7 km E
Riverside College and Independent School	2.8 km E
Maureen's Daycare	3.2 km E
Sugar n Spice Playschool	3.6 km E
Chicadees Aftercare	3.7 km E
Protea Valley Educare	8.3 km E
Creative Minds Learning Studio	8.4 km E
Kideo Kids	8.5 km E
Welgemoed Preprimary School	8.5 km E
Protea Valley Montessori School	8.7 km E
One 2Play	8.8 km E
Laerskool Welgemoed	9.2 km E
Die Ark Speelskool	9.9 km E
Bosmansdam High School	1.4 km SE
Bothasig Preprimary School	1.9 km SE
Bosmansdam Primary School	2.0 km SE
Edgemead Primary School	3.0 km SE
Edgemead Pre-Primary School	3.2 km SE
The Village Educare and Pre-Primary School	3.2 km SE
Edgemead High School	3.6 km SE
Joe Simon Pre-Primary School	4.2 km SE
Mountain View Academy	4.4 km SE
Oakland Academy School	4.4 km SE
Monte Vista Primary School	4.5 km SE
Buzzi Bees Pre-Primary School	4.7 km SE
Panorama Primary School	5.1 km SE
Panorama Preprimary School	5.1 km SE
Kings School Goodwood	5.7 km SE
Parow North Primary School	6.7 km SE
Hoerskool President High School	7.2 km SE
Parow Primary School	7.8 km SE

School	Distance
Parow Preparatory School	7.8 km SE
Valhalla Primary School	7.9 km SE
Parow-Wes Primary School	8.0 km SE
Parow East Primary School	8.8 km SE
Elswood Secondary School	8.8 km SE
Riebeck Straat Primary School	9.0 km SE
Leonsdale Primary School	9.1 km SE
Elswood Primary School	9.2 km SE
The Settlers High School	9.4 km SE
Boston Primary School	9.8 km SE
Vredelust Primary School	9.9 km SE
Parow Valley Primary School	9.9 km SE
Webner Street Primary School	10 km SE
Ruyterwacht Preparatory School	8.4 km S
Koos Sadie Primary School	7.0 km S
Thornton Primary School	8.1 km S
Mosesh Primary School	10 km S
Emmanuel Christian Academy	7.0 km S
Goodwood Park Primary School	6.1 km S
Klein Tygerdal Preprimary	5.9 km S
Goodwood Park Bewaarskool	5.4 km S
Akasiapark Primary School	4.4 km S
Kings and Queens Pre-Primary and Primary School	3.3 km S
Curro Century City High School	3.5 km S
Curro Castle Century City	3.5 km S
Curro Century City Primary School	3.5 km S
GROW with Tiny Queens and Kings Educare Centre	3.5 km S
WD Hendricks Primary	5.8 km S
Sunderland Primary School	6.0 km S
Windermere High School	6.2 km S
Wingfield Primary School	6.4 km S
Kensington High School	6.5 km S
James Academy	6.7 km S
St John's RC Primary School	6.7 km S
Kenmere Primary School	6.9 km S
Windermere Primary School	7.2 km S
Factreton Primary	6. 9 km S
HJ Kroneberg Primary School	7.4 km S
Greens'cool	8 km S
Oude Molen Technical High School	8.3 km S
Pinelands North Primary School	8.5 km S
La Gratitude Pre-Primary School	9.1 km S
Pinehurst Primary School	9.1 km S
Pinelands High School	9.5 km S
Qunatum Leap Education	9.2 km S
First Steps Daycare	9.4 km S
Smart Start Daycare	9.3 km S

School	Distance
Meerendal Pre-primary School	9.9 km S
Cannons Creek Independent School	9.9 km S
Ready Steady Grow Montessori	9.0 km S
Purzelbaum German Playgroup	8.9 km S
Red Roots Pre-Primary	8.6 km S
Elda Mahlentle Primary School	1.3 km SW
Seal College	2.2 km SW
Mother Goose Playschool Milnerton	2.3 km SW
Seamount Primary School	2.6 km SW
Marconi Beam Primary School	2.9 km SW
Milnerton High School	3.1 km SW
Milnerton Primary School	3.3 km SW
Milnerton Pre Primary School	4.5 km SW
Tygerhof Primary School	4.7 km SW
Woodbridge Primary School	5.1 km SW
Happy Little Educare	5.8 km SW
Holy Cross Brooklyn	6.4 km SW
Eve's Shoe Educare	6.4 km SW
Childcare at Home	6.5 km SW
TOTs Nursery	6.6 km SW
Buren High School	6.9 km SW
Ysterplaat Junior Primary School	7.1 km SW
Watersprite Nursery School	7.2 km SW
Focus College	7.2 km SW
Hidayatul Islam Primary School	7.4 km SW
Ysterplaat Primary School	7.5 km SW
Holy Cross Convent	8.1 km SW
Maitland Secondary School	8.4 km SW
Usasazo Secondary School	8.5 km SW
Koeberg Primary School	8.6 km SW
Garden Village Primary School	9.7 km SW
Liberte School	0.9 km W
Alpha Montessori	2.5 km W
Table View Primary School	2.1 km NW
Sunridge Circle Primary School	2.6 km NW
Parklands College Junior Preparatory and Christopher Robin Pre-Primary	3.9 km NW
Parklands College Senior Preparatory	4.0 km NW
Bloubergrant Primary School	5 km NW
Blouberg International School	5.3 km NW
Bloberg Ridge Primary School	5.7 km NW
Sunningdale Private School	5.7 km NW
West Coast Christian School	6.1 km NW
Parklands College Secondary Faculty	6.2 km NW
Elkanah House High School	6.4 km NW
Generations School Sunningdale	6.6 km NW
Sunningdale Primary School	7 km NW
Rallim Preparatory School	8.0 km NW

Considering that the proposed crematorium is to be located in a large industrial area, the site is surrounded by numerous contributors to air pollution, including Astron Energy, Permoseal, BP, Engen, Cape Precious Metals, Gayatri Paper and Novus Printing works. The contribution of these sources to air pollution is taken into account when the cumulative impact of the proposed crematorium on air quality is assessed. **This is because the baseline data that was used in this assessment already reflects the effect of the existing contributors to air pollution in the area.**

An emissions inventory was compiled for the pollutants identified by G.N. 893 of 2013 to be of concern from crematoria: PM, CO, NOx, and mercury. Level 2 air dispersion modelling was conducted for these pollutants using the AERMOD View programme.

The ambient pollutant concentrations that were predicted by the AERMOD model were added to the baseline air quality data to obtain cumulative predicted concentrations. These concentrations were compared to the NAAQS standards and international guidelines where no NAAQS are available.

The Code of Practice for Air Dispersion Modelling in Air Quality Management in South Africa, 2014 (referred to hereafter as the Code of Practice) (MESs) for Subcategory 8.2 were used as the basis for the emissions inventory for the proposed crematorium, where possible. These standards are given in concentration units of mg/Nm3. However, for use in AERMOD, an emission rate in g/s is required. The flow rate of gas in the stack is needed to convert the concentration into an absolute emission rate. A gas flow rate of 3 500 m3/h was provided by the applicant, along with an approximate stack temperature of 600 °C.

The minimum emissions standards and the provided flow rate were used to calculate the emissions rates of the legislated pollutants for Subcategory 8.2 from each cremator. A stack temperature of 600 °C was used, along with a stack pressure of 101.325 kPa (approximate ambient pressure at sea level), a moisture content of 2% (a conservative estimate from 27 sampling campaigns conducted by Yellow Tree on 14 cremators), and an oxygen concentration of 11%.:

Table 14: Emission Rates per Cremator

Pollutant	Concentration (mg/Nm³)	Emission Rate (g/s)
PM	40	0.012
CO	75	0.022
NO_x	500	0.15
Mercury	0.05	0.000015
PM_{10}	-	0.011
$PM_{2.5}$	-	0.011

As required by the Code of Practice, the emission rates calculated using the MESs were used in this study, apart from NMVOCs (conservatively assumed to comprise solely of benzene) and lead for which no MESs exist.

The ambient pollutant concentrations that were predicted by the AERMOD model were added to baseline air quality data to obtain cumulative predicted concentrations. These concentrations were compared to the NAAQS standards and international guidelines where no NAAQS are available.

Yellow Tree concluded that:

- The **ambient PM_{10} (using the Table View baseline data), $PM_{2.5}$, CO, mercury, and lead concentrations at the fence line of the site are predicted to remain in compliance with the NAAQS standards (and the international guideline for mercury)** should the proposed crematorium be commissioned.
- The annual cumulative benzene concentration would have exceeded the NAAQS in 2019, this was also the case in the baseline data before the contribution from the proposed crematorium was considered. **Thus, the benzene concentration as a result of the proposed crematorium does not change the overall compliance status.**
- Maximum ambient hourly NO_2 concentrations at the fence line are predicted to exceed the hourly NAAQS standard. However, the concentration rapidly decreases with distance from the site, and no NAAQS exceedances are predicted in any of the surrounding residential areas. It

must also be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, **which would not be the case in reality. The ambient annual NO_2 concentration at the fence line is predicted to comply with the annual NAAQS for NO_2.**

Table 15: NO2 Results (Total Conversion Method) (YellowTree, 2022).

Ave. Period	Parameter	Max Fence Line and Surrounds	Milnerton Ridge Sensitive Receptor	Bothasig Sensitive Receptor	Flamingo Vlei Sensitive Receptor	Richwood Sensitive Receptor	Dunoon Sensitive Receptor	Phoenix Sensitive Receptor
Hourly	**Conc. (ppb)**	193.37076	**4.76203**	**2.58430**	**2.17753**	**0.74043**	**0.60056**	**1.33647**
	Conc. (µg/m³)	363.80592	8.95923	4.86207	4.09679	1.39304	1.12989	2.51442
	Location	X: 270688.13 Y: 6251555.34	X: 270178.66 Y: 6251740.48	X: 271676.99 Y: 6251279.85	X: 270263.33 Y: 6252948.25	X: 272217.76 Y: 6253325.42	X: 272287.48 Y: 6254074.39	X: 269820.54 Y: 6249534.94
	Elevation	10.00	7.61	24.80	4.83	30.78	36.35	17.95
	Date, Hour	2020-12-07, 07:00	2020-05-16, 02:00	2020-06-17, 18:00	2020-09-02, 04:00	2021-12-10, 21:00	2019-03-07, 01:00	2021-07-30, 01:00
Annual	**Conc. (ppb)**	30.24871	**0.36655**	**0.16254**	**0.22838**	**0.04101**	**0.03193**	**0.06384**
	Conc. (µg/m³)	56.90963	0.68962	0.3058	0.42967	0.07716	0.06007	0.12011
	Location	X: 270739.81 Y: 6251563.06	X: 270178.66 Y: 6251740.48	X: 271676.99 Y: 6251279.85	X: 270263.33 Y: 6252948.25	X: 272217.76 Y: 6253325.42	X: 272287.48 Y: 6254074.39	X: 269820.54 Y: 6249534.94
	Elevation	11.32	7.61	24.80	4.83	30.78	36.35	17.95
	Date	-	-	-	-	-	-	-

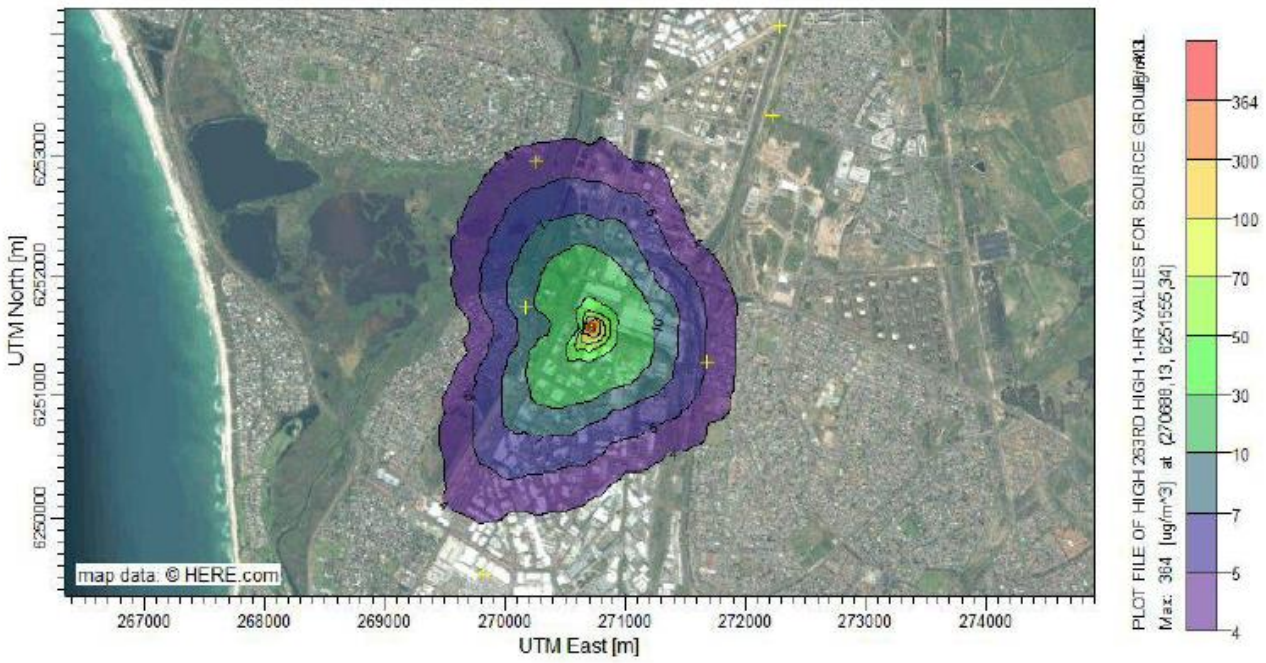


Figure 13: Isopleths of Hourly NO_2 Concentration Around the Proposed Crematorium (YellowTree, 2022)

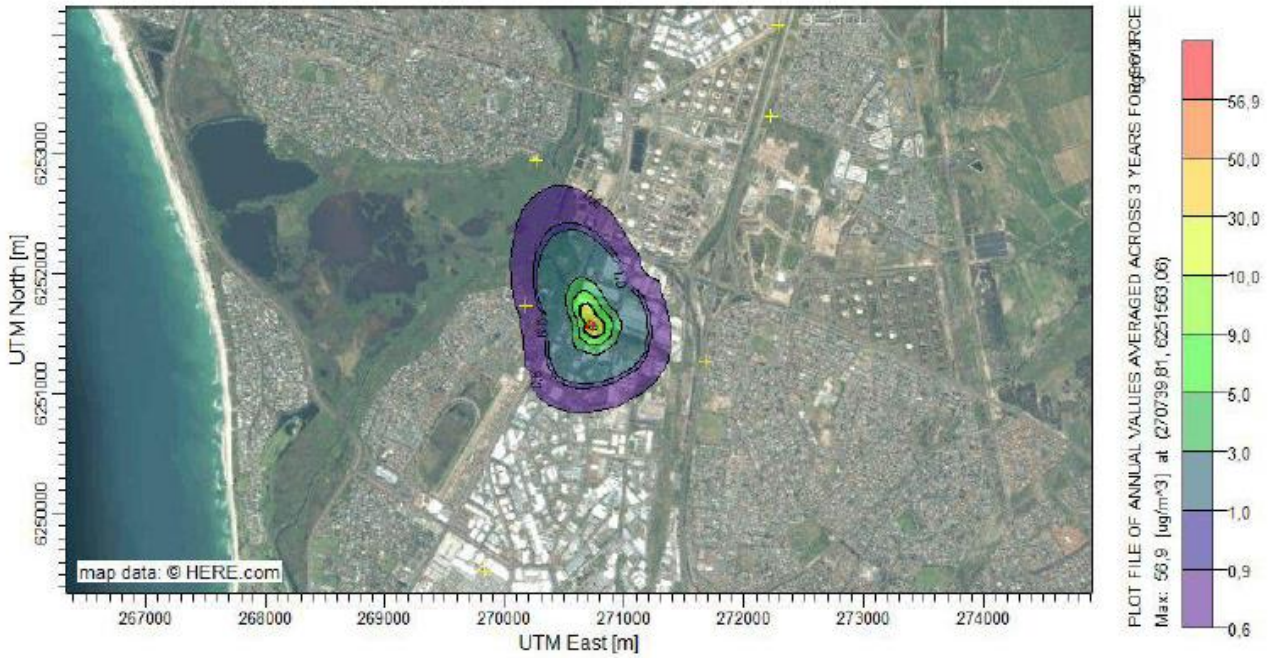


Figure 14: Isopleths of Annual NO_2 Concentration Around the Proposed Crematorium (YellowTree, 2022).

- When PM_{10} data from the Edgemead monitoring station is used as a baseline, **the daily PM_{10} concentrations are predicted to exceed the NAAQS standard at the facility's fence line. Again, it should be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality.**

Table 16: PM_{10} Results (YellowTree, 2022).

Ave. Period	Parameter	Max Fence Line and Surrounds	Milnerton Ridge Sensitive Receptor	Bothasig Sensitive Receptor	Flamingo Vlei Sensitive Receptor	Richwood Sensitive Receptor	Dunoon Sensitive Receptor	Phoenix Sensitive Receptor
Daily	**Conc. (µg/m³)**	**18.12408**	**0.26333**	**0.11884**	**0.12428**	**0.03783**	**0.03218**	**0.06409**
	Location	X: 270739.81 Y: 6251563.06	X: 270178.66 Y: 6251740.48	X: 271676.99 Y: 6251279.85	X: 270263.33 Y: 6252948.25	X: 272217.76 Y: 6253325.42	X: 272287.48 Y: 6254074.39	X: 269820.54 Y: 6249534.94
	Elevation	11.32	7.61	24.80	4.83	30.78	36.35	17.95
	Date	2019-07-03	2020-05-07	2021-07-28	2019-06-14	2021-04-21	2019-10-03	2019-08-24
Annual	**Conc. (µg/m³)**	**4.09635**	**0.04964**	**0.02201**	**0.03093**	**0.00555**	**0.00432**	**0.00865**
	Location	X: 270739.81 Y: 6251563.06	X: 270178.66 Y: 6251740.48	X: 271676.99 Y: 6251279.85	X: 270263.33 Y: 6252948.25	X: 272217.76 Y: 6253325.42	X: 272287.48 Y: 6254074.39	X: 269820.54 Y: 6249534.94
	Elevation	11.32	7.61	24.80	4.83	30.78	36.35	17.95
	Date	-	-	-	-	-	-	-

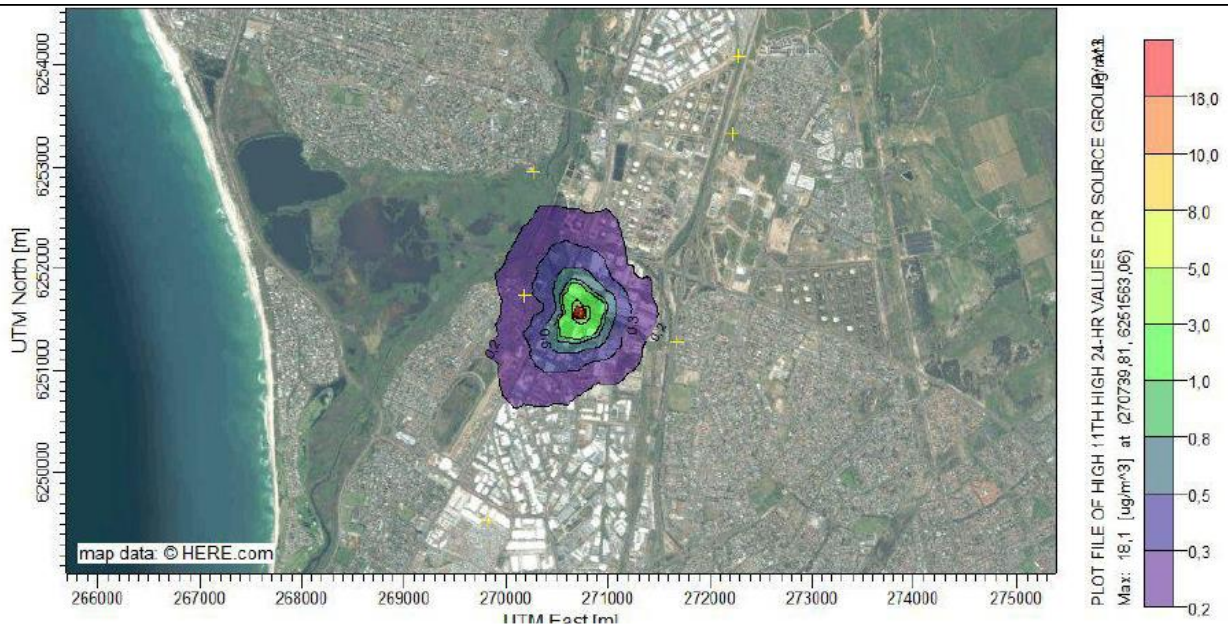


Figure 15: Isopleths of Daily PM_{10} Concentration Around the Proposed Crematorium (YellowTree, 2022)

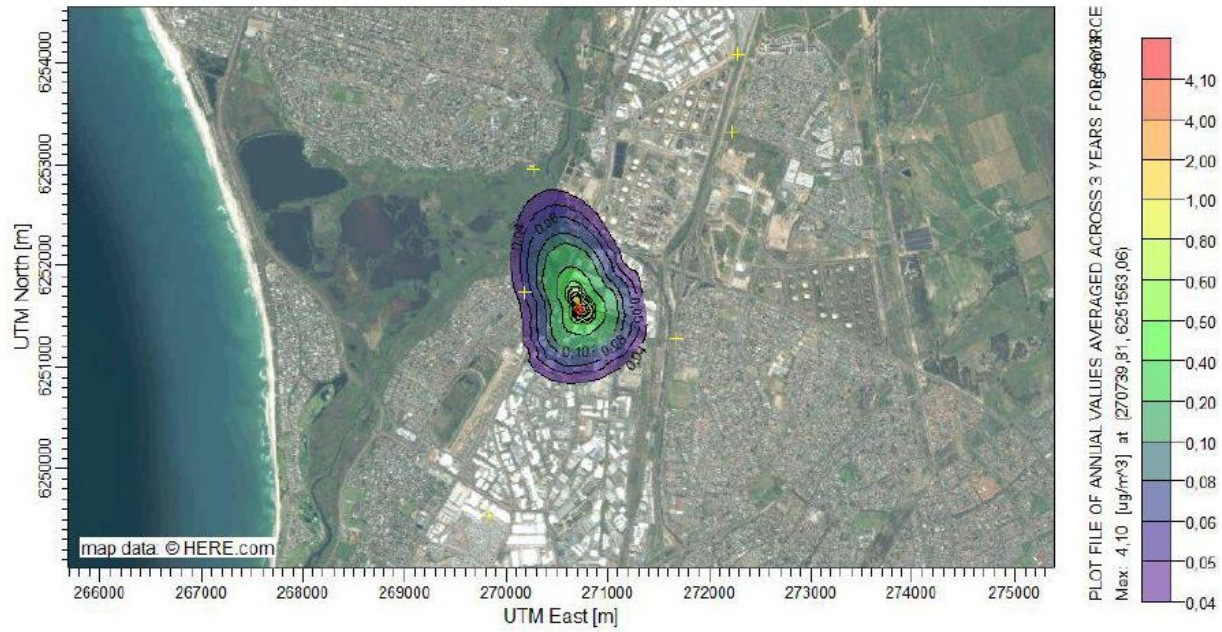


Figure 16: Isopleths of Annual PM_{10} Concentration Around the Proposed Crematorium (YellowTree, 2022).

YellowTree further recommended that although the engineering specifications of the cremators indicate that the stacks are to be 12 metres high, the AERMOD model was run using stack heights of up to 20 metres. The optimum height was determined to be 16 metres, which resulted in no NAAQS exceedances at the fence line for PM_{10} or NO_2, unless these exceedances existed in the baseline data (i.e. daily PM_{10} in 2021 using the Edgemead baseline data). It was recommended that higher stack heights be considered by the proponent in order to minimise the effect of the proposed crematorium on ambient air quality.

Figure 17: Estimated stack positions (YellowTree, 2022).

The manufacturer/distributors of the BA2 cremators, Engineered Thermal Solutions, further indicated that testing and commissioning of the cremators is done in accordance with SANS329 (Industrial Thermo-Processing Equipment) and it conforms to SANS347 (Categorization and conformity assessment Criteria for all Pressure Equipment), indicating that adherence to these standards is required by SASOL and SAGA (South African Gas Association). **Engineered Thermal Solutions has confirmed adopting a 16m stack may compromise the integrity of the technology, as the technology is designed to specifically perform as per the guarantee, with a 12m stack height.** This has still been considered in terms of design alternatives in the BAR but was found to be unfeasible.

NEM:AQA National Atmospheric Emission Reporting Regulations, 2015

Promulgated in terms of NEM:AQA, the National Atmospheric Emission Reporting Regulations, 2015, regulate the reporting of atmospheric emissions on the internet-based National Atmospheric Emissions Inventory System (NAEIS). In terms of Regulation 4 and Annexure 1 of the National Atmospheric Emission Reporting Regulations (2015), the operator of the NEM:AQA listed activity (Subcategory 8.2) must report their emissions in the format required by NAEIS and should be in accordance with the AEL obtained from the licensing authority, in this case the COCT.

YellowTree will submit an Application for an Air Emissions License in accordance with NEM:AQA Section 37 , to the licensing authority of the area (City of Cape Town). If the Air Emissions License is awarded, the proponent will need to comply with the AEL obtained from the COCT Air Quality Management Unit and the applicable monitoring and reporting requirements.

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.
Policies addressed in Section E of this BAR:

- Western Cape Provincial SDF
- City of Cape Town Municipal SDF
- City of Cape Town Municipal Spatial Development Framework (MSDF) (2018)
- City of Cape Town Municipal Integrated Development Plan (2017-2022)
- City of Cape Town Municipal Planning By-law (2015)

Other policies:

- **City of Cape Town Air Quality Management By-law, 2016 (as amended 2021)**
  The CoCT Air Quality Management By-law, 2016 (as amended 2021) was promulgated to provide for:
  - Air quality management and reasonable measures to prevent air pollution;
  - The designation of the air quality officer;
  - The establishment of local emissions Norms and Standards;
  - The promulgation of smoke control zones;
  - The prohibition of smoke emissions from dwellings and other premises;
  - The installation and operation of fuel burning equipment and obscuration measuring equipment, monitoring and sampling;
  - The prohibition of emissions caused by dust, open combustion and the burning of material;
  - The prohibition of dark smoke from compression ignition powered vehicles and provide for stopping, inspection and testing procedures; and
  - The prohibition of emissions that cause a nuisance.

  In terms of Section 8 of the By-law, the entire area of the jurisdiction of the City of Cape Town is declared to be an air quality pollution control zone. As provided in NEM:AQA Sections 36 and 37, application for an AEL must be made to the relevant licensing authority which in this case is the COCT Metropolitan Municipality. In terms of Section 11 of the **City of Cape Town Air Quality Management** By-law, 2016, written authorisation from the COCT is required to install, alter, extend, replace and operate fuel-burning equipment (through a separate application process subsequent to the BAR approval).

  Legal requirements for this project:
  The proponent must apply to the CoCT for authorisation to install and operate fuel-combustion equipment and must undertake periodic emission testing as required by the authorisation. Furthermore, in terms of the By-law, the proponent must take all reasonable measures to prevent any potential significant air pollution from occurring, to mitigate / remedy impacts should emissions take place and prevent emissions that may cause a nuisance.

- **City of Cape Town Cemeteries, Crematoria and Funeral Undertakers By-law (2011)**
  The COCT Cemeteries, Crematoria and Funeral Undertakers By-law (2011), regulates the development of cemeteries, the disposal of corpses and the interment of human remains in a dignified manner. Sections 52, 53 and 55(2) of the By-law applies to private crematoria.
  In terms of Section 52(1) of the By-law, written approval is required to install and operate fuel burning equipment.

  Legal requirements for this project:
  In terms of Section 52(1) of the By-law, the proponent must obtain written approval from the COCT to cremate or cause to cremate human remains within any crematorium after obtaining approval of the City and complying with all conditions as determined by the City.

In terms of Section 53(3) of the By-law, the crematorium facility must be fitted with abatement equipment to prevent the dispersion of ash into the atmosphere.

- **City of Cape Town Community Fire Safety By-law, 2002 (as amended 2015)**
  The COCT Community Fire Safety By-law, 2022 (amended 2015) provides for procedures, methods and practices to regulate fire safety within the COCT municipality. Chapter 8 provides for the regulation of Flammable Substances in the municipality to prevent and reduce fire hazards or other threatening dangers. In terms of Section 37(6) of the By-law an owner or person in charge of the premises may not use a flammable gas in excess of 100 kg, or a flammable liquid in excess of 200 litres, unless he has obtained a flammable substance certificate from the controlling authority.

  Section 39 provides that: [3]
  - A permanent or temporary tank must be erected at least 3,5 metres from boundaries, buildings and other flammable substances or combustible materials.
  - A permanent or temporary tank must be located on firm level ground and the ground must be of adequate strength to support the mass of the tank and contents.
  - A permanent or temporary tank must have a bund wall that shall be so designed as to contain 110% of the contents of the tank within the bund.
  - Adequate precautions must be taken to prevent spillage during the filling of a tank.
  - Sufficient fire extinguishers, as determined by the controlling authority, must be provided in weatherproof boxes in close proximity to a tank.
  - Symbolic safety signs depicting ''No Smoking'', ''No Naked Lights'' and ''Danger'' must be provided adjacent to a tank, and the signs must comply with SABS 1186: Part 1.
  - The flammable liquid in the tank must be clearly identified, using the Hazchem placards listed in SABS 0232

  Section 37 provides that prior to the commissioning of an aboveground storage tank or associated pipework, the owner or person in charge of the installation must ensure that it is pressure-tested in accordance with the provisions of the National Building Regulations in the presence of the controlling authority who must be notified at least 48 hours prior to the pressure test.

  Section 52A provides that the controlling authority may require a risk assessment to be carried out on a premises or portion of a premises where an installation or a quantity of a substance is present which in the opinion of the controlling authority poses a risk that could affect the health and safety of employees and the public.

  Legal requirements for this project:
  An application form for a flammable substance certificate must be submitted to the controlling authority, which in this case is the CoCT Chief Fire Officer. This must be completed and issued to the COCT Chief Fire Officer, for certification.

- **City of Cape Town Stormwater Management By-law, 2005**
  The COCT Stormwater Management By-law, 2005, prohibits any person to discharge any substance other than stormwater from any place onto any surface or into the stormwater system except with written consent of the Council and subject to any conditions it may impose.

In the event of a water pollution incident, Section 7 of the By-law requires the owner of the property on which the incident took place or the person responsible for the incident to immediately report the incident to Council, and at own cost, take all reasonable measures which, in the opinion of Council, will contain and minimise the effects of the pollution. This may include cleaning procedures and the rehabilitation of the environment, as required by Council.

- **City of Cape Town Wastewater and Industrial Effluent By-law, 2013**
  The proposed crematorium facility may conduct cleaning and maintenance operations of the installed cremators which will result in industrial effluent. If not properly managed, industrial effluent has the potential to damage the municipal sewer system, disrupt wastewater treatment processes and harm the natural environment. As per the COCT Wastewater and Industrial Effluent By-law, 2013, Section 3(2) specifies that 'any person who acquires a building for purposes of using such building for trade premisses, must, in writing, apply for permission to discharge industrial effluent into the sewer or any wastewater system in the form prescribed by the City'.

  Section 7 of the By-law provides that where no suitable industrial sewer is available, it must be transported to a designated municipal wastewater treatment works for disposal. However, no person may transport or dispose of wastewater or industrial effluent unless the applicable application form is submitted and:

  - An authorised official has approved the method of transportation and imposed such conditions as it may deem necessary for the transportation of such wastewater;
  - The waste generator takes the necessary precautions and measures to prevent the spillage, leakage or seepage from any container of such wastewater or its by-products during transportation; and
  - Such wastewater is disposed of in a waste treatment or disposal facility that is approved by the City
  - Disposal receipts must be obtained and, the waste generator must, for at least one year, retain the written the disposal receipt and upon request, make available for inspection by an authorised official such written proof of acceptance.

  In terms of Section 10, any person who has been granted consent to discharge industrial effluent into a municipal sewer, must pay to the City, a charge calaculated in accordance with Schedule 1 of the By-law.

  Legal requirements for this project:
  The proponent is required to complete and submit the 'Permission to Discharge Industrial Effluent into Sewers Application Form' in the case of discharge into the municipal sewers, or in the case of transportation and disposal at wastewater treatment works, the proponent must complete and submit the 'Disposal of Waste Water Directly at CoCT Facilities Application Form'.

- **City of Cape Town Integrated Waste Management By-law, 2009 (as amended 2016)**
  In term of the COCT Integrated Waste Management By-law, 2009 (as amended 2016), a waste generator must:

  - Avoid the generation of waste or where it cannot be avoided minimise the toxicity and amounts of waste generated;

- Separate waste with the aim of minimising waste and its impacts on the environment and to store the recyclable waste separately from non-recyclable waste;
- Any person who directly or indirectly generates building waste or the owner of the property on which such building waste is generated shall remove and dispose of it at a licenced crushing plant or landfill site or any other licenced building waste disposal facility
- Manage waste so that it does not endanger health or the environment or create a nuisance;
- Maintain suitable cleanliness and hygiene standards on their premises as required by the City's Environmental Health By-law;

As per Section 12 of the By-law, storage and transportation of waste must be undertaken in a manner that ensures:

- suitable measures are in place to prevent accidental spillage or leakage;
- the waste cannot be blown away;
- nuisances such as odour, visual impacts and breeding of vectors do not arise;
- pollution of the environment and harm to health are prevented;
- hazardous waste is sealed in an impervious container and suitable measures are in place to prevent tampering;
- any container holding hazardous waste is labelled or records are kept reflecting the date on which the waste was first placed in the container and the categories or the specific category of waste stored in the container; and
- any waste items or substances are safe for handling, collection or disposal.

Further to the requirements for waste management provided in the Integrated Waste Management By-law, 2009 (as amended 2016), the By-law requires compliances with the provisions stipulated in the COCT Environmental Health By-law, 2003.

- **City of Cape Town Environmental Health By-law, 2003**

As per the Environmental Health By-law, 2003, medical waste includes corpses. In terms of Section 23, medical waste must be handled and stored in a safe manner that poses no threat to human health or to the environment. Section 25(1) specifies that medical waste may only be disposed of by a person who holds a permit to operate a hazardous waste site in terms of section 20 of the Environment Conservation Act, 73 of 1989, or who is authorised to incinerate medical waste by means of equipment which has been approved in terms of the Atmospheric Pollution Prevention Act, 45 of 1965, or both. Further to this, the following is provided for the handling of medical waste:

- Prevent public access to medical waste containers which are in use;
- Store filled medical waste containers in controlled, secure areas which are reserved for the storage of medical waste.

It is expected that the funeral parlours and mortuaries, i.e. the clients of the proposed facility, will prepare the corpses and dispose of any medical waste that cannot be incinerated, before the corpses are brought to the proposed crematorium facility. Therefore, the crematorium is not considered to be a medical waste generator.

Legal requirements for this project:

No further legal requirements. The City of Cape Town Environmental Health Department is included as an I&AP to advise on further requirements during the public participation process.

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.

Guidelines	**How the proposed development complies with and responds to the relevant guideline**
Guideline on Public Participation (2013)	Guideline considered in undertaking of the public participation for the proposed development. All relevant provisions contained in the guideline were adhered to in the basic assessment process as appropriate.
Guideline on Need and Desirability (2017)	Guideline considered during the assessment of the Need and Desirability of the proposed development project.
Guideline on Environmental Management Plans (2005)	Guideline considered in the compilation of the EMPr attached to this Basic Assessment Report.
Guideline for the Review of Specialist Input into the EIA Process (2005)	Guideline considered during the review and integration of specialist input into this Basic Assessment Report.
External Guideline: Generic Water Use Authorization Application Process (2007)	Guideline considered during the process of applying for the required water use authorization.
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this Basic Assessment Report
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the assessment of the cumulative effect of the identified impacts.
Circular EADP 0028/2014: One Environmental Management System	Guideline regulating multiple environmental activities under NEMA, including mining related activities.
Guideline for determining the scope of specialist involvement in EIA processes, June 2005.	Guideline considered when determining the scope of specialist involvement for this assessment.
Guideline for review of specialist input in the EIA process (June 2005)	Guideline considered when reviewing specialist involvement for this assessment.
Guideline for involving visual and aesthetic specialists in the EIA process (June 2005)	Guideline considered to guide specialist involvement for this assessment.
Guideline on generic terms of Reference for EAPs and Project Schedules (March 2013)	Guideline has been considered to guide EAP and Project Schedule requirements.

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form

On March 20th, 2020, and August 2020, the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, was promulgated.

The following is a summary of the development footprint environmental sensitivities identified by the DEA Screening Tool (see Appendix D).

Theme	Sensitivity			
	Very High	High	Medium	Low
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme	X			
Palaeontology Theme				X
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Based on these results, the Screening Tool recommended the following specialist assessments be conducted:

- Landscape/Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontology Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Hydrology
- Socio-Economic Assessment
- Ambient Air Quality
- Air Quality Impact Assessment
- Plant Species Assessment
- Animal Species Assessment

Based on the footprint of the existing warehouse facility not being altered, the following specialist reports were not undertaken:

- Socio-Economic Assessment
- Landscape/Visual Impact Assessment
- Hydrology Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontological Impact Assessment
- Terrestrial Biodiversity Impact Assessment

- Agricultural Impact Assessment
- Plant Species Assessment
- Animal Species Assessment

As per the acknowledgment dated the 14th of June 2022, from DEADP, the exclusion of these studies was confirmed.

STUDY	***SPECIALIST***	***SENSITIVITY THEME AIMING TO BE ADDRESSED***
Aquatic Compliance Statement	FEN Consulting	Aquatic/Hydrology
Atmospheric Impact Assessment	Yellow Tree	Ambiant Air Quality
Health Impact Assessment	Niara Environmental Consultants	Health

- The Aquatic Compliance Statement was undertaken in accordance with the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity.
- The Atmospheric Impact Assessment complied with Appendix 6 of the EIA Regulations.
- The Health Impact Assessment with Appendix 6 of the EIA Regulations, as a minimum.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1**	Describe the portion of the proposed development to which the applicable listed activity relates.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	LPG gas will be stored on site for the operation of the furnaces, with a combined capacity of approximately 80m^3.
Activity No(s):	Provide the relevant **Scoping and Environmental Impact Assessment Activity(ies)** as set out in **Listing Notice 2**	Describe the portion of the proposed development to which the applicable listed activity relates.
~~6~~	~~The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—~~ **(i) activities which are identified and included in Listing Notice 1 of 2014;** ~~(ii) activities which are included in the list of waste management activities~~	The proposal will involve the establishment of a crematorium, that will require an Air Emissions Licence. Due to the triggering of Activity 14 of Listing Notice 1, it can be determined that in terms of exclusion (i) Listing Notice 2 is no longer applicable, and the proposal is now subjected to a Basic Assessment Process. **Therefore, this activity is not applicable.**

	~~published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;~~ ~~(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or~~ ~~(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day~~	The Air Emissions License Application is being undertaken by the YellowTree (Pty)Ltd.
~~Activity No(s):~~	~~Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3**~~	~~Describe the portion of the proposed development to which the applicable listed activity relates.~~
~~10~~	~~The development and related operation of facilities or infrastructure for the storage; or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.~~ ~~(i)Western Cape~~ ~~(iii) Inside urban areas:~~ ~~(bb) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined~~	Advised to be removed by DEA&DP. Therefore, not applicable.
~~12~~	~~The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.~~ ~~a.Western Cape~~ ~~i.Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;~~ ~~ii.Within critical biodiversity areas identified in bioregional plans;~~	It should be noted that the general vegetation as indicated by the Vegetation Map is Cape Flats Fynbos vegetation type, which is indicated to be critically endangered, the site is significantly transformed into hardened surfaces. The northern portion is natural; however it is extensively disturbed and contains alien invasives, waste, and existing infrastructure, and will not be utilized for this development. As per NEMA Section 28, the landowner is liable for maintenance of their site in terms of Duty of Care, should they wish to transfer this responsibility to the applicant, the vegetation remaining (predominantly alien invasive), but still recognized as indigenous, quantifies to

	~~iii.Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;~~ ~~iv.On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or~~ ~~v.On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.~~	less than 300m^3 due to the extensive disturbance and sporadic occurrence. **Therefore, this trigger is <u>not</u> applicable**.

Note:

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

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

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

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

Activity No(s):	Provide the relevant **Listed Activity(ies)**	Describe the portion of the proposed development to which the applicable listed activity relates.
Category 8: Subcategory 8.2	Subcategory 8.2: Crematoria and veterinary waste incineration	In terms of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) all installations related to cremations of human remains, companion animals (pets) and the incineration of veterinary waste, is applicable in terms of Subcategory 8.2: Crematoria and Veterinary Waste Incineration.

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.

The Proposed Preferred Alternatives:

- Site: ERF 2433, Montague Gardens, COCT
- Design: LPG fuel source.

ERF2433 contains existing access, and services. The site is predominantly transformed with hardened surfaces, as it is currently utilized by a chemical manufacturer. The site is appropriately zoned to accommodate a crematorium, as it is zoned General Industrial Zone I. The establishment of a crematorium at the site is to take place in two phases:

- Phase 1 will consist of the installation of two cremators that operate 24 hours per day. Each cremator has a maximum cremation capacity of 24 cadavers per day. Thus, in total, the site will have the capacity to cremate 48 cadavers per day.
- Phase 2 will consist of the installation of an additional four cremators, also operating 24 hours per day. After the completion of phase 2, the site will have the capacity to cremate 144 cadavers per day.

The proposed scope of works includes the renovations of the existing warehouse facility as follows:

- Installation of 6 x cremators and associated infrastructure.
- LPG tanks (fuel source for cremators), stored on site in excess of 80m^3, but less than 500m^3.
- 6 x Chimney stacks approximately 0.35m in diameter, and approximately 6m's above the nearest building.
- 3 x reefer coolers and one cool room, each reefer can take 60 units.
- Associated infrastructure and services.
- Safety Plans:
  - Compilation of a fire plan and equipment, safety measures;
- Modifications to the inside of the building includes
  - Resurfacing including flooring.
  - New offices.
  - Sterilization of the interior.
  - Servicing of roll-up doors.
- Modifications outside include:
  - New ABR sheets will be utilized on the outside.
  - Painting.
  - Erecting appropriate signage.

The cremators/furnaces utilized are BA2 Cremators and are sourced from distributors, Engineered Thermal Systems (Pty) Ltd. These cremators are manufactured under a license from Johnson Thermal Engineering (JTE).

The JTE Cremator design has the following benefits:

- The design has been around for more than a decade.
- Proven track record of successful operation that meets the Air Emission requirements for new plants as specified by the National Environmental Management: Air Quality Act (NEM:AQA).
- Design, manufacturing, testing and commissioning is done in accordance with SANS329 (Industrial Thermo-Processing Equipment) and conforms to SANS347 (Categorization and conformity assessment Criteria for all Pressure Equipment). Adherence to these Standards is required by SASOL and SAGA (South African Gas Association) of which Engineered Thermal Systems is a proud member of.

JTE has confirmed the following details on based on their BA2 cremators:

- Locally manufactured and distributed in South Africa.
- Accommodates two chambers:
  - Chamber 1:
    - starved combustion primary chamber cremator, ensuring gas velocities are reduced, resulting in lower particulate pickup.
  - Chamber 2:
    - cremation process begins, from 600°C rapidly rising to control at 850°C or higher to completely combust gases and odours before exiting the stack.
  - Provides 2 seconds of high temperature exhaust gas residence time, to ensuring low carbon monoxide emission and total combustion of complex volatile organic compounds.

- Cremators are equipped with an ejector in base of the cremator stack to aid with the drafting to maintain a slight negative pressure within the primary chamber, to ensure that no gases or noxious fumes are emitted into the cremator machine room when the door is opened; designed to meet the Air Emission requirements for new plants as specified in NEM:AQA.

Cremator set-up has the following benefits:

- All controls arranged for ease of access at maintenance time.
- If managed and operated as per specifications, maintenance is not required for upto 5 years, minimum.
- Equipment is registered with the Safe Gas Equipment Scheme, per SANS requirement.
- The Combustion Air Fan is noise attenuated and located on top of the Cremator roof.
- There is a main shut-off isolation solenoid valve in case of emergencies.
- Contains a primary burner and secondary burner, to optimize incineration process.
- Actuators are accessible so as to control the air supply to the burner and secondary chamber.
- The hydraulic power is also accessible from the rear of the furnace.
- Cremator doors are controlled by two hydraulic cylinders to open and close doors, which also ensures an airtight seal by locking the Cremator door in a door surround seal during the Cremation process.
- The electrical/instrumentation box with PLC and fan VFD is located above the hydraulic power pack.
- The system has an HMI (touchscreen) at the front of the Cremator communicates with the PLC and the HMI affords the Operator full control of the Cremator.

2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.

Erf 2433, Montague Gardens, is zoned as General Industry Subzone GI1 in terms of the City of Cape Town Municipal Planning By-Law, 2015. According to the City of Cape Town Municipal Planning By-Law, 2015, the primary uses of the General Industry Subzone GI1 include, amongst other things, funeral parlours and crematoriums.

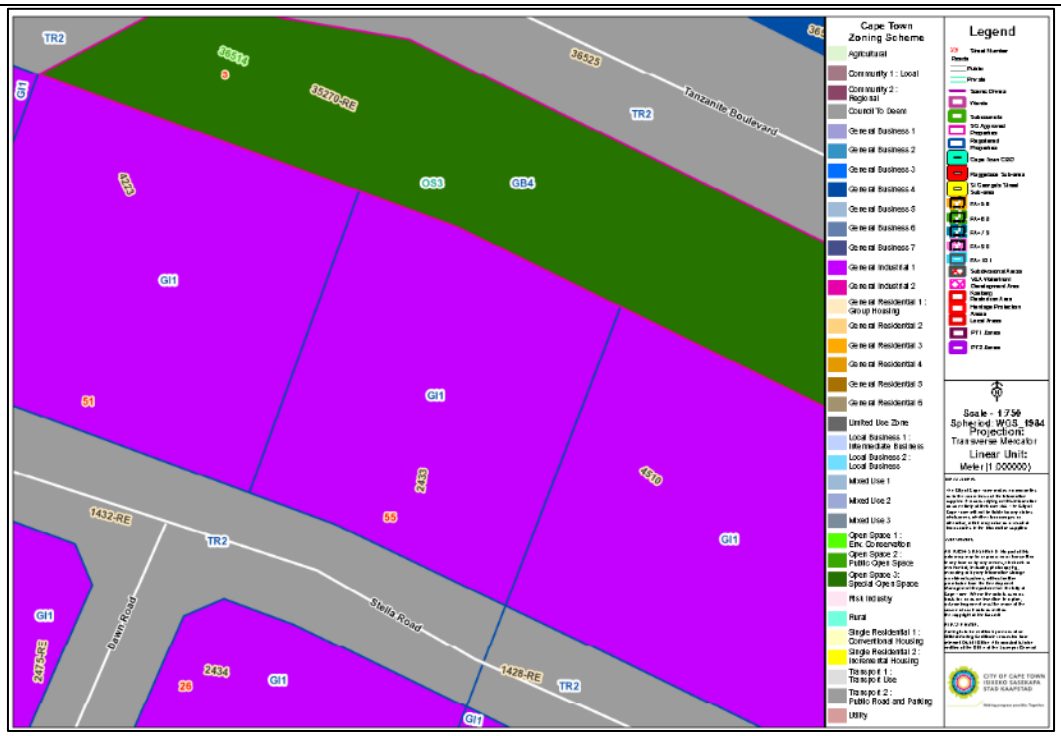


Figure 18: Zoning of the proposed site, Erf 2433, Montague Gardens

INDUSTRIAL ZONINGS	SUB-ZONING	FLOOR FACTOR	COVERAGE	MAXIMUM HEIGHT ABOVE BASE LEVEL	BUILDING LINES		STREET CENTRELINE SETBACK	OTHER PROVISIONS
					Street boundary	Common boundaries		
GENERAL INDUSTRY SUBZONINGS (GI1–GI2) **PRIMARY USES** Industry, restaurant, service station, motor repair garage, funeral parlour, scrap yard, authority use, utility service, crematorium, rooftop base telecommunication station, freestanding base telecommunication station, transport use, multiple parking garage, agricultural industry, private road, open space and additional use rights **ADDITIONAL USE RIGHTS** Factory shop and adult shop	GI 1 GI 2	1,5 4,0 Refer to item 68(a)	75% 75% Refer to item 68(a)	18,0 m 18,0 m, but no restriction in respect of manufacturing buildings Refer to item 68(b)	5,0 m 5,0 m Refer to item 68(c)	3,0 m 3,0 m Refer to item 68(d)	N/a	Boundary walls Parking and access Loading Screening Hazardous substances Service station and motor repair garage Factory shop Adult shop Informal trading

Figure 19: Extract from the City of Cape Town Municipal Planning By-Law, 2015.

The Municipal Planning By-Law, 2015, provides that the General Industry Zone is designed to accommodate manufacturing and related processes, including the use of hazardous substances on site. However, it further provides that although an activity may constitute a primary use right in terms of the General Industrial zoning, no activity or use which includes the on-site storage of hazardous substances, shall be permitted unless a risk management and prevention plan has been submitted and the City has given approval thereto. This will form part of the recommended plans in the EMPR, to be compiled by the applicant prior to commencement of works.

Spatial Planning and Environment Directorate: District Planning and Mechanisms Branch and Development Management Branch, confirmed that the in terms of the City of Cape Town Development Management Scheme (DMS) a crematorium facility is permitted as a primary right in terms of the General Industrial 1 (GI1) zoning. This was provided during public participation.

3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.
N/A	
4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.

The proposed crematorium aligns with the Western Cape PSDF (2014) Guiding Principle 3 which seeks to promote spatial efficiency. Spatial efficiency requires prioritisation of densification, mixed-use, and repurposing of buildings to provide accessible facilities and social services within the urban edge. The proposed crematorium further aligns with the Implementation Plan of the PSDF for the City of Cape Town (2014) which promotes compact, mixed use and integrated settlements that remains limited to within the delineated urban edges of the municipality to divert urban growth pressures away from greenfields.

The Western Cape Development Guidelines for the Provision of Facilities within Settlements aims to provide development guidelines which will complement and interpret the essence and fundamentals of the PSDF. These Guidelines state that cemeteries and crematoria should ideally be located outside settlement cores. The proposed crematorium facility is not located within a settlement core or regional centre, as mapped in the Implementation Plan of the Western Cape PSDF for the City of Cape Town (see Figure 20).

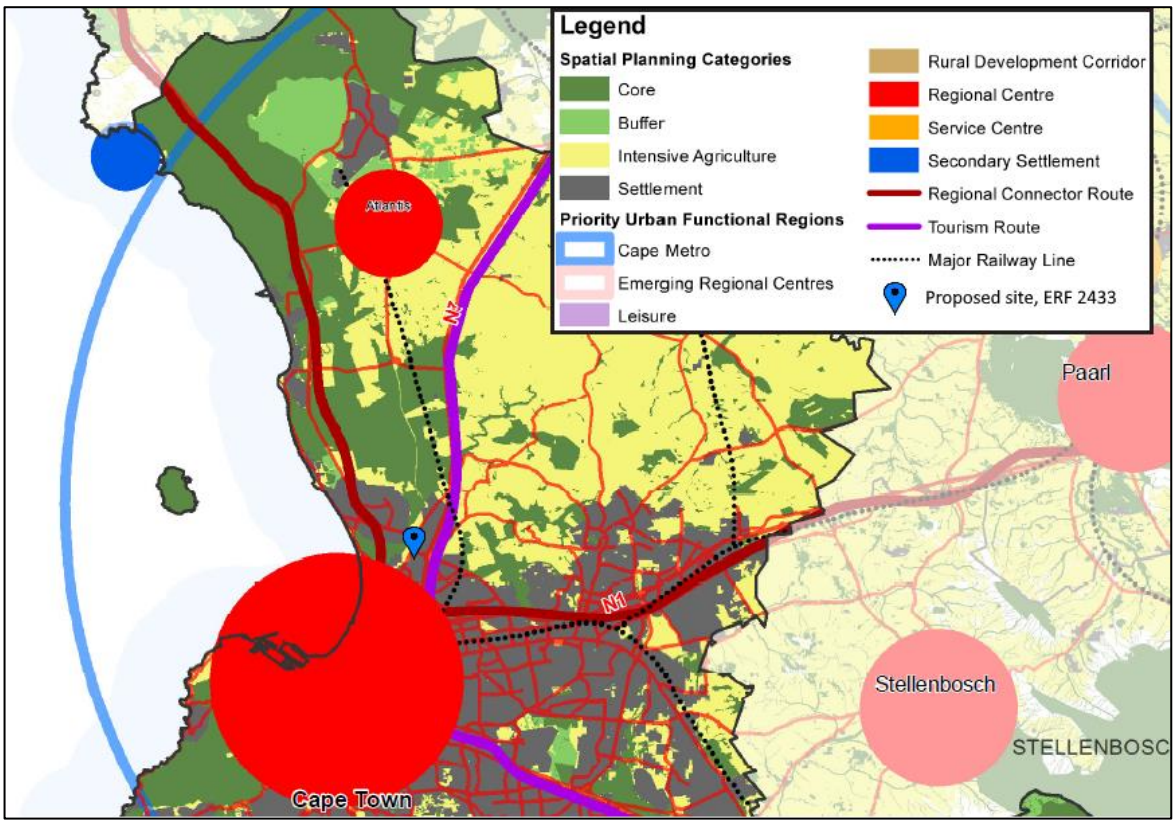


Figure 20: Proposed site (ERF 2433) superimposed on Western Cape PSDF Implementation Plan for COCT (2014).

4.2	The Integrated Development Plan of the local municipality.

The COCT IDP (2017 – 2022) is a strategic plan to guide the development of Cape Town for a specific period. It is built on five key pillars or Strategic Focus Areas (SFAs): the opportunity city; the safe city; the caring city; the inclusive city; and the well-run city.

The "opportunity city" SFA is relevant to the project and is discussed below:

- **The opportunity city:** "Being an opportunity city also requires a concerted focus on taking care of the natural environment in which we find ourselves. We must also ensure that future generations are able to enjoy a clean and safe environment, in which biodiversity is conserved and tourism and recreational opportunities are maximised by managing our natural resources more efficiently and investing in green technologies, we will ensure that there is enough water and energy to go around, and that we do not generate more waste than is strictly necessary. It is also important that we continue to strive towards a more robust and resilient city that is able to respond to the ongoing challenges of climate change and other natural hazards."

In addition to the five SFAs, the COCT has also identified 11 priorities that span the five SFAs. Two of these priorities are relevant to the project and is discussed below:

- **Resource efficiency and security:** "The COCT aims to achieve this through promoting resource efficiency, diversifying resource consumption and sourcing, managing and protecting green infrastructure, and restoring key ecosystem services where needed. The desired outcome is to establish a city that is more resource-efficient, more resource-secure, and increasingly resilient to economic, social and environmental shocks produced by climate change."
- **Positioning Cape Town as a forward-looking, globally competitive business city:** "Opening up new opportunities for investment in high-growth and high-value industries, and in the creation of new small- and medium-sized enterprises."

Cremation, as opposed to burial, promotes "land resource efficiency" as cemeteries require a significant amount of land. In addition, provided air quality and associated health impacts are acceptably managed, crematoria do not have the biophysical impacts of cemeteries (such as groundwater contamination, loss of indigenous vegetation and water quality impacts to freshwater resources).

According to the City of Cape Town's Covid-19 Fatality Management report (2020), the increased fatalities during the COVID-19 pandemic, have placed substantial demand on existing crematoria in the municipality (COCT, 2020; McCain, 2021). In September 2021, the lack of capacity at existing crematoria in Cape Town reportedly led to more than 100 bodies being transported by truck to the Eastern Cape for cremation (McCain, 2021).

The proposed crematorium facility is aligned with the IDP's SFAs and will assist in alleviating the demand on existing crematorium and burial facilities in Cape Town.

4.3.	The Spatial Development Framework of the local municipality.

The proposed crematorium facility aligns with the City of Cape Town's strategic spatial objective to promote an inclusive, integrated, and vibrant city. According to the City of Cape Town Municipal Spatial Development Framework (2018) to align with the strategic objective for integrated settlements, development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet increasing burial demand. The Cape Town SDF Policy Guidelines on Integrated Settlement Patterns further emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). The proposed development of a crematorium facility represents and will contribute to providing an alternative to in-ground burial in the municipality.

According to the City of Cape Town IDP and SDF development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet ongoing burial needs (COCT, 2017:99 & 2018:106). The Cape Town SDF policy guidelines further emphasise

that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). Crematorium facilities represent such an alternative. In accordance with the City of Cape Town Municipal Planning By-Law (2015), the proposed site is currently zoned for General Industrial activities which include 'funeral parlour' and 'crematorium' facilities. The City of Cape Town Parks and Recreations Branch has highlighted the City of Cape Town is facing critical grave shortages in local municipal Cemeteries, resulting in additional costs to families, therefore, they have encouraged the creation of additional crematorium facilities, as cremated remains may be added to full family graves, thereby reusing existing graves locally (Appendix E15).

Further to this there are a limited number of crematorium facilities available in the CoCT area, especially in terms of accessibility for the West Coast of CoCT that has experience significant development over the past 10 years. As depicted in the Figure 20, the proposed site will cater to this area, and to the multiple funeral homes located in and around CoCT.

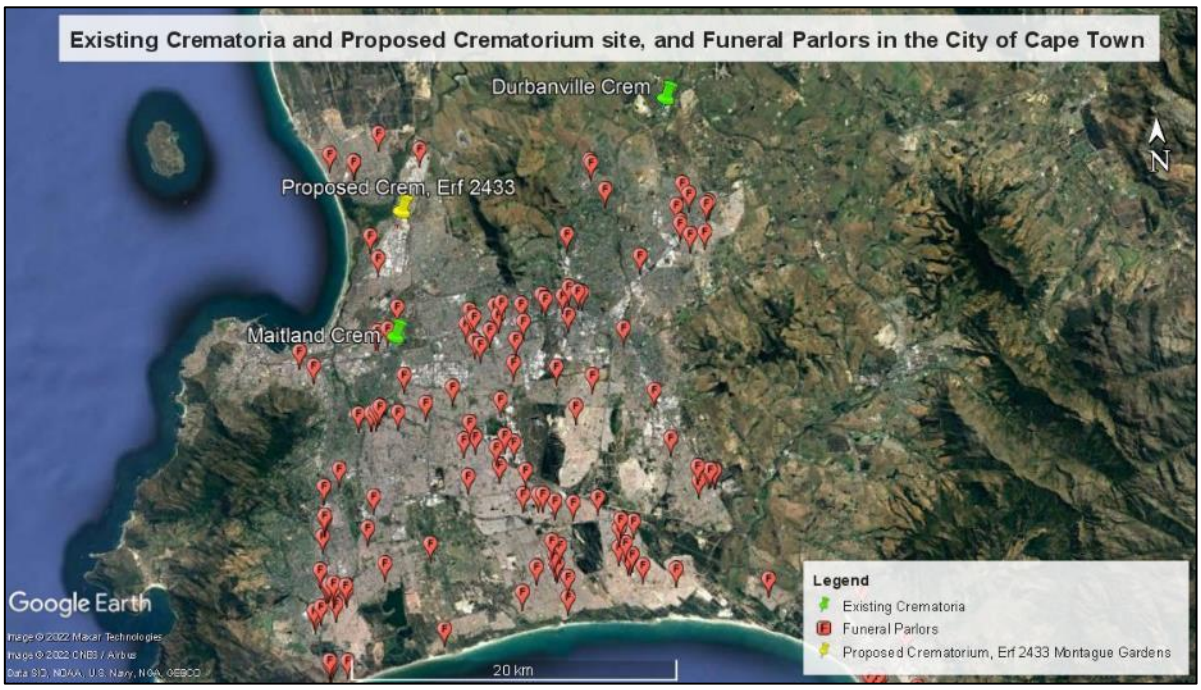


Figure 21: Location of existing crematorium facilities and funeral parlours.

According to the City of Cape Town's Covid-19 Fatality Management report (2020), the increased fatalities during the COVID-19 pandemic, have placed substantial demand on existing crematoria in the municipality (COCT, 2020; McCain, 2021).

The proposed crematorium facility is aligned with Cape Town's IDP and SDF objectives and will contribute towards the need for alternatives to in-ground burials and the need for increase cremation capacity in the city.

4.4.	The Environmental Management Framework applicable to the area.

The Montague Gardens industrial area forms part of the City of Cape Town Blaauwberg Planning District. The EMFs applicable to this district include the 2012 Blaauwberg District EMF and the May 2022 Draft Blaauwberg District EMF.

The 2012 EMF further provides for activities which are undesirable in the hydrological, coastal and dune, conservation and biodiversity, cultural and recreational resources. Natural economic capital zones. The proposed activity on ERF 2433 does not fall within any of these zones as mapped in the 2012 EMF. The

2012 EMF aligns with the bioregional planning framework and broad provincial Spatial Planning Categories (SPCs). The SPCs specify the inherent land use suitability of the city's environmental, cultural and urban landscapes. Under the SPC for cemeteries, the 2012 EMF states that:

> "No existing cemetery in the southern portion of the District and significant "green-fields" development (i.e. > 100 000 households), requires the reservation of a 20ha cemetery site within such "greenfields" development. Such a site is required to address existing grave demand together with an additional 0,8ha of cemetery space per annum to cater for the "green-fields" development, as well as grave demand emanating from District A in the short-medium term (i.e. 5-15 years). The Atlantis cemetery (43,5ha), while located favourably to accommodate the future growth of Atlantis and environs, is not an economical consideration for communities in the southern portion of the district, especially those of lower income status. Therefore, the district will require new cemetery development. In this regard, the Vissershok landfill buffer area could provide opportunities for above ground burial."

The May 2022 Draft Blaauwberg District EMF Guidelines for Utility Service Infrastructure states that in relation to cemeteries, other interment options to supplement the traditional in-ground burial must be identified and supported. Citing the MSDF, the 2022 Draft EMF identifies cemeteries as a relevant District SDF SPC for the Urban Inner Core and the Incremental Growth and Consolidation spatial transformation areas.

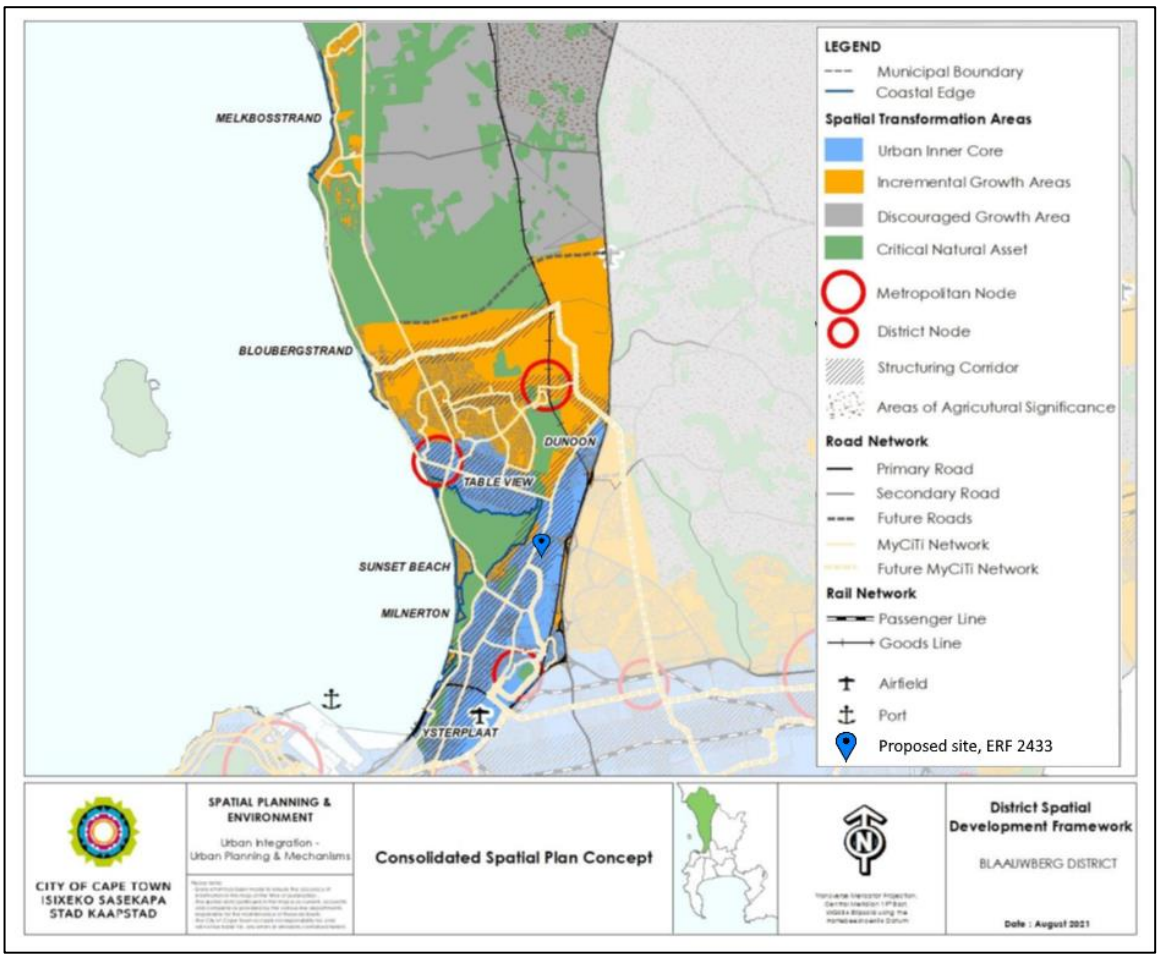


Figure 22: Consolidated Spatial Planning and Environmental Management Framework (adapted from COCT, 2022)

The 2022 Draft EMF provides that while Montague Gardens is a major industrial area in the district, no activity or use which includes the on- site storage (or management) of hazardous substances shall be permitted without an approved risk management and prevention plan has been submitted and Council

has given approval thereto. This is in line with the requirements of the City of Cape Town Municipal Planning By-Law, 2015.

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

No concerns were raised during public participation.

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

According to CapeFarmMapper (Accessed February 2, 2022), no CBA's, ESA's or other natural areas have been identified on site. This is further supported during the site visit, which indicates that the site is significantly transformed. Further to this, the proposed footprint of the existing warehouse on Erf 2433, Montague Gardens, will not be expanded. The northern portion of the site although not transformed, contains extensive alien invasive encroachment, old construction material, existing and stormwater infrastructure, however the warehouse footprint will not be expanded into this area.

Therefore, no further action has been undertaken as this will not have any influence on the proposed development. Alien invasive management measures have been included in the BAR and EMPr.

7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.

The proposed establishment of a crematorium facility within the existing industrial warehouse on Erf 2433, Montague Gardens, Cape Town, does not occur on a coastal property.

8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.

No, there have been no changes to the Screening Tool report since the Application form was submitted.

9.	Explain how the proposed development will optimise vacant land available within an urban area.

While not on vacant land, the crematorium facility will be established within an existing warehouse on Erf 2433 in Montague Gardens, an industrial area in the City of Cape Town Metropolitan Municipality. All modifications are superficial in nature, to the exterior of the building, and will therefore not result in expansion of the existing footprint. Therefore, no natural area will be transformed, the proposed development can be accommodated within the existing zoning of the site, within the existing urban area.

10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.

The crematorium facility will be established within an existing warehouse on Erf 2433 in Montague Gardens, an industrial area in the City of Cape Town Metropolitan Municipality. All modifications are superficial in nature, to the exterior and interior of the building, and will therefore not result in expansion of the existing footprint. No additional services will be required, as the existing services are sufficient to meet the needs of the proposed development. Furthermore, given the proposed use of LPG for the operation of the furnaces (the main energy consumption on the site), this will reduce the developments reliance on the grid.

11.	Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).

The crematorium facility will utilise existing services available to the existing functioning warehouse on Erf 2433.

12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.

The National Department of Environmental Affairs (2017) and the Western Cape Department of Environmental Affairs and Development Planning's (2011) environmental impact assessment Guidelines on Need and Desirability requires that the need and desirability of a project are considered and evaluated against the tenets of sustainability. This requires an analysis of the effect of the project on social, economic and ecological systems, and places emphasis on consideration of a project's justification in terms of the specific needs and interests of the community. The consideration of need and desirability in EIA decision-making therefore requires the consideration of the strategic context of the project along with broader societal needs and the public interest (DEA, 2017). This includes justification of a proposed development in terms of the current planning framework of the credible municipal Integrated Development Plan (IDP) and the Spatial Development Framework (SDF).

Social Aspects

The social component of need and desirability can be assessed using regional planning documents such as SDFs, IDPs and EMFs to assess the project's social compatibility with plans. These documents incorporate specific social objectives and emphasise the need to promote the social wellbeing, health, safety, and security of communities, especially underprivileged and/or vulnerable communities.

- *Location*

The proposed development is located within an industrial area compatible with the COCTs Spatial Development Framework (2018) and land use zoning objectives for the site provided that the development does not exceed air emission standards or materially contribute to ambient pollution exceedances as provided for by the:

- National Ambient Air Quality Standards (NAAQS),
- NEM:AQA Minimum Emission Standards, applicable in terms of Subcategory 8.2: Crematoria and Veterinary Waste Incineration, for particulate matter, CO, SO, and mercury
- City of Cape Town Air Quality Management By-law (2016)

The proposed crematorium is not located within 500 m radius of any habitable dwelling. Further to this the **Health Specialist has highlighted that the risk to human health based on the proposal is negligible to none.**

- *Employment Opportunities*

The crematorium will generate multiple job opportunities of which local labour can be sourced for, and local suppliers will be utilized where possible, however this will be temporary. The manufacturer and distributor is national. The development will generate fewer permanent jobs, however permanent jobs will be created for people of various skills levels, who can be sourced from the local communities. Where necessary upon receipt of the Environmental Authorization the proponent will appoint appropriately experience and skilled operators where necessary.

According to the City of Cape Town IDP and SDF development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet increasing burial demand (COCT, 2017:99 & 2018:106). The Cape Town SDF policy guidelines further emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). Crematorium facilities represent such an alternative. In accordance with the City of

Cape Town Municipal Planning By-Law (2015), the proposed site is currently zoned for General Industrial activities which include 'funeral parlour' and 'crematorium' facilities.

According to the City of Cape Town's Covid-19 Fatality Management report (2020), the increased fatalities during the COVID-19 pandemic, have placed substantial demand on existing crematoria in the municipality (COCT, 2020; McCain, 2021). The proposed development of a crematorium facility will help provide for the increased need for cremation services in the Cape Town Metropolitan area, as supported by the Recreations and Parks Department: Cemetery Management Branch of the CoCT (Appendix E15).

Economic Aspects

The economic need and desirability of a project can be assessed using national, provincial, district and local municipal planning documents to assess the project's economic compatibility with plans. These documents describe specific economic objectives and emphasise the need to:

- Improve job creation opportunities;
- Create opportunities for the private and public sectors to grow the economy;
- Ensure appropriate economic growth;
- Encourage trade and investment;
- Develop human capital and a skilled and capable workforce; and
- Provide adequate and appropriate infrastructure to stimulate economic growth.

The proposed project is aligned with the above objectives, which effectively support the development of the crematorium. The crematorium will create employment opportunities during the Establishment and Operation Phases and provide cremation service to communities within the Cape Town Metropolitan area in the Western Cape. Where necessary, upon receipt of the Environmental Authorization the proponent will appoint appropriately experience and skilled operators where necessary.

The Recreations and Parks Department: Cemetery Management Branch of the CoCT has advised that the cost of establishing crematoria is significantly due to a lack of supply and demand disparity. As such the creation of additional crematoria could contribute to keep costs more competitive (Appednix E15).

Ecological aspects:

It is essential that the implementation of social and economic policies takes cognisance of strategic ecological concerns such as climate change, food security, as well as the sustainability in supply of natural resources and the status of our ecosystem services. Sustainable development is the process that is followed to achieve the goal of sustainability (DEAT, 2017).

Sustainable development implies that a project should not compromise natural systems. In this regard, the Best Practicable Environmental Option (BPEO) is that which provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.

The development will aim to create a more environmentally sustainable alternative to in-ground burial, which in most cases is associated with negative impacts to the environment. Further to this, the proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, is significantly transformed and contains no critical biodiversity areas, ecological support areas or any other natural area.

In conclusion, the proposed project is justifiably needed and desirable in terms of the social, economic and ecological environments.

National Framework for Sustainable Development ("NFSD")

In the National Framework for Sustainable Development ("NFSD") (2008), it states that "The achievement of sustainable development is not a once-off occurrence, and its objectives cannot be achieved by a single action or decision." As such, it is not expected that this proposed development will single handily achieve sustainable development, but it will contribute towards achieving sustainable development.

"The process to achieve sustainable development is an ongoing process that requires a particular set of values and attitudes in which economic, social and environmental assets that society has at its disposal, are managed in a manner that sustains human well-being without compromising the ability of future generations to meet their own need," (NFSD, 2008). The need and desirability of the proposed development is further emphasized as the proposed development forms part of the aforementioned on-going process. The proposed development conceptualizes the particular set of values and attitudes in which economic, social and ecological assets are required to be managed in order to sustain human well-being without compromising the ability of future generations to meet their own needs and effectively achieve sustainable development.

The Need and Desirability of the proposed development in terms of the Department's guideline on Need and Desirability (March 2013) is further emphasised through its alignment with the NEMA sustainability principles. Relevant specialist reports have been completed to aid decision making and fully understand all elements of the environment on site. As the specialist reports provide an insight into the environmental elements, provisions have been made for a stringent public participation process to take into account the interests, needs and values of all interested and affected parties. NEMA makes it evident that proposed developments must ensure that the environment and its resources must serve the public interest while protecting the ecological environment.

As described in Table 7, the proposed development will serve the public's social, economic and ecological needs equitably.

Table 17: Alignment of the proposed development with the principles contained in Section 2 of NEMA (1998)

NEMA (1998) Section 2: Principles	Manner in which the principle is addressed by the proposed development
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably	The Environmental Assessment process underscoring this BAR, holistically considers the social, economic, and ecological needs of the local community, as well as the social, economic, and ecological consequences (disadvantages and benefits) of the proposed development and accordingly how the proposed development will contribute to meeting local needs as defined in the COCT Municipal Integrated Development Plan and Municipal Spatial Development Framework (MSDF). The proposed development is located within an industrial area compatible with the COCTs Spatial Development Framework (2018) and land use zoning objectives for the site. The Atmospheric Impact Assessment conducted by Yellow Tree found that the development will not exceed air emission standards or materially contribute to ambient pollution exceedances as provided for by the: • National Ambient Air Quality Standards (NAAQS),
(3) Development must be socially, environmentally, and economically sustainable.	

	• NEM:AQA Minimum Emission Standards, applicable in terms of Subcategory 8.2: Crematoria and Veterinary Waste Incineration, for particulate matter, CO, SO, and mercury • City of Cape Town Air Quality Management By-law (2016) According to the City of Cape Town IDP and SDF development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet increasing burial demand (COCT, 2017:99 & 2018:106). The Cape Town SDF policy guidelines further emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). Crematorium facilities represent such an alternative. According to the City of Cape Town's Covid-19 Fatality Management report (2020), the increased fatalities during the COVID-19 pandemic, have placed substantial demand on existing crematoria in the municipality (COCT, 2020; McCain, 2021). The development will aim to create a more environmentally sustainable alternative to in-ground burial, which in most cases is associated with impacts to the environment. Further to this, the proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, which is significantly transformed. In this manner, the proposed development forefronts people and their needs in a manner which is socially, economically and ecologically sustainable.
(4) – *(a)* Sustainable development requires the consideration of all relevant factors including the following:	
(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	There are currently 38 cemeteries in the COCT with a total area of 529.1 hectares. Cemeteries and associated in-ground burial represent an environmentally unsustainable burial option in terms of their demand for land. The Cape Town SDF policy guidelines emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). The proposed development of a crematorium on Erf 2433, Montague Gardens, will provide a more environmentally sustainable alternative to in-ground burial, which in most cases is associated with impacts to the environment. Further to this, the proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, which is significantly

	transformed and contains no critical biodiversity areas, ecological support areas or other natural area.
(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	The proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, which is significantly transformed and contains no critical biodiversity areas, ecological support areas or other natural area. As indicated by the DFFE Screening Tool Report (20 January 2022), Yellow Tree was appointed to conduct a Specialist Air Quality Impact Assessment and an Atmospheric Impact Report. The Atmospheric Impact Report v5 (September 2022) was conducted by Ms Caitlin Morris, of Yellow Tree, in accordance with the Regulations Prescribing the Format of the Atmospheric Impact Report (GN. R. 747 of 2013). Yellow Tree concluded that there were predicted exceedances with PM_{10} and NO_2, as per the model, however it should be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality.
(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;	The proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, which is significantly transformed and contains no critical biodiversity areas, ecological support areas or other natural area. No expansion of the existing development footprint will take place. The proposed development will maintain the industrial character of the site and will, therefore, not trigger any of the National Heritage Resources Act (Act 25 of 1999) Section 38 activities.
(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;	The proposed site and associated development will be managed in accordance with the COCT Integrated Waste Management By-law, 2009 (as amended 2016) and the COCT Environmental Health By-law, 2003. In the EMPr (Appendix H), it is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and appropriate disposal. Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste including builders rubble and medical waste. These bins/skips must be emptied, and the waste taken to a registered disposal facility – the receipts of which be kept on file for inspection.
(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes	The resource impact and/or requirements of the development is low in terms of dependence on electricity, water, and other services. Natural gas will be

into account the consequences of the depletion of the resource; (vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;	used for the incineration process. Natural gas is considered one of the cleanest fuels for waste incineration processes when compared to coal or diesel. In future the use of biogas can be explored.
(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and	Extensive analysis from various perspectives, both environmental, technical, and planning has been invested in the proposal. The overall BAR integrates all this data, so as to inform the decision-making process going forward. The various assessments took into the potential consequences of the proposed development (disturbance, pollution, degradation, waste) and provided mitigation measures integrated into EMPr for implementation on site pre-construction, during and post-construction (Appendix H).
(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.	Guided by multiple specialist assessments, negative impacts on the environment have been addressed in the BAR and EMPr (Appendix H) and has been informed by specialist input.
(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option	The Environmental Assessment process underscoring this BAR, holistically considers the social, economic, and ecological impacts (disadvantages and benefits) of the proposed development and provides mitigation measures for possible negative impacts. Provision has been made for a stringent 30-day public participation process to take into account the interests, needs and values of all interested and affected parties.
(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons	To safeguard against the unjust distribution of adverse environmental impacts, and as advised by the appointed specialists, mitigation measures are included in the mitigation tables of this BAR (Section F) which are translated into the EMPr (Appendix H). In addition, no person, particularly vulnerable and disadvantaged persons, were found to be directly affected by the proposal, or site development in a negative manner. However, persons of this nature may benefit, through socio-economic benefits that will be created by the proposed development. The land on which the development is proposed is also not earmarked for land re-distribution.
(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure	The proposed development will invest in 6 BA2 cremators costing approximately R2 million each; this amounts to a total invest of R12 million for the cremators alone. The proponent is committed to invest in cremation technology which meets the requirements of the

access thereto by categories of persons disadvantaged by unfair discrimination	applicable legislations, including but not limited to the National Environmental Management: Air Quality Act (Act 39 of 2004). During the Establishment and Operational Phases, the crematorium will create temporary and permanent employment opportunities. As Cape Town experiences rapid population growth and associated deaths, existing crematoria are overcrowded. In addition, cremation is becoming a preferred choice for many families due to its reduced cost compared with burial expenses. The proposed development will increase the capacity of cremation services by 144 cadavers per day in the Cape Town Metropolitan area. This private crematorium will reduce the burden on the existing municipal crematoria (Maitland and Durbanville) and therefore improve access for disadvantaged persons to the municipal crematoria. Furthermore, the proposed development will cater to an area that has been significantly developed (west coast of CoCT) and is quite a distance from the existing sites (Maitland and Durbanville), therefore ensuring that these areas have efficient access to this type of service (see Figure 20 for locations of funeral parlours and crematoriums).
(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle	Temporary nuisances may arise during the renovation of the existing warehouse, however, mitigation has been integrated into the EMPr to reduce the significance of the impacts, and they are not predicted to extend into operational phase. The Atmospheric Impact Report v5 (September 2022) was conducted by Ms Caitlin Morris, of Yellow Tree, in accordance with the Regulations Prescribing the Format of the Atmospheric Impact Report (GN. R. 747 of 2013). Yellow Tree concluded that there were predicted exceedances with PM_{10} and NO_2, as per the model, however it should be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. In accordance with the below legislation, mitigation measures to ensure environmental health and safety is maintained are provided in the EMPr for implementation during the operational phase of the development: • National Health Act (Act 61 of 2003) o Regulations Relating to the Management of Human Remains, 2013 (GN No. R. 363 of 2013)

	○ National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners, 2015 (GN. R. 1229 OF 2015) • City of Cape Town Cemeteries, Crematoria and Funeral Undertakers By-law (2011) • City of Cape Town Community Fire Safety By-law, 2002 (as amended 2015) • City of Cape Town Wastewater and Industrial Effluent By-law, 2013 • City of Cape Town Environmental Health By-law, 2003 During the phased development process, multiple jobs will be created and opportunity for skills transfer and knowledge sharing will be supported. This will equip labour with skills and experience that will aid in securing future employment. These skills and knowledge can also be passed on to younger generations, creating a virtuous cycle of skills development, livelihood improvement and economic upliftment.
(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.	Provisions have been made for a stringent public participation process in order to take into account the interests, needs and values of all interested and affected parties. Public participation measures include placing a notice board at the proposed site, placing an advertisement in a local newspaper, providing environmental assessment documents to registered interested and affected parties, adjacent property owners, relevant organs of state and providing access to these documents on the EAP's website and in hardcopy form at a local public library.
(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.	Provisions have been made for a stringent public participation process in order to take into account the interests, needs and values of all interested and affected parties.
(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	The proposed development will provide socio-economic benefits to the local community in the form of employment opportunities, skills development, transferring knowledge and experience to employees during construction and post-construction. During the phased development process, multiple temporary and permanent jobs will be created and opportunity for skills transfer and knowledge sharing will be supported. This will equip labour with skills and experience that will aid in securing future employment. These skills and knowledge can also be passed on to younger generations, creating a virtuous cycle of skills development, livelihood improvement and economic upliftment.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.	This BAR holistically considers the social, economic, and ecological impacts (disadvantages and benefits) of the proposed development and provides mitigation measures for possible negative impacts. These mitigation measures are translated through to the EMPr to guide decision-making and promote monitoring and corrective action during the planning, pre-construction, construction and operational phases of the development (Appendix H). Key health impacts include air quality and human health impacts, which are addressed by two external and independent specialists. Both specialists have concluded that the anticipated impacts are low.
(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	In terms of construction activities, the Occupational Health and Safety Act (85 of 1993) will be implemented by an appropriate professional on site, to ensure the health and safety of workers. In terms of the operational phase of the development, the facility operator woll ensure that the requirements of the EMPr are implemented in terms of the applicable legislation, inter alia: • National Health Act (Act 61 of 2003); • Regulations Relating to the Management of Human Remains, 2013 (GN No. R. 363 of 2013) • National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners, 2015 (GN. R. 1229 OF 2015) • City of Cape Town Cemeteries, Crematoria and Funeral Undertakers By-law (2011) • City of Cape Town Community Fire Safety By-law, 2002 (as amended 2015) • City of Cape Town Environmental Health By-law, 2003 The EMPr is comprehensive in terms of measures to preserve human health.
(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.	Undertaking the Basic Assessment process allows for accountability and transparency of the proposed development in an integrated manner, as the documents will be submitted for public participation, to any interested and affected party, and will be subject to comments, rejections and appeals, in accordance with section 41 of the NEMA EIA Regulations (2014, as amended). Information, reports and documentation will be made available to I&APs via the SES website for download, review and comment. The SEScc website is designed to be mobile friendly, allowing those with only mobile internet the availability to view the relevant reports. On request, reports would also be shared via bulk online sharing sites such as WeTransfer, and in hard-copy

	form through individual deliveries or in a local public library. In accordance with s4(1) of the NEMA EIA Regulations (2014, as amended), upon reaching a decision on whether to grant an Environmental Authorisation for the proposed development, the competent authority must provide the applicant with the decision, with accompanying reasons for the decision, and inform the applicant that such decision can be appealed. Further to this, in terms of s4(2) the applicant must within 14 days of the date of the decision provide I&APs with access to the decision and reasons for such decision, and that such decision may be appealed. These regulations, and compliance therewith, ensure that decisions are taken in an open and transparent manner, and access to information is provided.
(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.	The proponent has taken all necessary measures to comply with the requirements of relevant policies, legislation, and the relevant organs of state have been included as I&APs to provide comment during the public participation process.
(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	No conflicts were encountered, however, should any arise, they will be addressed accordingly.
(n) Global and international responsibilities relating to the environment must be discharged in the national interest.	The proposed development aligns with the relevant national legislation which as promulgated by the relevant domestic legislatures gives effect to international environmental responsibilities.
(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.	The DFFE Screening Tool Report of 20 January 2022 found a low sensitivity for the Archaeological and Cultural Heritage Theme. Further to this, the proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, which is significantly transformed and contains no critical biodiversity areas, ecological support areas or other natural area. No expansion of the existing development footprint will take place. The proposed development will maintain the industrial character of the site and will, therefore, not trigger any of the National Heritage Resources Act (Act 25 of 1999) Section 38 activities.
(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.	As advised by the appointed specialists, mitigation measures are included in the mitigation tables of this BAR (Section F) which are translated into the EMPr (Appendix H), the developer does take responsibility for these aspects.

(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	During the phased development process, multiple jobs will be created and opportunity for skills transfer and knowledge sharing will be supported. This will equip labour with skills and experience that will aid in securing future employment. These skills and knowledge can also be passed on to younger generations, creating a virtuous cycle of skills development, livelihood improvement and economic upliftment. Labour will include female labour and the process of appointment will not discriminate against any person based on gender.
(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	No aquatic (freshwater/marine) have been identified on this site. There is a water course and an estuarine wetland within 500m of the proposed site, but the site is located outside the 100-year flood line. Erf 2433, Montague Gardens, is significantly transformed and contains no critical biodiversity areas, ecological support areas or other natural area. DWS has commented, and did not indicated the need for a Water Use Application.

SECTION F: PUBLIC PARTICIPATION

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

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

N/A as this is not a linear activity.

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

Public Participation will be undertaken **from the 11th July 2022 – 11th of August 2022.**

PUBLIC PARTICIPATION REQUIREMENTS IN TERMS OF THE EIA REGULATIONS		**PROPOSED IMPLEMENTATION**
REGULATION	**REGULATION REQUIREMENTS**	

41(2)(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of— (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site; **41(4)** A notice board referred to in subregulation (2) must— **(a)** be of a size of at least 60cm by 42cm; and **(b)** display the required information in lettering and in a format as may be determined by the competent authority.	**41(3)** A notice, notice board or advertisement referred to in subregulation (2) must— **(a)** give details of the application or proposed application which is subjected to public participation; and **(b)** state— (i) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made. In Accordance with Regulation **41(6)** When complying with this regulation, the person conducting the public participation process must ensure that— **(a)** information containing all relevant facts in respect of the application or proposed application is made available to potential I&APs; and	A notice board meeting the requirements was fixed as per the Proposed Public Participation Map, below (see figure 26), and as supplied in Appendix F.2.	
41(2)(b) giving written notice, in any of the manners provided for in section 47D of the Act, to— (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) the municipal councilor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area; (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority;		An I&AP register has been compiled, which identifies affected adjacent landowners, authorities, organs of state and other affected parties, as per Appendix F.1. The means proposed to notify the various I&APs include email notification, direct telephonic calls, site notices and newspaper advertisement (See Appendix F.2). Letter-drops will be undertaken as per the Proposed Public Participation Map, below (see Figure	

	(b) participation by potential or registered I&APs has been facilitated in such a manner that all potential or registered I&APs are provided with a reasonable opportunity to comment on the application or proposed application.	2), to both the landowners and land occupiers, as recorded in Appendix F.2.	
41(2)(c) placing an advertisement in— (i) one local newspaper; or (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;		An advertisement was placed in the TableTalk newspaper, on 06th of July 2022, as recorded in Appendix F.2.	
41(2)(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii)		Regulation not applicable to the proposed development, given its localised impact. YellowTree placed the advertisement for the AEL Application in the Cape Times. The tear sheet will be attached as a part of the	

		Appendix F – proof of Public Participation.
41(2)(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage	As part of reasonable alternative methods proposed in terms of regulation **41(2)(e)** of the EIA Regulations, an applicant may make use of the following non-exhaustive list of methods: emails, websites, Zero Data Portals, Cloud Based Services, or similar platforms, direct telephone calls, virtual meetings, newspaper notices, radio advertisements, community representatives, distribution of notices at places that are accessible to potential I&APs.	A physical copy of the document has been made available at the Milnerton Public Library. If the EAP is made aware of any I&AP with illiteracy, disability or other disadvantage we will engage with such I&AP to ensure their issues are noted.
42. A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of— **(a)** all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP; **(b)** all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and **(c)** all organs of state which have jurisdiction in respect of the activity to which the application relates.	Proponents/ applicants, EAPs, specialists and professionals, where relevant, must ensure that all reasonable measures are taken to identify potential I&APs for purposes of conducting public participation on the application; and	An I&AP register has been compiled, which identifies affected adjacent landowners, authorities, organs of state and other affected parties (Appendix F.1). The register will be maintained by the applicant's EAP in accordance with Regulation 42 of the NEMA EIA Regulations, 2014 (as amended).

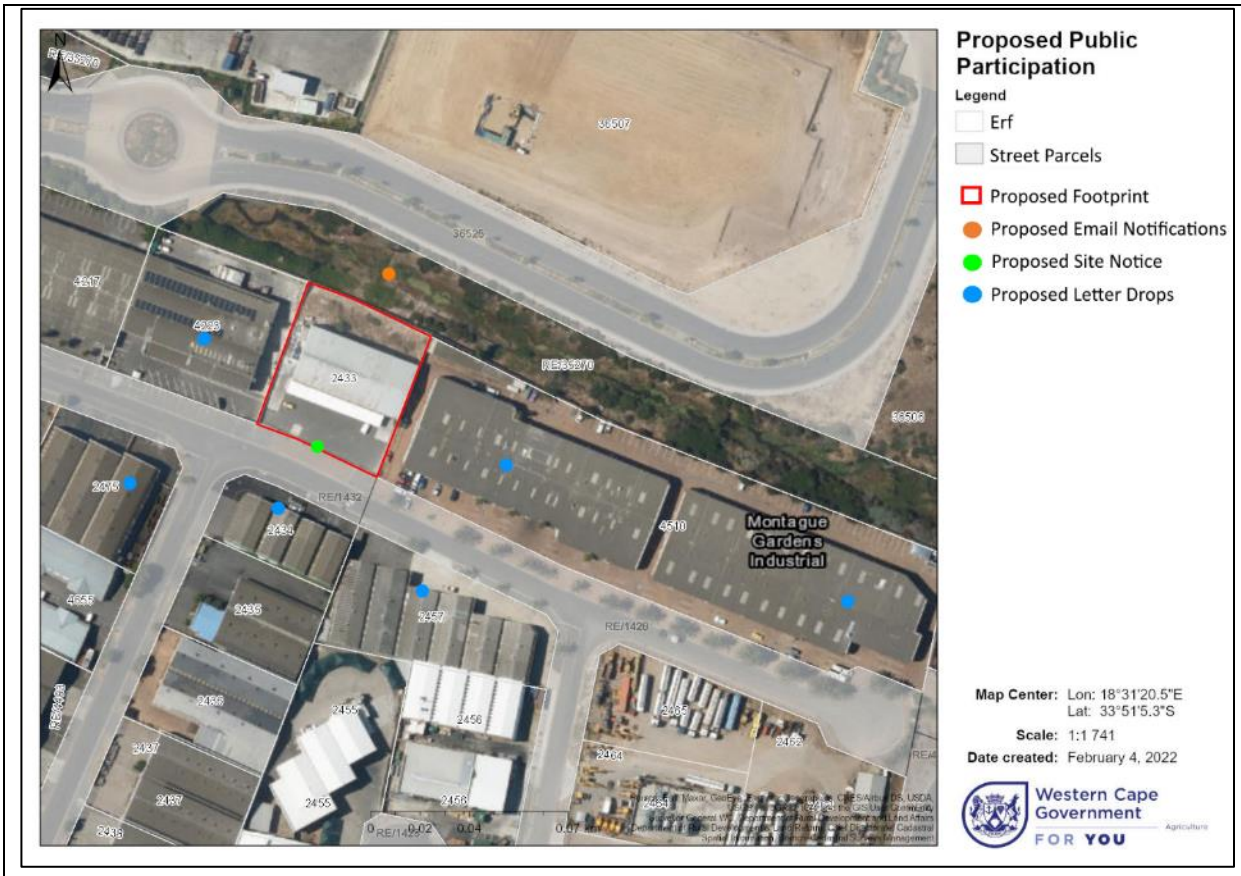


Figure 23: Proposed public participation.

CLARIFICATION SESSIONS: POST PUBLIC PARTICIPATION

The EAP conducted a MS Teams meeting on the 25th of August 2022, with the City of Cape Town, and the Department of Environmental Affairs and Development Planning (Region 1), to address their concerns raised during the public participation. Minutes of this meeting have been included in Appendix B of Appendix F2 of the BAR.

The EAP conducted a MS Teams meeting on the 29th of August 2022, with the remaining registered I&AP's, to address their concerns raised during the public participation. Approximately 39% of the registered I&AP's (excluding DEA&DP and CoCT), attended this meeting. Minutes of this meeting have been included in Appendix B of Appendix F2 of the BAR.

50-DAY EXTENSION

The original intent was to undertake the public participation as described previously and submit on the original submission date, the 8th of September 2022. However, the proponent has opted to pursue an extension, in terms of National Environmental Management Act, 1998 (107 of 1998), in accordance with the EIA Regulations, 2014 (as amended 2017), Section 19 (1)(b), the Final BAR will be submitted within 140 days of receipt of the application, by the competent authority. DEADP was notified by the EAP on the 26th of August 2022, DEADP Admin provided a confirmation of receipt. This additional public participation is on the following basis:

- There have been updates to the Specialists Reports.
- During public participation it has been recognized that this project has been contentious, and many concerns were raised that required further clarity.
- DEA&DP raised a concern that I&AP's should be provided with an opportunity to view and comment on the changes.

Therefore, an additional public participation will be undertaken **from Monday 12th September 2022 until Wednesday 12th October 2022.** A copy of the revised BAR will be positioned in the Milnerton Library.

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

See Appendix F1

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

The following Departments and/or Organs of State will not be consulted, as the proposed development and/or proposed activities and impact, would have no relevance to their interests:

Departments of:

- Community Safety
- Cultural Affairs and Sport
- Education
- Provincial Treasury
- Social Development
- Agriculture

Public Entities:

- Cape Town and Western Cape Tourism, Trade and Investment Promotion Agency (WESGRO)
- Western Cape Cultural Commission
- Western Cape Gambling and Racing Board
- Western Cape Language Committee
- Western Cape Liquor Authority
- Western Cape Police Ombudsman (WCPO)

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

- DEA&DP Waste Management
- DEA&DP Air Quality
- WCG: Department of Health
- WCG: Department of Human Settlements
- Heritage Western Cape
- South African Civil Aviation Authority.
- CoCT:
  - Urban Planning and Design
  - Human Settlements

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

Please refer to Appendix F2 of the BAR.

Note:

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

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

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

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

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

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

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

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	**NO**
1.2.	Provide the name and or company who conducted the specialist study.		
No specialist study was required, as no earthworks are planned.			
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		

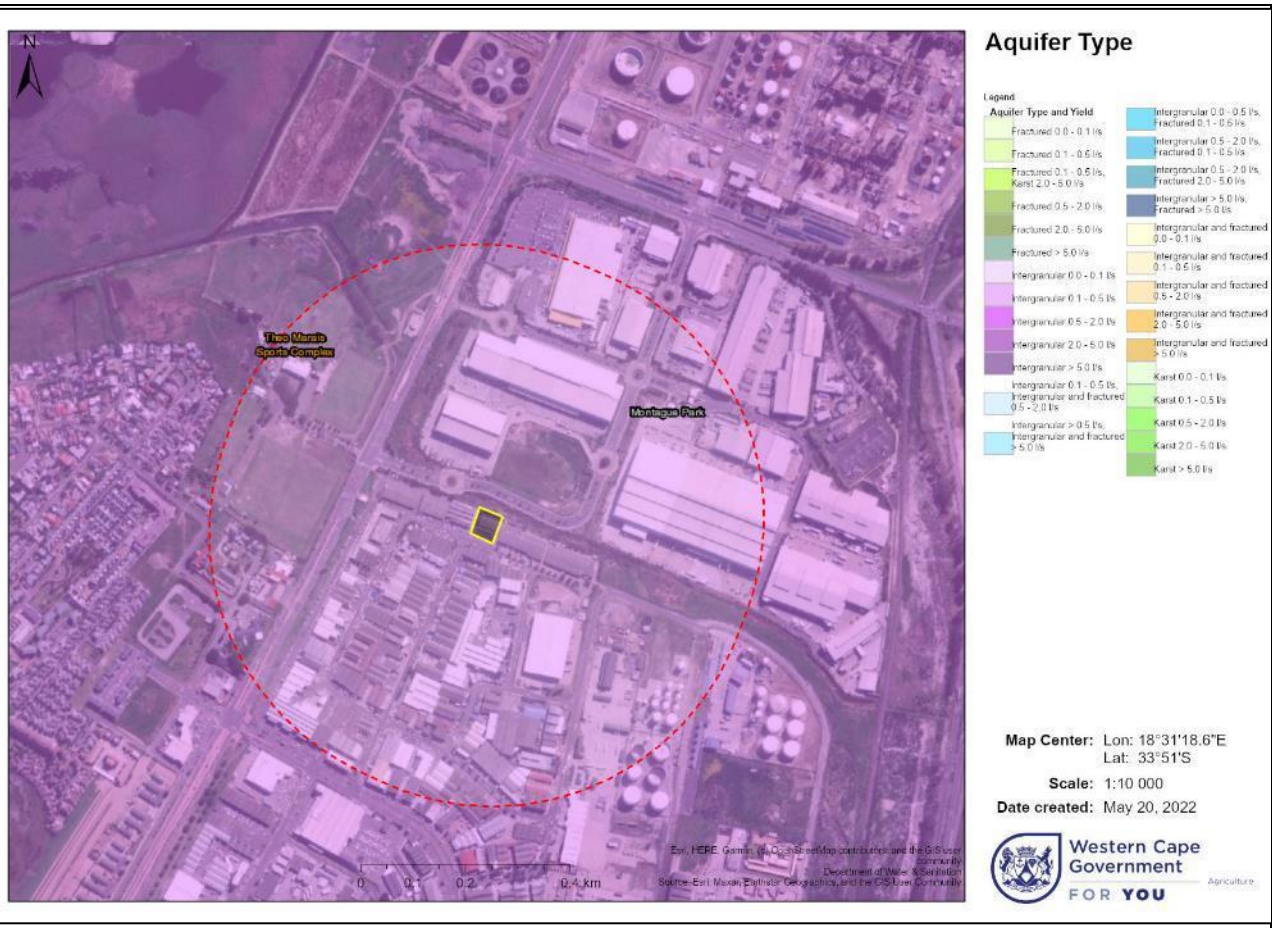


Figure 24: Aquifer type (CapeFarmMapper, 2022).

According to Cape Farm Mapper the proposed development will be located above an intergranular aquifer, in which groundwater flows in openings and spaces between grains and weathered rock. The proposal does not require earthworks, or alterations to the existing foundation, and mitigation measures recommended during renovation stage will include capture and appropriate disposal of any relevant contaminated stormwater. For this reason, it is unlikely that the proposed development will have any impact on the existing aquifer and vice versa the presence of the aquifer will not influence the proposed development.

1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.

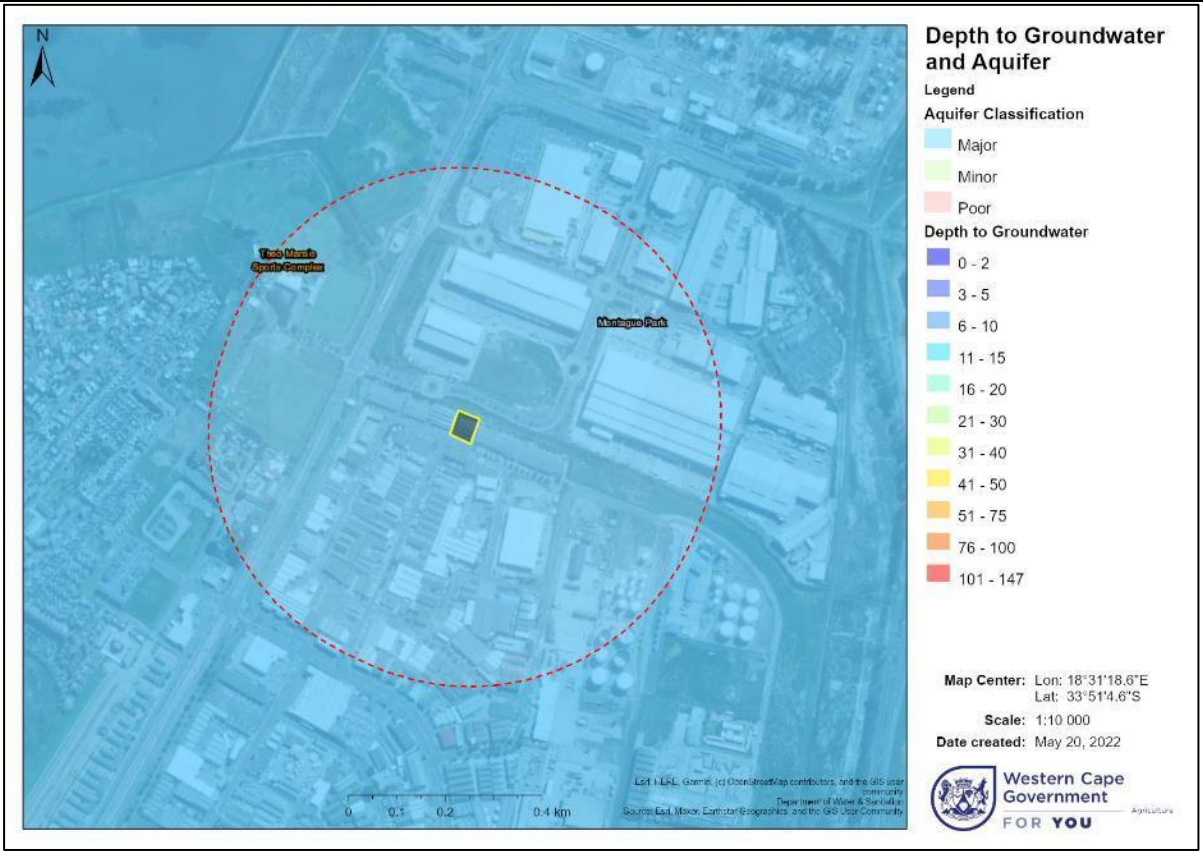


Figure 25: Depth to groundwater (CapeFarmMapper, 2022).

According to Cape Farm Mapper the depth of the groundwater is approximately 3 – 5mbgl, and the aquifer classification is major, which means a high-yielding system of good water quality. The proposal does not require earthworks, or alterations to the existing foundation, and mitigation measures recommended during renovation stage will include capture and appropriate disposal of any relevant contaminated stormwater. For this reason, it is unlikely that the proposed development will have any impact on the existing aquifer and vice versa the presence of the aquifer will not influence the proposed development.

2. Surface water

2.1.	Was a specialist study conducted?	**YES**	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
Company: FEN Consulting Report author: C. du Preez (Pr. Sci. Nat) Report reviewers: S. van Staden (Pr. Sci. Nat)			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		

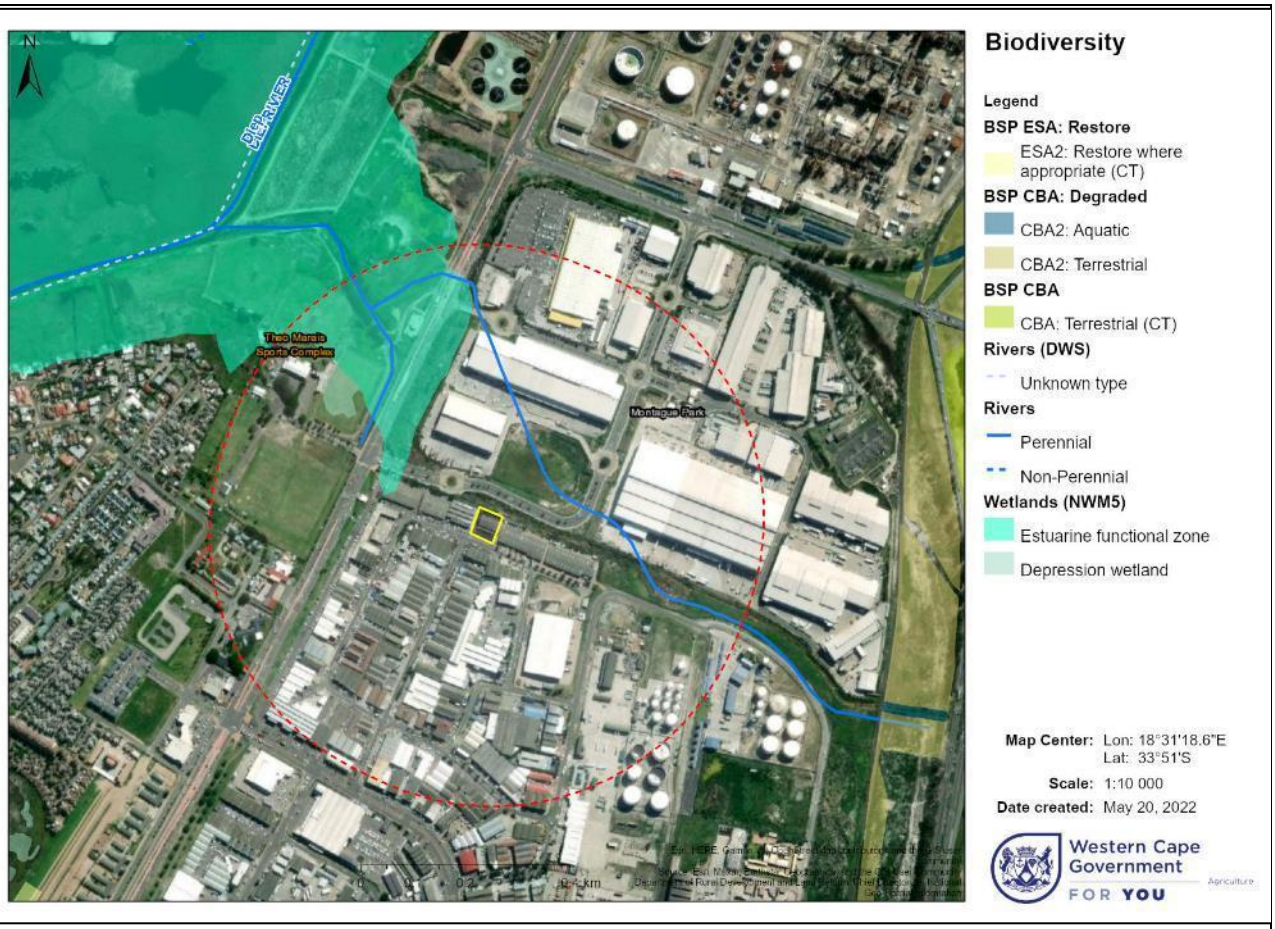


Figure 26: Biodiversity Map (CapeFarmMapper, 2022).

The DEA Screening Tool suggests that the aquatic features are of low sensitivity. During the site visit it was confirmed by the EAP that no wetland or other watercourse features were identified within the site, however a drainage line was located to the north of the site. Cape Farm Mapper does indicate a wetland and watercourse features within a 500m radius of the site.

FEN Consulting was appointed to conduct a site verification and compile a Compliance Statement to support this application, as well as advise on the way forward with regard to the Water Use Application in terms of the National Water Act, 1997 (Act 36 of 1997).

The specialist concluded that there were no natural watercourses identified within the study area, however a riparian watercourse was identified outside the northern boundary of the study area. Considering that the proposed refurbishment activities will be limited to the existing footprint within the study area and that the study area is bounded by a solid precast concrete fence, from a watercourse management perspective, impacts on the freshwater receiving environment due to the proposed refurbishment activities are unlikely to impact upon any watercourse services or functions.

It is imperative that the proponent ensure that the operation of the crematorium does not generate any effluent or pollution that could impact on the stream. All operational activities must be contained and managed within the existing footprint within the study area. Control measures that must be implemented during the refurbishment and operational phase of the proposed crematorium:

- No runoff from the study area may be released or enter the stream during both the refurbishment activities and the operational phase. All stormwater runoff generated in the study area must be managed in appropriate stormwater management structures and

released into the municipal stormwater infrastructure. Regular inspection of the stormwater management infrastructure in the study area must be undertaken to ensure proper functioning thereof;

- Suitable dust management practices must be implemented for the duration of the refurbishment activities to prevent dust deposition in the stream that could lead to sedimentation thereof;
- No construction personnel may enter the stream or access the study area along the northern boundary. Access to the study area must be limited to the existing access area along the southern boundary;
- General good housekeeping practices must be implemented during all phases of the proposed development, to ensure limited direct, indirect and cumulative impacts to the stream.

Should the abovementioned control measure be implemented, the refurbishment and operation of the crematorium is expected to pose a low-risk significance to the stream.

The specialist further advised that the study area may potentially be subject to the 100 m zone of regulation in accordance with GN509 as it relates to the National Water Act, 1998 (Act No. 36 of 1998). The EAP has been in consultation with DWS regarding the relevant authorisation process. Based on initial discussions, it is unlikely that Water Use Authorisation would be required (to be confirmed) with the condition that the control measures as provided in the compliance statement be adhered to. Considering this and should DWS agree with the outcome of this compliance statement, the stream is considered a watercourse of aquatic biodiversity importance, however due to the nature of the proposed operation, the study area can be considered of low aquatic biodiversity sensitivity.

The specialist further recommended that this compliance statement must be submitted to the relevant competent authority for consideration as part of the EA process. Therefore, DWS will be included as an I&AP in the public participation planned for this development.

DWS provided a response during public participation, which **did not** indicate that a water use application is required at this stage (Appendix E3), however:

- No abstraction of surface or groundwater may be done, or storage of water be created without prior authorisation from this Department, unless it is Schedule 1 or Existing Lawful use as described in the National Water Act 1998 (Act No. 36 of 1998).
- No surface, ground or storm water may be polluted as a result of activities on the site. In the event that pollution does occur, this Department must be informed immediately.
- The person who owns, controls, occupies, or uses the land in question is responsible for taking measures to prevent any occurrence of pollution to water resources.
- All the requirements of the National Water Act, 1998 (Act 36 of 1998) regarding water use and pollution prevention must be adhered to at all times.

All recommendations have been integrated into the BAR (mitigation tables) and EMPr.

3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	NO
3.2.	Provide the name and/or company who conducted the specialist study.		
Not applicable, as no coastal environment will be impacted by the proposed development.			

3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.

Not applicable, as the proposed development will not impact on any coastal property/zone.

3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.

It is noted that the Diep River Estuary is located approximately 200m north-west of the site.

Figure 27: Estuarine functional zone within 200m radius of site.

In terms of the Diep River Estuary Management Plan, when addressing urban development, it is noted that the Integrated Zoning Scheme and the Spatial Development Plan for the City must ensure that any further rezoning for urban development in areas upstream and/or likely to impact on the estuary must be subject to stringent environmental conditions.

The proposed development will not entail any additional zoning, both the site and surrounding properties are already zoned for General Industrial purposes, and the proposed technology and management of the facility will be strictly monitored. Therefore, this will have no impact on the Estuary environment, and vice versa.

3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.

As noted previously and as per Figure 27, the site is located south-east of an Estuarine Functional Zone but his not located in any coastal properties. According to the Diep River Estuary Management Plan, when addressing urban development, it is noted that the Integrated Zoning Scheme and the Spatial Development Plan for the City must ensure that any further rezoning for urban development in areas upstream and/or likely to impact on the estuary must be subject to stringent environmental conditions.

The proposed development will not entail any additional zoning, both the site and surrounding properties are already zoned for General Industrial purposes, and the proposed technology and management of the facility will be strictly monitored. Therefore, this will have no impact on the Estuary environment, and vice versa.

4. Biodiversity

4.1.	Were specialist studies conducted?	YES	**NO**
4.2.	Provide the name and/or company who conducted the specialist studies.		
Not applicable, as the proposed development was not located in an area indicated to have significant biodiversity, and no impact is expected occur on any indigenous vegetation.			
4.3.	Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.		

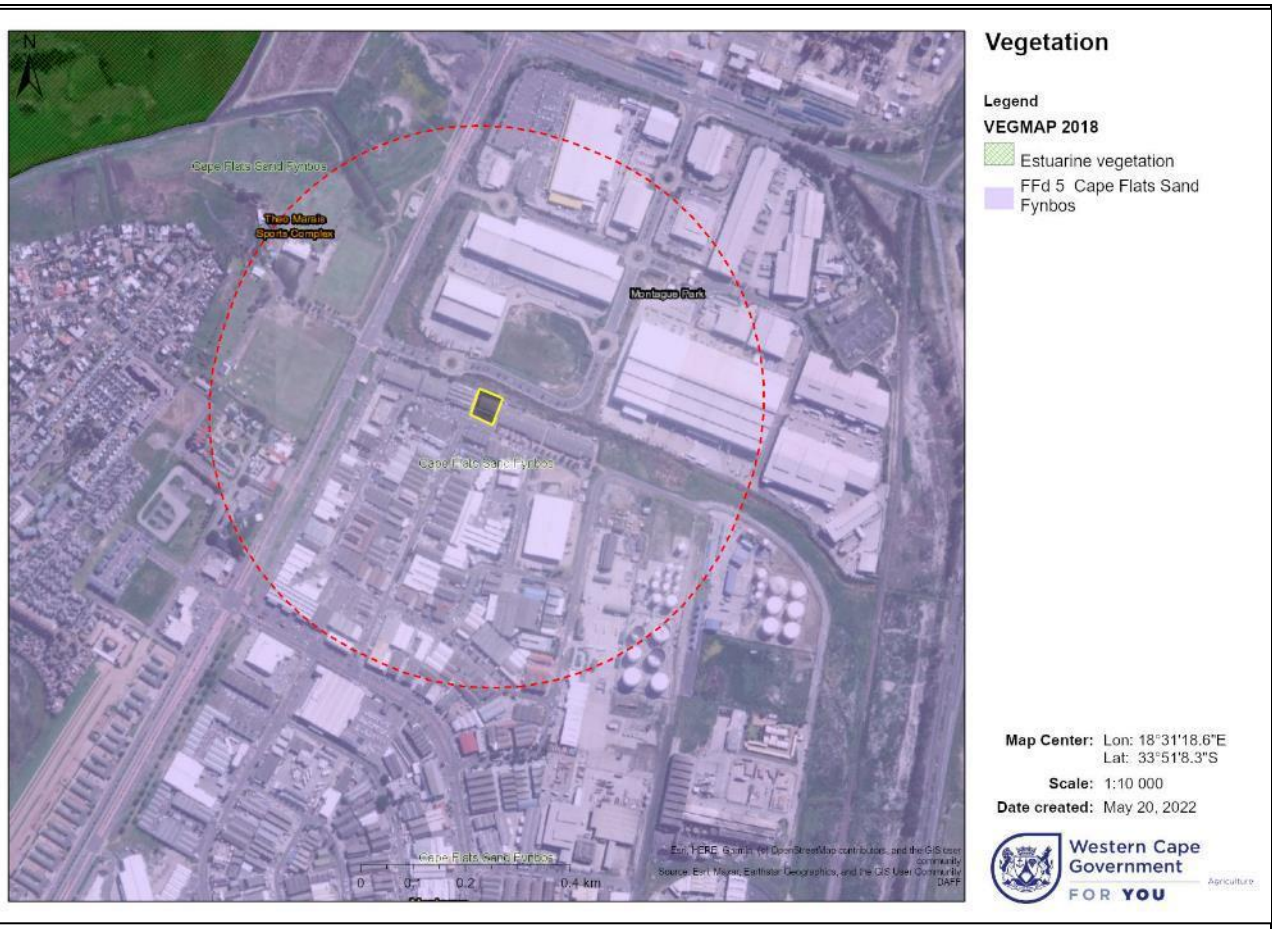


Figure 28: Vegetation Map (CapeFarmMapper, 2022).

The DEA Screening Tool indicated the plant species theme to be of low sensitivity. Further to this Cape Farm Mapper (as per Figure 28), indicates that the dominant vegetation type is the Cape Flats Sand Fynbos vegetation type, which is characterized as Critically Endangered. During the site inspection undertaken by the EAP, *Acacia saligna* (common name: Port Jackson) and potential *Geraniaceae Pelargonium* was seen in the northern natural portion of the site, however, the site has been significantly transformed, the proposal will only impact on the existing facility, and is not intended to further impact on the northern natural area.

In terms of the National Biodiversity Act (10 of 2004: s70), *Acacia Saligna* is a category 1b alien invader that requires compulsory control and must be removed and destroyed as part of invasive species control undertaken by the developer.

Given the significant transformation of the site, and the intended proposal, no specialist input will be required. In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes alien invasive species success within the site.

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

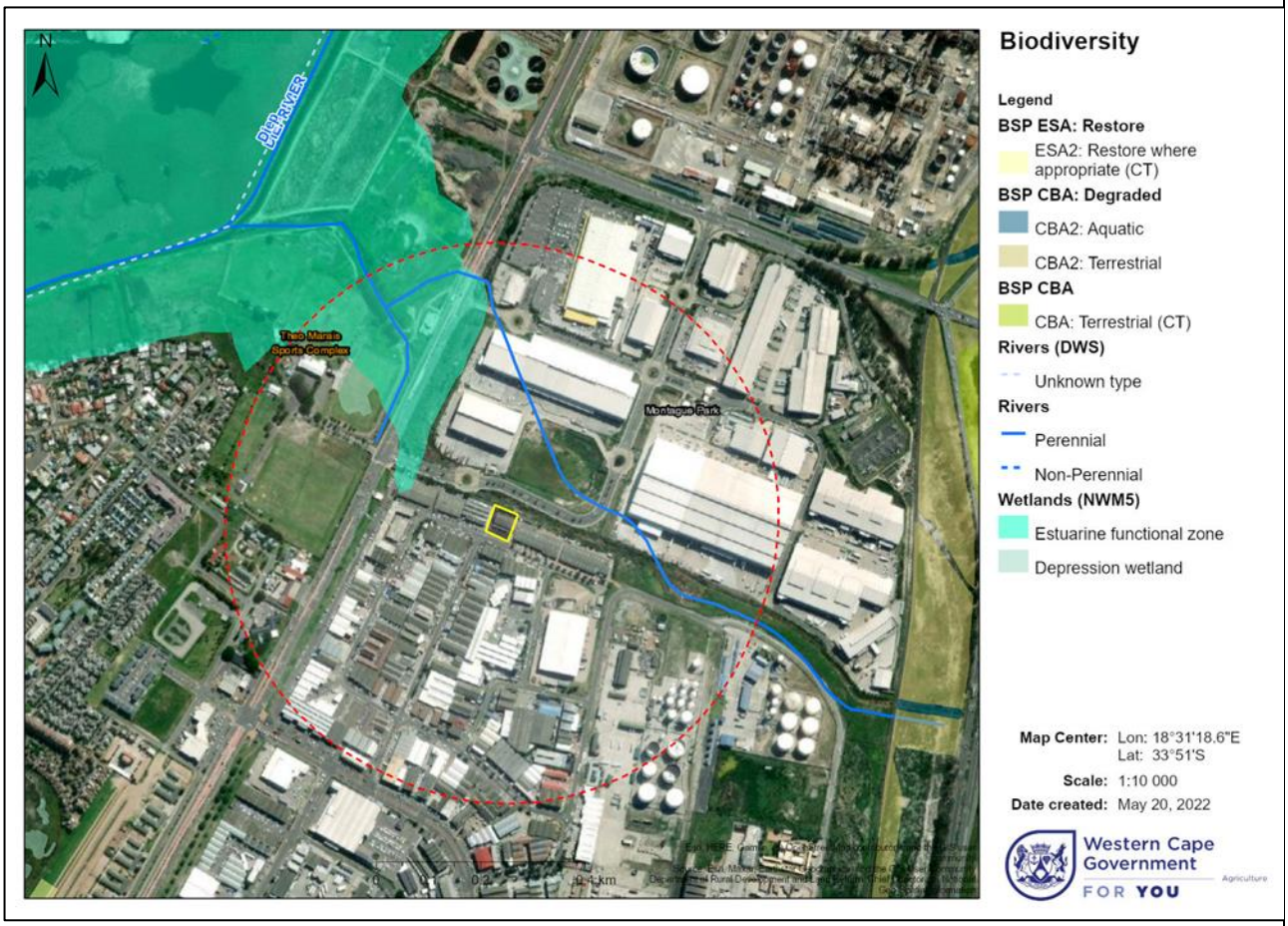


Figure 29: Biodiversity Map (CapeFarmMapper, 2022).

According to CapeFarmMapper, the site does not contain, nor is it adjacent to any sensitive biodiversity areas, therefore, none of the objectives/guidelines are applicable, and no specialist input has been sought.

4.5.	Explain what impact the proposed development will have on the site specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.

As discussed above, the development will be focused on the existing footprint of the transformed area and will not encroach onto any natural areas. Nor does the site contain any biodiversity features of note. Therefore, no specialist input is required, and there will be no influence on the development.

4.6.	If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.

The proposed site is not in a protected area.

4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.

The DEA Screening Tool report indicated that the animal sensitivity rating of the site is medium indicating the following features:

- *Pachysoma aesculapius*: African Dung Beetle.
  - Habitat: This large, day-active, flightless species of beetle is restricted to the firm deep sand of coastal hummocks, riverbanks, and vegetated dunes. They are known to collect dung pellets and organic detritus such as twigs, which they translocate to a permanent burrow (IUCN Red List, 2013a).

- *Conocephalus peringueyi* : Peringuey's Meadow Katydid (grasshopper)
  - Habitat: Peringuey's Meadow Katydid is only known to inhabit mountains in the Fynbos biome (IUCN Red List, 2013b).

- *Bullacris obliqua* : Bladder grasshopper.
  - Habitat: The Bladder grasshopper inhabits shrubland of the fynbos biome. *Eriocephalus africanus* is currently the only confirmed host plant for this species (IUCN red list, 2018).

The only natural portion on the ERF2433, is located to the north of the existing infrastructure. The area has been disturbed, and contains alien invasive species, waste material from construction and manufacturing activities, and existing stormwater infrastructure.

Figure 30: Northern portion of site.

Figure 31: Discarded blocks from construction activties.

Following the site inspection undertaken by the EAP on the 1st of February 2022, it was concluded that given the industrial area in which the proposed site is located, the disturbed state of the site and the lack of suitable vegetation (habitat) available to support these species, it is unlikely that these species would thrive on the proposed site.

No further specialist input was required, as this will have no influence on the proposed development.

CapeNature provided comment during public participation and did not raise any concerns, and confirmed that, "from a biodiversity perspective the development is low impact."

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.
According to Cape Farm Mapper and site visits, the contour data indicates that the topography of the proposed site is relatively flat. It can be determined that no geographical aspects will be affected or influence the proposed development.

6. Heritage Resources

6.1.	Was a specialist study conducted?	YES	**NO**
6.2.	Provide the name and/or company who conducted the specialist study.		

Not applicable. The site is already transformed and does not trigger any listed activities in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.

The proposed development does not trigger any of the section 38(1) activities of the Heritage Resource Act 25 of 1999. Therefore, no specialist input is required, as this aspect will have no influence on the proposed development.

7. Historical and Cultural Aspects

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

The proposed development does not trigger any of the section 38(1) activities of the Heritage Resource Act 25 of 1999. Therefore, no specialist input is required, as this aspect will have no influence on the proposed development.

8. Socio/Economic Aspects

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

The COCT is divided into eight planning districts. The site is situated in the Blaauwberg District. The towns of Milnerton, Table View, Parklands, Melkbos, Summer Greens, Brooklyn and Atlantis are located in the Blaauwberg District. Areas of informal settlement in the district include Du Noon, Racing Park, Joe Slovo and Phoenix.

<u>Population</u>

According to the Blaauwberg District Plan (COCT, 2019), the population in the Blaauwberg District more than doubled (increased by ~111%) from 152 299 to 321 692 between 2001 and 2018, this translates to an annual population growth rate around 7%. Despite this rapid increase, the unemployment rate remained relatively constant. The population of the Blaauwberg District comprises 7.3% of the City's total population of 4 400 240 (COCT, 2019).

Between 2011 and 2018, the majority of pollution increase was in areas of informality clustered mainly in Du Noon, Racing Park, Joe Slovo and Phoenix. These areas have the highest population density in the district and are among those which have relatively lower average household incomes, making them more vulnerable to stresses and shocks.

According to the Blaauwberg District Plan (COCT, 2019), the driver of population growth between 2001 and 2011 was migration, and more people over the age of 65 migrated into the district in relation to those below 15 years.

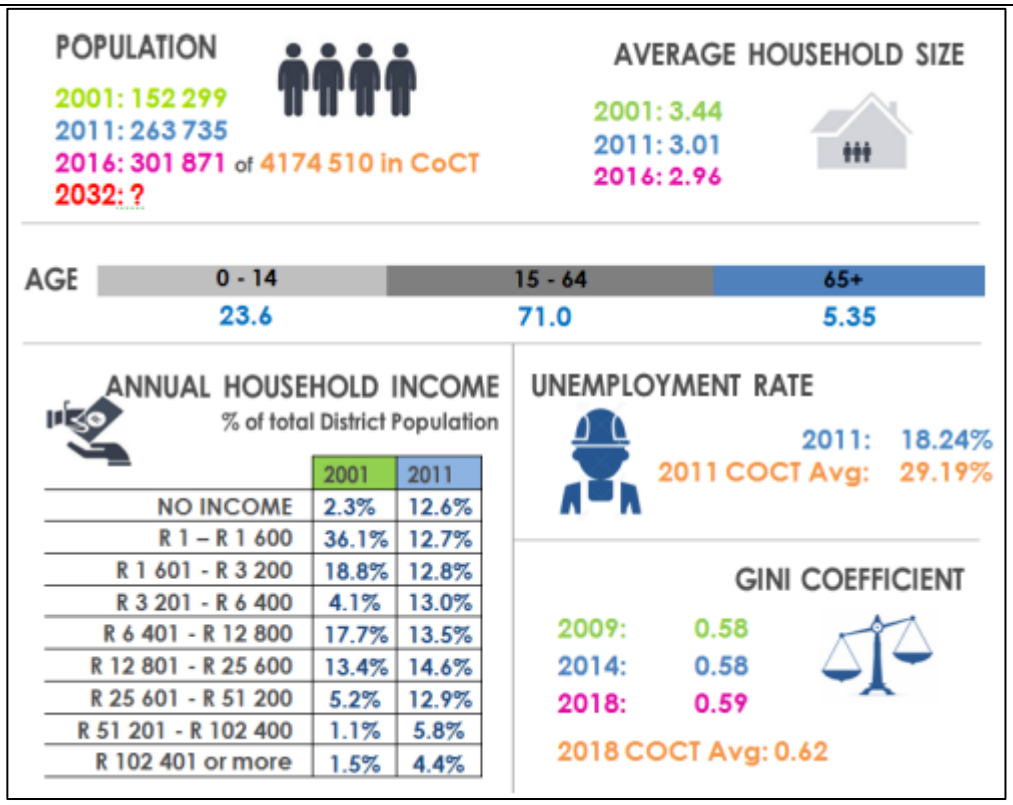


Figure 32: Overview Demographic Profile of the Blaauwberg district in the COCT Demographics (COCT, 2019)

Employment

The COCT Spatial Development Framework (2018) states that Montague Gardens is an employment generating area. As of 2011, 71% (187 392 persons) of the Blaauwberg District's 263735 residents were of working age (15–64 years old). Approximately 72.11% the working-age population made up the labour force of 105 148 persons, with the remaining 18.24% classified as unemployed in 2011 (this is significantly better than overall metropolitan unemployment rate of 29.19% in the same year).

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

The National Department of Environmental Affairs (2017) and the Western Cape Department of Environmental Affairs and Development Planning's (2011) environmental impact assessment Guidelines on Need and Desirability requires that the need and desirability of a project are considered and evaluated against the tenets of sustainability. This requires an analysis of the effect of the project on social, economic and ecological systems, and places emphasis on consideration of a project's justification in terms of the specific needs and interests of the community.

Social Aspects

According to the Blaauwberg District Plan (COCT, 2019), the population in the Blaauwberg District more than doubled (increased by ~111%) from 152 299 to 321 692 between 2001 and 2018, this translates to an annual population growth rate around 7%. According to the City of Cape Town IDP and SDF development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet increasing burial demand (COCT, 2017:99 & 2018:106).

There is currently only one cemetery in the Blaauwberg District, namely the Atlantis Cemetery. As illustrated in Figure 33, there are no existing crematoria in the Blaauwberg District, with the nearest crematorium situated in Maitland, approximately 8 km South of the proposed site.

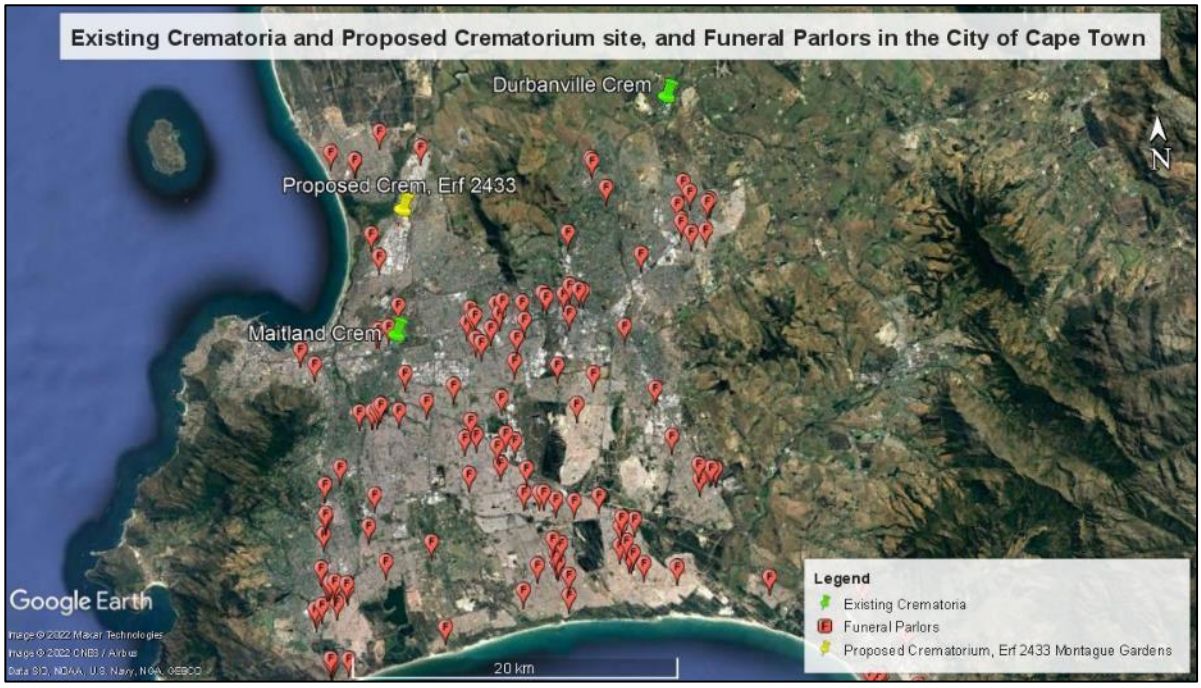


Figure 33: The Proposed Crematorium Site in Relation to Existing Crematoria and Funeral Parlors in the City of Cape Town

Platinum Pride Crematoria provided the following information to the EAP as motivation as to why they felt the need to establish a crematorium in the CoCT:

- In September 2021, the lack of capacity at existing crematoria in Cape Town reportedly led to 107 bodies being transported by truck to the Eastern Cape for cremation (News24, 2021). Upon closer inspection, it was found that approximately 80-100 bodies are transported to the Despatch Crematorium in the Eastern Cape on a weekly basis.

- Funeral parlors in Cape Town, such as Nashca Funeral, concurred that crematoriums in Cape Town have been overcrowded, resulting in a 3 to 4 week waiting period for families to receive the ashes of their deceased family members.
- Several news articles illustrate the lack of capacity at existing crematoriums in Cape Town:
- 'Covid-19: Cremations at 'record high' at a Cape Town crematorium' (News24, 2 Feb 2021)
- 'Covid-19: Cape Town crematoriums, burial grounds under strain' (News24, 14 September 2021)
- 'Inquiry opened into transportation of 106 corpses to Eastern Cape after Western Cape crematoriums overwhelmed' (Daily Maverick, 12 September 2021)
- 'Crematorium can't cope with volume of bodies in Western Cape needing to be cremated' (Weekend Argus, 28 August 2021)
- 'Corpses piled in trucks a sign of Covid times, say undertakers' (Daily Maverick, 14 September 2021)
- 'Overloaded truck was transporting corpses to the Eastern Cape' (Sowetan, 12 September 2021)

The City of Cape Town's Covid-19 Fatality Management report (2020) supports these observations, reporting that the increased fatalities during the COVID-19 pandemic, placed substantial demand on existing crematoria in the municipality (COCT, 2020). Further to this, the CEO of Nashca Funerals, reported that "with limited land availability for cemeteries, people now prefer cremations" as opposed to in-ground burial.

Further to this The City of Cape Town Parks and Recreations Branch has highlighted that the following:

- City of Cape Town is facing critical grave shortages in local municipal cemeteries, resulting in additional costs to families, having to travel a lot further (40Km+) in future to find burial space. The creation of additional crematorium facilities is therefore encouraged, as cremated remains may be added to full family graves, thereby reusing existing graves locally.
- The current limited number of crematoria in the Western Cape proved to struggle during the past Covid 19 Pandemic, therefore additional crematoria facilities will be beneficial to the greater Western Cape Province. There is currently no crematorium in West Coast District as the crematorium Malmesbury closed down. This results in residents in the West Coast being discouraged to cremate from this region, having to pay extra for transporting deceased to Maitland or Durbanville for Cremation.
- The cost of establishing crematoria is significantly due to a lack of supply and demand disparity. As such the creation of additional crematoria could contribute to keep costs more competitive.

<u>Economic Aspects</u>

The economic need and desirability of a project can be assessed using national, provincial, district and local municipal planning documents to assess the project's economic compatibility with plans. These documents describe specific economic objectives and emphasise the need to:

- Improve job creation opportunities;
- Create opportunities for the private and public sectors to grow the economy;
- Ensure appropriate economic growth;
- Encourage trade and investment;
- Develop human capital and a skilled and capable workforce; and
- Provide adequate and appropriate infrastructure to stimulate economic growth.

The proposed project is aligned with the above objectives, which effectively supports the development of the crematorium. The proponent will invest in 6 BA2 JTE cremators costing approximately R2 million each; this amounts to a total investment of R12 million for the cremators alone. The proponent is committed to invest in cremation technology which meets the requirements of the applicable legislations, including but not limited to the National Environmental Management: Air Quality Act (Act 39 of 2004). During the Establishment and Operational Phases, the crematorium will create temporary and permanent employment opportunities, and during operational phase will provide cremation service to communities within the Cape Town Metropolitan area in the Western Cape.

Further to this The City of Cape Town Parks and Recreations Branch has highlighted that the cost of establishing crematoria is significantly due to a lack of supply and demand disparity. As such the creation of additional crematoria could contribute to keep costs more competitive.

Ecological aspects:

There are currently 38 cemeteries in the COCT with a total area of 529.1 hectares. Cemeteries and associated in-ground burial represent an environmentally unsustainable burial option in terms of their demand for land. The Cape Town SDF policy guidelines emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). The proposed development of a crematorium on Erf 2433, Montague Gardens, will provide a more environmentally sustainable alternative to in-ground burial, which in most cases is associated with impacts to the environment. Further to this, the proposed development will be established within an existing warehouse on Erf 2433. Erf 2433, Montague Gardens, is significantly transformed and contains no critical biodiversity areas, ecological support areas or other natural area.

In conclusion, the proposed project is justifiably needed and desirable in terms of the social, economic and ecological needs of the community.

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

During the establishment phase the proposed development will provide temporary employment and create opportunities for skills transfer; and it will support local suppliers and business by sourcing construction material and installation services locally, where available. The proposed development will invest in 6 BA2 cremators costing an approximate total of R12 million for the cremators alone. During the operational phase, the proposed development will create permanent employment of opportunities which will assist in the alleviation of the 18.24% unemployment rate in the Blaauwberg District.

According to the City of Cape Town IDP and SDF development proposals should provide an adequate and equitable distribution of social facilities which includes the provision of cemetery space to meet increasing burial demand (COCT, 2017:99 & 2018:106). There is currently only one cemetery in the Blaauwberg District, namely the Atlantis Cemetery. There are no existing crematoria in the district, with the nearest crematorium situated in Maitland, approximately 8 km South of the proposed site. In view of the rapid pollution growth experienced in the Blaauwberg District – which more than doubled (~111%) between 2001 and 2018 – provision must be made for increased burial and cremation demand in the district. Grave shortage has been highlighted by the City of Cape Town Parks and Recreations Branch during the previous public participation (Appendix E15).

The City of Cape Town Parks and Recreations Branch has highlighted the current limited number of crematoria in the Western Cape proved to struggle during the past Covid 19 Pandemic, therefore additional crematoria facilities will be beneficial to the greater Western Cape Province. There is currently no crematorium in West Coast District as the crematorium in Malmesbury closed down. This results in residents in the West Coast being discouraged to cremate from this region, having to pay extra for transporting deceased to Maitland or Durbanville for Cremation. The proposed site is in close proximity to the N7 which makes transportation easier to outlying areas, particularly those to the west-coast of CoCT, while still being in close proximity to a good number of funeral homes (this access us also a benefit of this being an industrial area).

At present the CoCT's 38 cemeteries occupy a total area of 529.1 hectares. The CEO of Nashca Funerals reported that "with limited land availability for cemeteries, people now prefer cremations" as opposed to in-ground burial. The Cape Town SDF policy guidelines emphasise that "addressing burial demand" requires "encouraging alternatives to in-ground burial" (COCT, 2018:106). The proposed crematorium facility is proposed to have 6 BA2 Cremators installed which will have a combined maximum cremation capacity of 144 cadavers per day.

The cremation services provided by the proposed development represent a more environmentally sustainable alternative to in-ground burial and will help meet the increased need for cremation services in the Blaauwberg District, and the broader Cape Town Metropolitan area.

Proponent Commitment:
The proponent has provided a commitment letter, which includes joining the relevant community group, in order to open lines of communication between the neighbouring developments and the proposed development. Allowing for any concerns raised during the operational and development phases (it is a standard requirement of the EMPr (Appendix H), to include a Complaints Register on site, should any members of the public have concerns or need to report issues during development phase). See proponent's commitment letter below. All of these have been integrated into the mitigation tables of the EMPr and BAR, to ensure compliance during construction and operation.

IKAMVA GREEN HOLDINGS

Your Ref:

Enquiries: Mr Sybrand Teubes
Email: sybrand.teubes@platinumpride.co.za

05th September 2022

Attention: Interested and Affected Parties

RE: THE BASIC ASSESSMENT REPORT FOR THE PROPOSED ESTABLISHMENT OF A CREMATORIUM FACILITY ON ERF 2433, MONTAGUE GARDENS, CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY, WESTERN CAPE (DEADP REF: 16/3/3/1/A1/20/3027/22) – APPLICANT COMMITMENT.

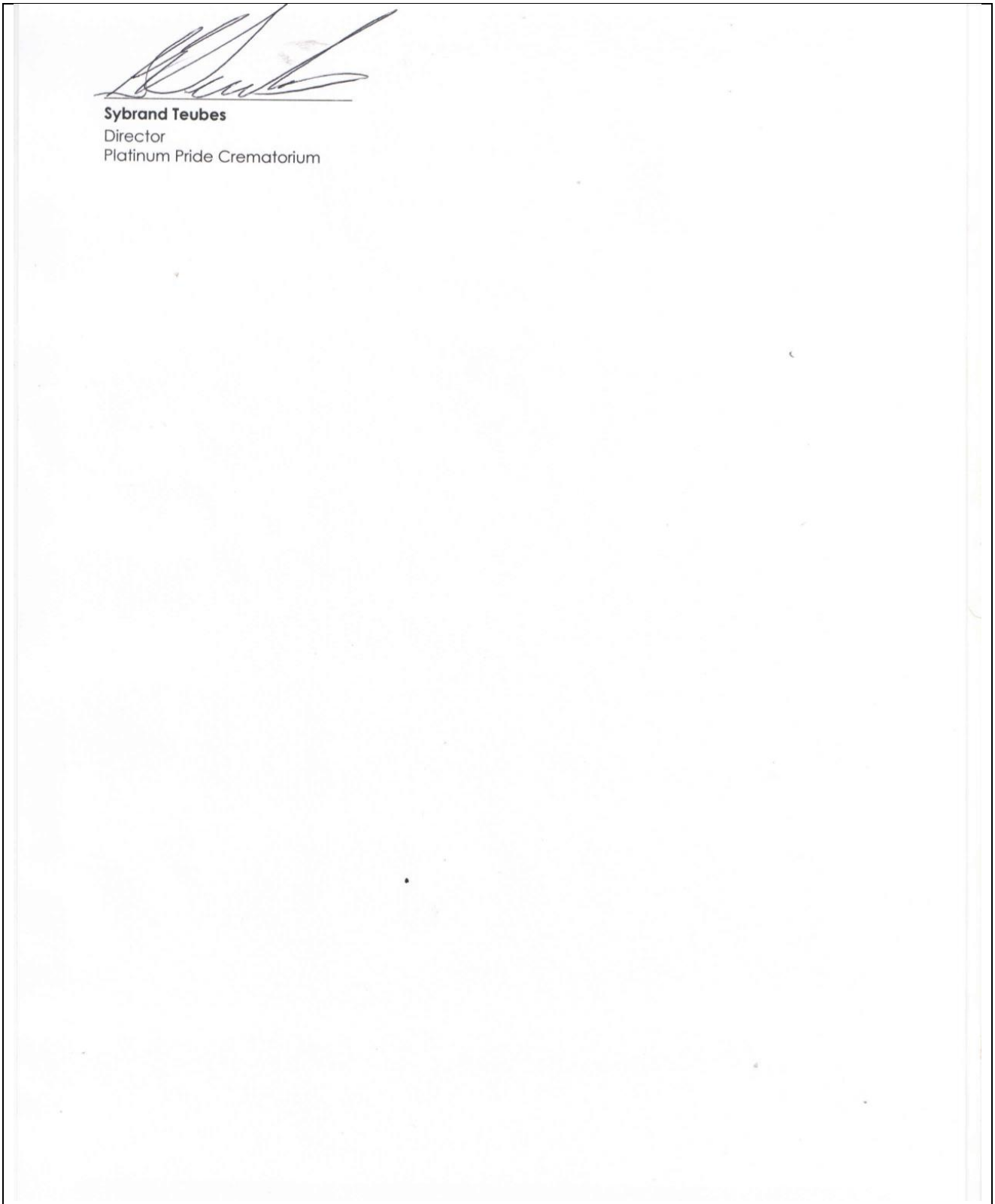
Platinum Pride Crematorium, the proponent for the Proposed Establishment of a Crematorium Facility on ERF 2433, Montague Gardens, City of Cape Town Metropolitan Municipality, Western Cape (DEADP REF: 16/3/3/1/A1/20/3027/22), hereby provides a written commitment, that if the environmental authorization is granted by the DEA&DP (Competent Authority), the proponent commits to:

- Comply with all mitigation measures and conditions recommended in the Final EMPr, as and when applicable.
- Comply with all the conditions of the Environmental Authorization, and any other relevant permits.
- Will appoint an appropriately experienced service provider, to undertake the necessary risk assessment, to establish the need for a Major Hazard Installation.
- Appoint an appropriately experienced service provider to undertake the recommended air emissions monitoring in line with the Air Emissions License. These reports will be released to any person who wishes to view them, on written request, and may not be shared with a third party unless approved by the proponent.
- Become involved in any public groups for the Montague Industrial Area (once the public has advised which these are, if any), allowing for open communication between the public and the proponent.
- Utilize potted vegetation to provide a screen at the interface of the site, and offloading area.
- Encourage the use of cardboard coffins amongst clients.
- Utilize non-descript vehicles for transportation of corpses to site.
- Reduce visual impact of signage.

Platinum Pride Crematorium aims to ensure that the proposed development is undertaken in a legitimate and transparent manner, therefore, the client has opted to release the BAR for a further 30-day public participation, to ensure that the public is aware of how their comments were addressed, and to ensure that should they wish to, they may provide further comment.

Please do not hesitate to contact me if you have any queries.

Kind Regards,



Sybrand Teubes
Director
Platinum Pride Crematorium

Figure 34: Proponent commitment letter.

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

Given the purpose and function of crematoriums, the idea of such a facility being situated close to one's premises, work or home can be emotionally and psychologically overwhelming, influenced by cultural beliefs and perceptions of negative health impacts.

Health Impact Concerns:

Will the development contaminate the air quality? Create emissions that will disperse into the surrounding community, affecting businesses? Will these emissions harm human health, and affect businesses that handle food in the surrounding community? Will the odour create a disturbance to the surrounding community?

These are some of the concerns that may come to mind for the surrounding community members, and these are valid concerns. SES has endeavoured to address these issues with facts, based on the proposal and informed by specialist input.

- Technology

The proposed development is intended to adopt furnaces manufactured to ensure that impacts related to odour, emissions, and other risks are significantly low. The cremators/furnaces utilized are BA2 Cremators and are sourced from distributers, Engineered Thermal Systems (Pty) Ltd, and are manufactured under a license from Johnson Thermal Engineering (JTE).

The JTE Cremator design has the following benefits:

- The design has been around for more than a decade.
- Proven track record of successful operation that meets the Air Emission requirements for new plants as specified by the National Environmental Management: Air Quality Act (NEM:AQA).
- Design, manufacturing, testing and commissioning is done in accordance with SANS329 (Industrial Thermo-Processing Equipment) and conforms to SANS347 (Categorization and conformity assessment Criteria for all Pressure Equipment). Adherence to these Standards is required by SASOL and SAGA (South African Gas Association) of which Engineered Thermal Systems is a proud member of.

JTE has confirmed the following details based on their BA2 cremators:

- Locally manufactured and distributed in South Africa.
- Accommodates two chambers:
- Chamber 1:
  - starved combustion primary chamber cremator, ensuring gas velocities are reduced, resulting in lower particulate pickup.
- Chamber 2:
  - cremation process begins, from 600°C rapidly rising to control at 850°C or higher to completely combust gases and odours before exiting the stack.
- Provides 2 seconds of high temperature exhaust gas residence time, to ensuring low carbon monoxide emission and total combustion of complex volatile organic compounds.
- Cremators are equipped with an ejector in base of the cremator stack to aid with the drafting to maintain a slight negative pressure within the primary chamber, to ensure that no gases or noxious fumes are emitted into the cremator machine room when the door is opened; designed to meet the Air Emission requirements for new plants as specified in NEM:AQA.

Cremator set-up has the following benefits:

- All controls arranged for ease of access at maintenance time.
- Equipment is registered with the Safe Gas Equipment Scheme, per SANS requirement.

- The Combustion Air Fan is noise attenuated and located on top of the Cremator roof.
- There is a main shut-off isolation solenoid valve in case of emergencies.
- Contains a primary burner and secondary burner, to optimize incineration process.
- Actuators are accessible to control the air supply to the burner and secondary chamber.
- The hydraulic power is also accessible from the rear of the furnace.
- Cremator doors are controlled by two hydraulic cylinders to open and close doors, which also ensures an airtight seal by locking the Cremator door in a door surround seal during the Cremation process.
- The electrical/instrumentation box with PLC and fan VFD is located above the hydraulic power pack.
- The system has an HMI (touchscreen) at the front of the Cremator communicates with the PLC and the HMI affords the Operator full control of the Cremator.

As per Appendix L, the technology has been implemented on other sites, across South Africa, and are operational. Based on the emission monitoring undertaken on the site (Appendix L2), it is clear to see that the technology has repeatedly proven compliant with the Air Emissions Standards for New Plants in line with NEM:AQA. The EMPr, Environmental Authorization, and other licenses/permits will ensure that one of the requirements for operation, is that the furnaces be operated in line with the manufacturer's specifications.

- Clean Fuel Alternative:

LPG (Liquid-Petroleum Gas) was identified as the preferred fuel source. LPG's include butane and propane, which are gases that get their name from their ability to convert from a gas into a liquid when exposed to low temperatures.

LPG has gained momentum as it is now seen as a modern, affordable alternative to electricity, that offers no disruptions and is non-toxic (when handled appropriately).

While LPG benefits includes:

- Much lower CO_2 emissions (kg/ BTU) and a higher potential calorific value (energy content contained in a fuel) than coal, diesel, petrol.
- To utilize LPG in the process requires extensive compliance, indicating that if adopted it is done with much consideration in terms of Health and Safety, this includes:
  - Must be in line with the South African Gas Association's (SAGA), Safe Gas Equipment Scheme for registration of industrial LPG equipment within the scope of SANS 347 and SANS 329. *[1]
  - As per the Pressure Equipment Regulations, LPG installations will require a registered gas practitioner to indicate and certify on the Certificate of Conformance (COC) that the equipment installed has been formally verified to South African Bureau of Standards (SABS) SANS standards and it safe for use. These regulations set out the requirements regarding the design, manufacture, installation, operation, repair, modification, inspection and testing of pressure equipment. *[1]
  - Must comply with the Occupational Health and Safety Act. *[1]
  - Strict storage and handling requirements.

  Cost-effective, as it is cheaper than electricity. Therefore, as the furnaces will operate off of LPG, there will not be additional strain on the existing electrical infrastructure, and processes will not be stalled as a result of events like loadshedding. This is an essential aspect, considering this activity is related to the management of human remains, any delays to the operational process, should be avoided.

- LPG supply is easier to source than natural gas, as the demand grows in urban areas more suppliers are becoming available, and given that LPG does not require extensive pipelines for supply, it can be easily transported and stored. *[1]
- Considering the temperatures required for the efficient cremation of human remains. LPG allows these temperatures to be reached more efficiently and consistently.

Disadvantages include:

- Usually more expensive than diesel.

It is evident from the above that the disadvantages are mainly weighing on the proponent, however the proponent has committed to adopting this fuel alternative, based on its many advantages, and their commitment to establishing a facility that is of good quality.

**1 Liquefied Petroleum Gas Safety Association of Southern Africa https://www.lpgas.co.za/ 31 August 2022*

- Specialist Input:

Specialists have been provided with all relevant information on the project. All specialist mitigation has been integrated into the BAR and EMPr, for implementation during construction and operational phases.

A Rapid Appraisal Health Impact Assessment was undertaken by Niara Environmental Consulting and an Atmospheric Impact Assessment was undertaken by YellowTree. Based on the pollutant quantities that may create health issues (extracted from theoretical papers and studies in the Health Assessment related to general health concerns), when compared to the Air Quality findings, it was concluded that only PM (Particulate Matter)may result in health concerns, if exceedances are experienced:

- Susceptible groups with pre-existing lung or heart disease, asthmatics, as well as elderly people and children, are particularly vulnerable.
- Short term exposure to PM (based on the daily predicted model result) at low concentrations of exposure below 100 µg/m3 may include:
  - an increase in lower respiratory symptoms
  - medication use.
  - small reductions in lung function.

There are no annual exceedances. The Health Assessment has concluded that the **proposed project poses negligible to no risk to human health, taking into consideration the air quality results** and other factors. The Health Specialist further highlighted that they believe that the exceedances may be as a result of baseline data consisting of other existing pollutants in the surrounding area, and as noted by the Air Quality Specialist, the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. Despite the anticipated low impact, all specialist mitigation measures have been integrated into the BAR and EMPr for implementation, should it be necessary. The only exclusions being:

- Auditing frequency recommended from the Health specialist. Given that this is based on air quality monitoring the annual recommendation has been supported, as well as any further conditions based on the authorizing bodies recommendations.
- The stack height from the Air Quality report, has been considered, but found to not be feasible, as it would compromise the integrity of the technology, as the technology is designed to specifically perform as per the guarantee, with a 12m stack height.

Perceptions and Sense of Place

While there are negative social perceptions in terms of the vicinity to crematoriums, facts to keep in mind include:

- Some religions recognize cremations as a standard and necessary practice.
- One alternative to crematoriums is cemeteries:
  - Cemeteries are not sustainable in the long-term, utilizing vast amounts of land, that could be utilized for other essential land uses, that can result in economic benefits, while a crematorium is one facility (in this case positioned on disturbed and transformed land), that can be utilized for a long time if maintained sufficiently.
  - Cemeteries have the potential to contaminate ground water and soil if conditions are not ideal or are altered and if implementation is undertaken negligently.
  - Cemetery land has very little use once full, while a crematorium can be decommissioned, and the facility altered for another use.
- Funeral homes are sometimes mistaken for crematoriums however they provide different services. Funeral homes are facilities that prepare bodies for cremation or burial, or for viewing, and can sometimes hold funeral services on the premises. Crematoriums do not allow for the excessive handling of bodies, bodies are not stored for extended periods of time, bodies are delivered, stored temporarily (if necessary), and are then cremated, thereafter the ashes are distributed to the loved ones of the deceased. Therefore, there is no long-term storage encouraged at crematoriums. Funerals are not permitted to be held on this site, and public access on the site will be limited.
- Visual impacts can be mitigated through appropriate screening.
- This BAR and associated EMPr, provides guidance on appropriate measures to mitigate visual impacts including:
  - Offloading of vehicles may not be within public view. Vehicles are required to reverse into offloading zone so as to offload between the facility and the vehicle.
  - No storage of any funeral related paraphernalia (coffins, waste, etc.) is permitted outside the premises, unless positioned in skips (only for general – hazardous waste).
  - Utilize potted vegetation as a screen along the interfaces of Stella Road and the site, as well as to screen the offloading area.
- The EAP has recommended that if the Environmental Authorization is awarded, the proponent must comply with all relevant conditions of the EA and EMPr, as well as obtain all necessary permits/licenses/authorizations related to other relevant legislation/policies/by-laws. If these licenses/permits/authorizations are awarded the development will be monitored by the relevant competent authorities, going forward, therefore encouraging compliance.
- The proponent has further committed to joining the relevant community group, in order to open lines of communication between the neighbouring developments and the proposed development. Allowing for any concerns raised during the operational and development phases (it is a standard requirement of the EMPr (Appendix H), to include a Complaints Register on site, should any members of the public have concerns or need to report issues during development phase). See proponent's commitment letter as per Figure 34. All of these items been integrated into the mitigation tables of the EMPr and BAR, to ensure compliance during construction and operation

Taking into account the aforementioned facts, the development poses a low nuisance risk to the surrounding community (from noise, dust and visual impacts) during construction.

During the operational phase, the site is appropriately zoned, and in close proximity to other risk zones, and south of a significantly larger refinery. The City of Cape Tonw has provided comment to support the establishment of crematoria in CoCT. The Health Specialist has confirmed that there is

negligible to no human health risks, no smoke or odour is anticipated based on the technology, therefore there is extremely low risk to food products, etc. Air quality monitoring is a requirement of the BAR and will be a requirement of the Air Emissions License to ensure compliance monitoring. Therefore, the as there is negligible to no health risks, which is indicative of there being low air quality risks, the only standing risk is perception which is difficult to mitigate, however the proponent has committed to applying all available means to reducing this impact.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.

Provide a description of the preferred property and site alternative.

Preferred Site Alternative 1: ERF 2433 Montague Gardens

The Preferred Alternative 1 Site is ERF 2433, located in Montague Gardens, City of Cape Town Metropolitan Municipality. The site is approximately 2506.7m^2, and is located in an industrial area. The site has been significantly transformed, contains hardened surfaces, existing infrastructure, services and access. It is surrounded by other commercial and industrial land uses, and is accessible off of Stella Road, in close proximity to Koeberg Road.

Coordinates: 33°51'4.60"S; 18°31'18.52"E.

The site is currently being utilized by a manufacturing company, specializing in the manufacturing of chemicals.

Figure 35: Google Earth imagery of the Proposed Preferred Alternative Site 1: ERF 2433.

Provide a description of any other property and site alternatives investigated.

The Proposed Alternative 2 Site: ERF 358 Blackheath Business Park

Located in Rustdal, the site is approximately 2558.3m^2 . The site is accessible off of Chardonnay Road, and is in close proximity to Zevenwacht Shopping Mall, as well as main road networks such as the R102 and the M12.

The site is transformed, contains hardened surfaces, and existing infrastructure, as well as existing services.

Coordinates: 33°57'5.71"S; 18°41'49.35"E.

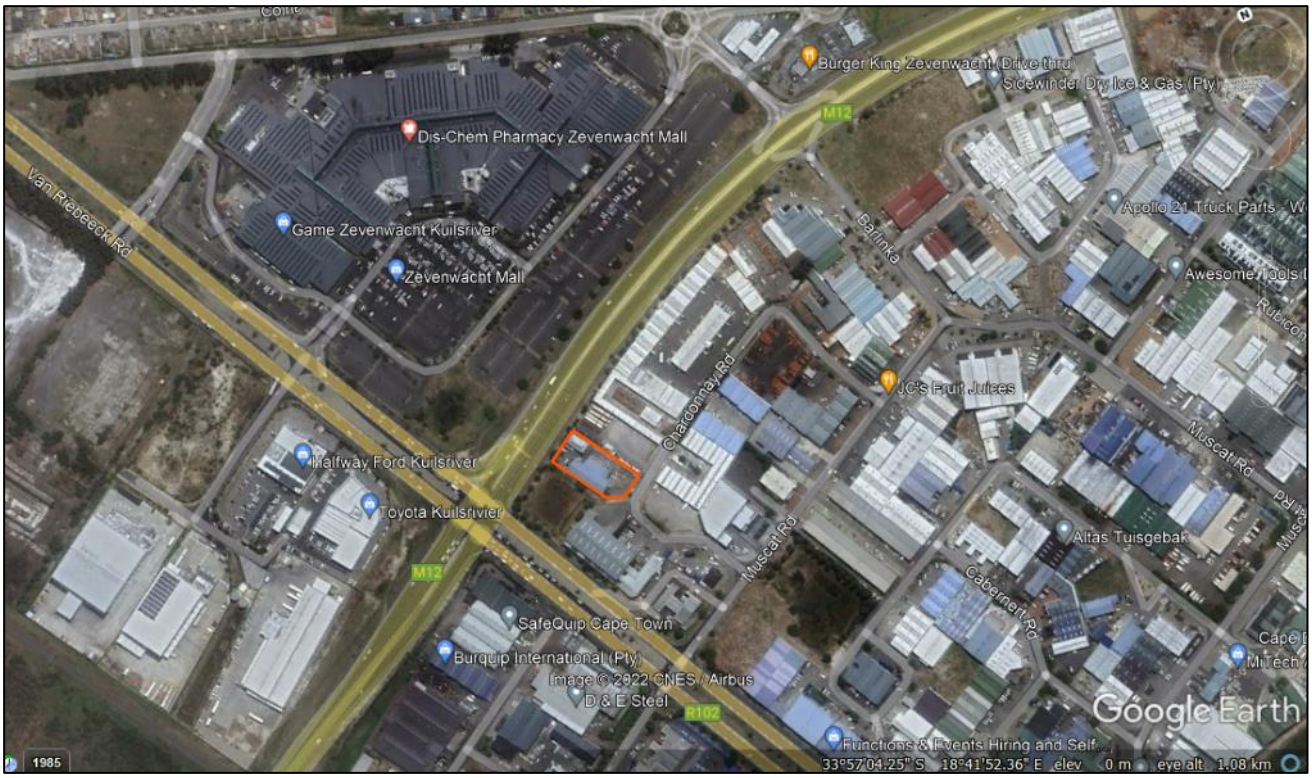


Figure 36: Google Earth imagery of Proposed Alternative 2 Site - ERF358 Blackheath Industria.

The site is located within 500m radius of a General residential zoned area and located opposite Zevenwacht Shopping Mall (as depicted in Figure 37 and Figure 38).

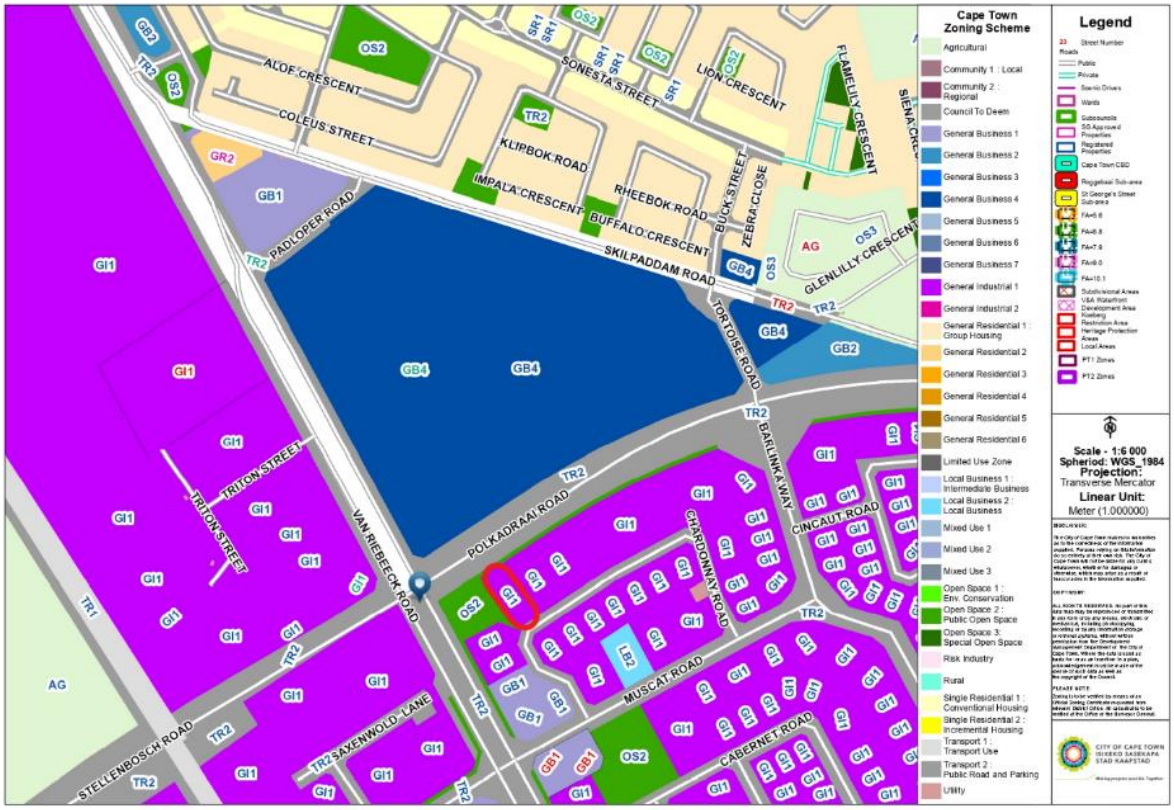


Figure 37: CoCT zoning map for Proposed Site Alternative 2 - ERF358 BlackHeath Industria (red polygon).

Figure 38: 500m radius from Proposed site Alternative 2 (CapeFarmMapper, 2022).

Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.

Proposed Site Alternative 2 was considered as the site was available to rent, therefore the proponent was in communication with the real estate agent, prior to identifying Site Alternative 1. However, given that the site is within 400m's of a dense residential area (zoned as general residential), is adjacent to a main road, and opposite a shopping mall. The main constraint was the lack of agreement with the landowner, making this a highly unfeasible option.

The Proposed Site Alternative 1 Site is zoned appropriately (for Industrial use), which accommodates for the establishment of a crematorium as a primary use. Given this zoning there are existing risk zones in close proximity to the site, along with other pollutant emitters with the surrounding area. The site is accessible from only the south side, off of Stella Road, and has two access points, which allows for controlled access. The site has existing services and is located closer to the west coast region, which currently lacks this type of service within close proximity. The site is located more than 500m radius from a habitable dwelling, and as confirmed by the City of Cape Town, there is a need for crematoria in the City of Cape Town. Furthermore, the site is significantly transformed and the development will ensure that urban areas are utilized efficiently. Given the additional aspects addressed in the question below, it was concluded that the preferred site alternative is the Alternative Site 1: ERF 2433, as this is the most feasible and reasonable site.

Provide a full description of the process followed to reach the preferred alternative within the site.

The two sites were looked at comparatively with regard to the following aspects:

Table 18: Comparative aspects for site suitability.

Aspects Compared	Proposed Preferred Site Alternative 1: ERF 2433 Montague Gardens			Proposed Site Alternative 2: ERF 358 Blackheath Industria		
	Description	Significance		Description	Significance	
		+	-		+	-
Service Availability - Site	Existing services are available, no additional services are required.	✓		Existing services are available, no additional services are required.	✓	
Proximity to Other Crematoriums and Funeral Parlours	• The proposed site is located along the west coast region of the City of Cape Town. This crematorium will provide crematoria services to the west coast of City of Cape Town, which currently does not have access to such a facility within a reasonable distance (see Figure 39). • Demand created from these areas can now be supported by the proposed development, thereby reducing the demand on the existing crematoriums.	✓		• None in close proximity.	✓	
Surrounding Land-Use	The site is surrounded by built-up industrial/commercial infrastructure, which is ideally suited to the proposed development.	✓		The site is located adjacent to commercial infrastructure, a public open space, and a main road network. Should there be changes in the future such as the use of the public open space to accommodate a green space, the crematorium may not be ideal.		**Medium (-)**
Transformation of Site	• Extensively transformed with a small untransformed area located to the		**Low (-)**	Extensively transformed	✓	

	north, that is extensively disturbed and degraded.					
Accessibility & Traffic	• The site is only accessible off of Stella Road and contains two access gates which is ideal for traffic flow. • Temporary low impact on traffic.		**Low (-)**	The site is accessible off of Chardonnay Road, however the site only has one entrance, that may result in some traffic generation and therefore additional impacts.		**Medium (-) and potentially long-term (-)**
Visual Impacts	• The site is not visible from any main road network, therefore the visual impacts created during renovations are temporary. • Given the industrial nature of the area, the movement of trucks and other activities will not create significant impacts.		**Low (-)**	• The site is visible from the M12, and is located opposite the Zevenwacht Mall, which may incur additional visual impacts.		**Medium – High (-)**
Proximity to Residential Areas/Habitable Dwellings	• Not within 500m radius of any habitable dwelling.		**Low (-)**	• The proposed site is located less than 400m radius of a busy mall, and within 400m radius of a zoned, dense, residential area.		**Medium - High (-)**
Permission by Landowner	• Permission was granted by landowner to accommodate a crematorium on site.	✓		The site is within 500m radius of habitable dwellings, indicating that it is non-compliant with the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, Chapter 6, point 18(a).		**High (-)**

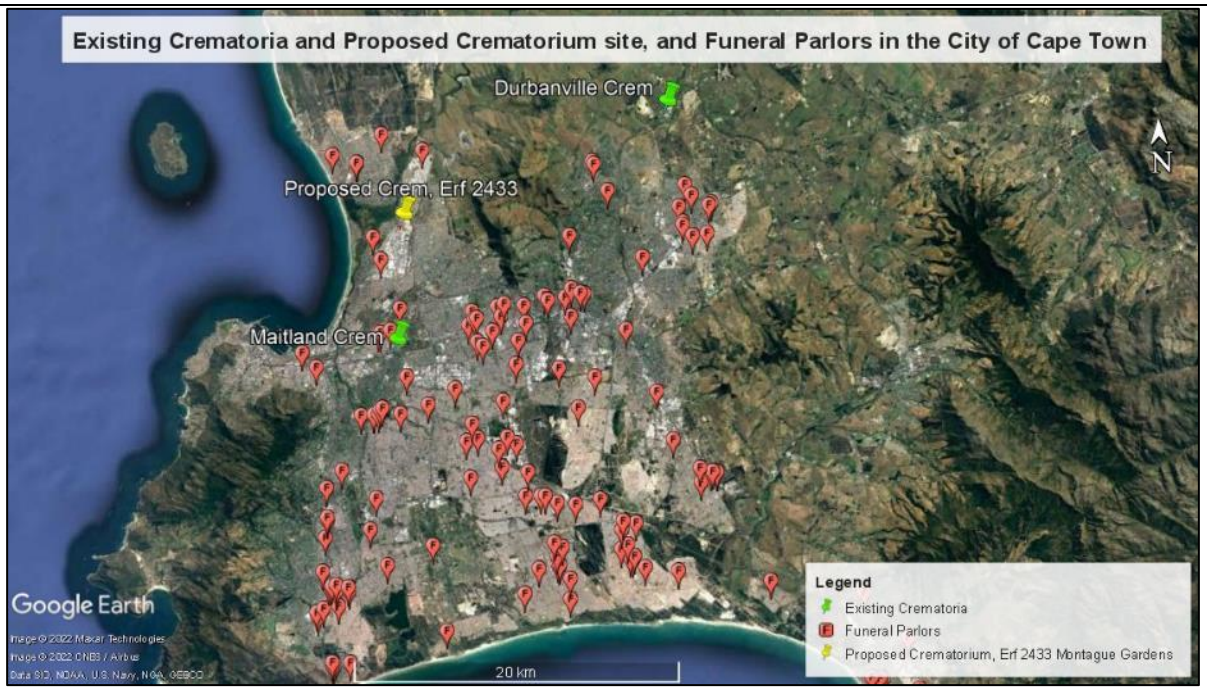


Figure 39: Existing crematorium facilities and funeral parlours within the existing Cape Town area.

In terms of the aforementioned aspects discussed in Table 18, the Proposed Site Alternative 1: ERF 2433 Montague Gardens, was found to be the most reasonable and feasible option, as impacts, although some were negative, would be of low significance, temporary and could be mitigated.

Site Alternative 2 had two fatal flaws, that being within 500m radius of a residential area and busy mall, making it non-compliant with the Regulations related to the Management of Human Remains R363 of 2013, promulgated in terms of the National Health Act 61 of 2003, along with the lack of agreement with the landowner to secure the premises.

Provide a detailed motivation if no property and site alternatives were considered.

Alternatives were considered.

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

Proposed Preferred Site Alternative 1: ERF 2433 Montague Gardens

Positive impacts on the environment:

- No additional services and no earthworks are required.
- No natural areas will be degraded, in fact there is opportunity for the small portion of natural area to be maintained in line with the NEMA (Section 28).
- EMPr and respective permits will ensure that the site is managed in an environmentally efficient manner during renovation and operational phases.
- No additional access is required.
- Controlled access onto site.
- Site is located more than 500m away from any habitable dwelling (residential) and is surrounded by industrial/commercial land use.
- Zoned appropriately (Industrial).
- Decent proximity to funeral parlours and communities (located along the west coast of CoCT) that do not currently have a facility such as this to service the area.
- Opportunity for refurbishment and upkeep of existing infrastructure.

Negative Impacts on the environment:

- Natural area to the north can be impacted upon indirectly, due to negligence. However, given the disturbance, this area will need to be maintained.

Proposed Site Alternative 2: ERF 358 Blackheath Industria

Positive impacts on the environment:

- No additional services or earthworks are required.
- No natural areas will be degraded.
- EMPr and respective permits will ensure that the site is managed in an environmentally efficient manner during renovation and operational phases.
- No additional access is required.
- Controlled access onto site.
- Zoned General Industrial.

Negative Impacts on the environment:

- The site is located approximately 400m away from a dense zoned residential area and is in close proximity to a busy mall.
- Site is visible from main road networks such as the M12 and R102, which can lead to visual impacts.

~~1.2.~~	~~Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.~~

~~Provide a description of the preferred activity alternative.~~

~~Provide a description of any other activity alternatives investigated.~~

~~Provide a motivation for the preferred activity alternative.~~

~~Provide a detailed motivation if no activity alternatives exist.~~

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

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

Provide a description of the preferred design or layout alternative.

Design Alternative 1: Stack Height of 12m's

The proposal will entail the establishment of 6 x chimney stacks. Stack heights of 12m's high (from ground level), which is approximately 6m's above the height of the building.

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

Design Alternative 2: Stack Height of 16m's

The establishment of 6 x chimney stacks. Stack heights of 16m's high (from ground level), which is approximately 10m's above the height of the building.

Design Alternative 3: Single Stack

The establishment of a single stack, as suggested by the City of Cape Town: Air Quality Department, that could potentially reduce emissions.

Provide a motivation for the preferred design or layout alternative.

The Design Alternative 1 is the preferred stack height. Although the Air Quality modelling predicted that all exceedances are avoided with a stack height of 16m's, the air quality specialist did note that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three-year period, which would not be the case in reality.

Furthermore, the JTE Cremators have been adopted on other sites, with stack heights of 12m's, given that the technology is specifically designed for a 12m stack height. Changing this stack height would involve a significant re-design, that would not be feasible, and the manufacturer has advised that if the technology is implemented as is, with the single stack or 16m stack height, they cannot guarantee the technologies compliance.

Therefore, the 12m stack height (Design Alternative 1) would be the most reasonable and feasible option.

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

Alternatives have been considered.

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

Design Alternative 1: 12m Stack Height

Positive impacts on the environment:

- Compatible with the current design of the JTE Cremator.
- Already adopted in the proposed scope of works, therefore, funds are available to undertake this construction.
- Compliant with the requirements of the Regulations for Handling and Storage of Human Remains, 2013, in terms of required stack height.
- Manufacturer guarantee for emissions to be compliant with Air Quality Emissions for New Plant designs, as has been proven on other sites.
- Compliant with permissible height for an industrial zone, as per the City of Cape Town Development Management Scheme (DMS)

Negative Impacts on the environment:

- Potential for predicted exceedances of PM and NO_2, as per the AERMOD (air quality modelling).

Design Alternative 2: 16m Stack Height

Positive impacts on the environment:

- As recommended by the Air Quality Specialist as per the AERMOD (Air Quality Modelling), predicted to avoid all exceedances.
- Compliant with permissible height for an industrial zone, as per the City of Cape Town Development

Negative Impacts on the environment:

- Manufacturer cannot guarantee the technologies compliance, should this be adopted.
- Re-design will result in substantial costs, that would make the proposal unfeasible.

Design Alternative 3: Single Stack

Positive impacts on the environment:

- As suggested by the City of Cape Town: Air Quality Department, to potentially reduce impact emissions.

Negative Impacts on the environment:

- Manufacturer cannot guarantee emissions and technology compliance, should this be adopted.
- Re-design, will result in substantial costs, that would make the proposal unfeasible.

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

Provide a description of the preferred technology alternative:

PREFERRED PROPOSED ALTERNATIVE FUEL - 1: LPG

LPG (Liquid-Petroleum Gas) was identified as the preferred fuel source. In South Africa, LPG's include butane and propane, which are gases that get their name from their ability to convert from a gas into a liquid when exposed to low temperatures. The ratio of butane and propane in LPG in South Africa consists of a 40:60 ratio.

The majority of LPG available in South Africa is produced locally, as a by-product of the crude oil refining process, from local producers including ENREF (Engen Petroleum Ltd.); SAPREF (South African Petroleum Refineries – a joint venture between Shell and BP(located in Durban)), Sasol Synfuels, Chevron (located in Cape Town) and PetroSA (Mossel Bay). LPG that is produced at these refineries is then sold to suppliers who in turn distribute the LPG around the county, for consumers. The balance of the LPG is imported from overseas companies such as Petredec and Geogas (Simsgas, 2021)*.

LPG has gained momentum as it is now seen as a modern, affordable alternative to electricity, that offers no disruptions, is non-toxic, and is a lower carbon dioxide emitter than other petroleum-based fuels.

*Simsgas (2021) *Where does South African LPG come from*? < https://www.simsgas.co.za/blog/126-where-does-south-african-lpg-come-from.html#:~:text=In%20South%20Africa%2C%20we%20use,when%20exposed%20to%20low%20temperatures.>. Accessed on 26th May 2022.

Provide a description of any other technology alternatives investigated.

PROPOSED ALTERNATIVE FUEL - 2: COAL

The U.S Environmental Information Administration*[1] defines coal as a combustible black or brownish-black sedimentary rock with a high amount of carbon and hydrocarbons. Coal contains the energy stored by plants that lived hundreds of millions of years ago in swampy forests. In South Africa it is mined from Ecca deposits, a stratum of the Karoo Supergroup. Coal along with wood were original fuel sources for crematoriums. South Africa is heavily dependent on coal as the main fuel source for electricity generation, however, due to Climate Change initiatives steadily growing and the adoption of alternative energy, all industries are being encouraged to investigate alternative fuels for application purposes.

* The U.S Environmental Information Administration (2021) *Coal explained*. < https://www.eia.gov/energyexplained/coal/>. Accessed on the 26th of May 2022.

PROPOSED ALTERNATIVE FUEL – 3: DIESEL

Diesel is a major liquid fuel used in South Africa. Diesel is produced from the refining of crude oil, which in South Africa takes place at South Africa's four crude oil refineries (SAPIA, 2022).

*SAPIA (2022) South African fuel industry. <https://www.sapia.org.za/Overview/South-African-fuel-industry> accessed on 26th May 2022.

PROPOSED ALTERNATIVE FUEL – 4: Natural Gas

Natural Gas, which is primarily methane based, is the cleanest burning hydrocarbon producing 83% less CO_2 when burnt. Natural gas requires an air to gas ratio of 10:1, compared to 25:1 for LPG. Natural gas is usually supplied via pipelines directly connected to their point of use. In South Africa this creates supply constraints where such gas pipelines are not available. For this reason, natural gas is used solely as a feedstock for the production of synthetic fuels in South Africa.

Unlike LPG, which is liquified through pressurisation, Natural gas is liquified through cryogenic cooling which turns it into Liquified Natural Gas (LNG). LNG reduces the volume of natural gas by 600 times, which makes it easy and

economical to transport to its source, in gas tanks similar to that used for LPG. However, LNG processing infrastructure is under-developed in South Africa, and its feasibility as a fuel source in South Africa is still under investigation (ELGAS, 2021).

*Department of Mineral Resources and Energy (n,d,) *Natural gas* <http://www.energy.gov.za/files/naturalgas_frame.html> Accessed on 4 July 2022.
ELGAS (2021) LPG vs Natural Gas – Difference Between LPG and Natural Gas – Is LPG Natural Gas < https://www.elgas.com.au/blog/486-comparison-lpg-natural-gas-propane-butane-methane-lng-cng/#:~:text=LPG%20is%20better%20than%20natural,less%20CO2%20when%20burned.> Accessed on 4 July 2022.

sgas (2021) *Where does South African LPG come from*? < https://www.simsgas.co.za/blog/126-where-does-south-african-lpg-come-from.html#:~:text=In%20South%20Africa%2C%20we%20use,when%20exposed%20to%20low%20temperatures.>. Accessed on 26th May 2022.

Provide a motivation for the preferred technology alternative.

Coal, although a significant fuel source in South Africa, is also a non-renewable resource. The burning of coal is a significant contributor to GHG emissions and will result in significant air quality emissions that would not be feasible to permit. In an effort to adopt greener energy, coal was ruled out as a viable fuel source.

As extracted from the World Nuclear Association (Calorific Value - energy content contained in a fuel. The higher the calorific value, the higher the efficiency of the fuel for heating in a furnace), and the American Geoscience Institute (CO_2):

Fuel	**Calorific Value (MJ/m³)** (World Nuclear Association, n.d.)	**CO_2 emissions (kg/ BTU)** (American Geoscience Institute, n.d.)	**% more CO_2 emission compared to Natural Gas** (calculated)
Natural Gas	42-55	53.07	
LPG	46-51	62.88	18%
Petrol/Gasoline	44-46	71.30	34%
Diesel	42-46	73.16	38%
Coal	17-24	97.20	83%

Evidently LPG has much lower CO_2 emissions (kg/ BTU) and a higher potential calorific value than coal, diesel and petrol. Although LPG will have higher CO_2 emissions compared to Natural Gas, it is portable and widely available (as compared to natural gas). Diesel emissions contribute a higher percentage of carbon dioxide emissions than both LPG and Diesel.

LPG has been found to have significant benefits, including amongst other things:

- Much lower CO_2 emissions (kg/ BTU) and a higher potential calorific value (energy content contained in a fuel) than coal, diesel, petrol, making it an efficient fuel for this process.
- To utilize LPG in the process requires extensive compliance, indicating that if adopted it is done with significant consideration in terms of Health and Safety, this includes:
  - Must be in line with the South African Gas Association's (SAGA), Safe Gas Equipment Scheme for registration of industrial LPG equipment within the scope of SANS 347 and SANS 329. *[1]
  - As per the Pressure Equipment Regulations, LPG installations will require a registered gas practitioner to indicate and certify on the Certificate of Conformance (COC) that the equipment installed has been formally verified to South African Bureau of Standards (SABS) SANS standards and it safe for use. These regulations set out the requirements regarding the design, manufacture, installation, operation, repair, modification, inspection and testing of pressure equipment. *[1]
  - Must comply with the Occupational Health and Safety Act. *[1]
  - Strict storage and handling requirements.

Cost-effective, as it is cheaper than electricity. Therefore, as the furnaces will operate off of LPG, there will not be additional strain on the existing electrical infrastructure, and processes will not be stalled as a result of events like loadshedding. This is an essential aspect, considering this activity is related to the management of human remains, any delays to the operational process, should be avoided.

- LPG supply is easier to source than natural gas, as the demand grows in urban areas more suppliers are becoming available and given that LPG does not require extensive pipelines for supply, it can be easily transported and stored. *1
- Considering the temperatures required for the efficient cremation of human remains. LPG allows these temperatures to be reached more efficiently and consistently.

LPG is therefore the most feasible and reasonable option. However, LPG and Natural Gas will be considered in terms of the assessment.

*1 Liquefied Petroleum Gas Safety Association of Southern Africa https://www.lpgas.co.za/ 31 August 2022

Provide a detailed motivation if no alternatives exist.

Alternatives were investigated.

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

PREFERRED PROPOSED ALTERNATIVE FUEL - 1: LPG

Positive Impacts:

- Reduced CO_2 emissions, as compared to other petroleum-based fuel sources.
- No smoke or particulate matter emitted.
- No odours.
- Consistent and reliable.
- Time-saving when applied to the cremation process.
- Cheaper as compared to the cost of electricity.
- Small area required to house tanks.
- Maintenance costs are reasonable.
- Compatible with intended cremator technology.
- Site will undergo a risk assessment to establish the need for a Major Hazard Installation, and LPG storage will be advised by an appropriate specialist, who will indicate where storage will be positioned, and all specific safety measures related to the storage and handling of LPG, including access control. Only if authorized.

Negative Impacts:

- Usually more expensive than diesel.
- Strict handling and management.
- Harmful if mishandled, or direct contact is made.
- Extensive conditions required in terms of legislation compliance.

PROPOSED ALTERNATIVE FUEL - 2: COAL

Positive Impacts:

- Readily available connection to network/infrastructure.

Negative Impacts:

- Emits GHG and particulate matter.
- High operational costs and maintenance costs, to achieve the temperatures required for cremations.
- Strain on existing services.

- Unreliable supply, therefore inconsistent and disruptive to the process of cremation.

PROPOSED ALTERNATIVE FUEL – 3: DIESEL

Positive Impacts:

- Time-saving when applied to the cremation process.
- Cheaper as compared to the cost of electricity and LPG.
- Easily sourced.
- Fairly low emissions.

Negative Impacts:

- Impacts to human health if contact is made and has been linked to health conditions like asthma and respiratory illnesses (EPA, 2022).
- Production of ground-level ozone which damages crops, trees and other vegetation, furthermore, these emissions also contribute to property damage and reduced visibility (EPA, 2021).
- Strict storage, handling and management, as diesel spills can contribute to contamination if washed into the general stormwater network or other natural areas.

PROPOSED ALTERNATIVE FUEL – 4: NATURAL GAS

Positive Impacts:

- Cleanest burning hydrocarbon fuel source
- Abundant global supply
- Versatile as a bridge fuel
- Low levels of criteria pollutants (e.g. SOx and NOx) or soot when burned, which has been linked to health conditions including respiratory symptoms, cardiovascular disease, and cancer (EPA, 2021).
- Lighter than air, safer than LPG which is heavier than air

Negative Impacts:

- Delivery infrastructure (pipelines) in Montague Gardens, is not available
- Stored and distributed under high pressure
- LNG used to transport over distance, is potentially very dangerous.

Environmental Protection Agency (EPA), (2022) *Learn About Impacts of Diesel Exhaust and the Diesel Emissions Reduction Act (DERA)* https://www.epa.gov/dera/learn-about-impacts-diesel-exhaust-and-diesel-emissions-reduction-act-dera#impact.

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

Provide a description of the preferred operational alternative.

PREFERRED PROPOSED OPERATIONAL ALTERNATIVE 1: CREMATORIUM

A crematorium is a facility for the cremation/disposal through incineration of human/animal remains. Modern crematoriums contain cremators/furnaces, which are specially designed technology/machines in which the remains are incinerated.

The existing building will be renovated to accommodate the crematorium infrastructure, including the installation of the cremators/furnaces and their associated infrastructure, as well as the chimney stacks, estimated at 6m's in height, above the roof. The establishment of a crematorium will take place in two phases:

- Phase 1 will consist of the installation of two cremators that operate 24 hours per day. Each cremator has a maximum cremation capacity of 24 cadavers per day. Thus, in total, the site will have the capacity to cremate 48 cadavers per day.
- Phase 2 will consist of the installation of an additional four cremators, also operating 24 hours per day. After the completion of phase 2, the site will have the capacity to cremate 144 cadavers per day.

The proposed scope of works includes the renovations of the existing warehouse facility as follows:

- Installation of 6 x BA2 cremators (manufactured by Engineered Thermal Systems) and associated infrastructure.
- LPG tanks (fuel source for cremators), stored on site in excess of 80m^3, but less than 500m^3.
- 6 x Chimney stacks approximately 0.35m in diameter, and approximately 6m's above the nearest building.
- 3 x reefer coolers and one cool room.
    - each reefer can take 60 units, in total with three reefers and one cool room, the business can stockpile.
- Associated infrastructure and services.
    - Safety Plans:
        - Compilation of a fire plan and equipment, safety measures;
        - Risk Management and Prevention Plan for the on-site storage of Hazardous Substances.
- Modifications to the inside of the building includes, but is not limited to:
    - Resurfacing including flooring.
    - New offices.
    - Sterilization of the interior.
    - Servicing of roll-up doors.
- Modifications outside include:
    - New ABR sheets will be utilized on the outside.
    - Painting.
    - Appropriate signage.

According to current google information, see Figure 42, there are only two municipal crematorium facilities (in Maitland and Durbanville), and a small number of privately owned crematoria, within the City of Cape Town, that are having to shoulder the demand of the current population, approximately 4.4 million people (SDF for the City of Cape Town, 2019), as well as shoulder the demand from surrounding municipalities who do not have this service available/in operation.

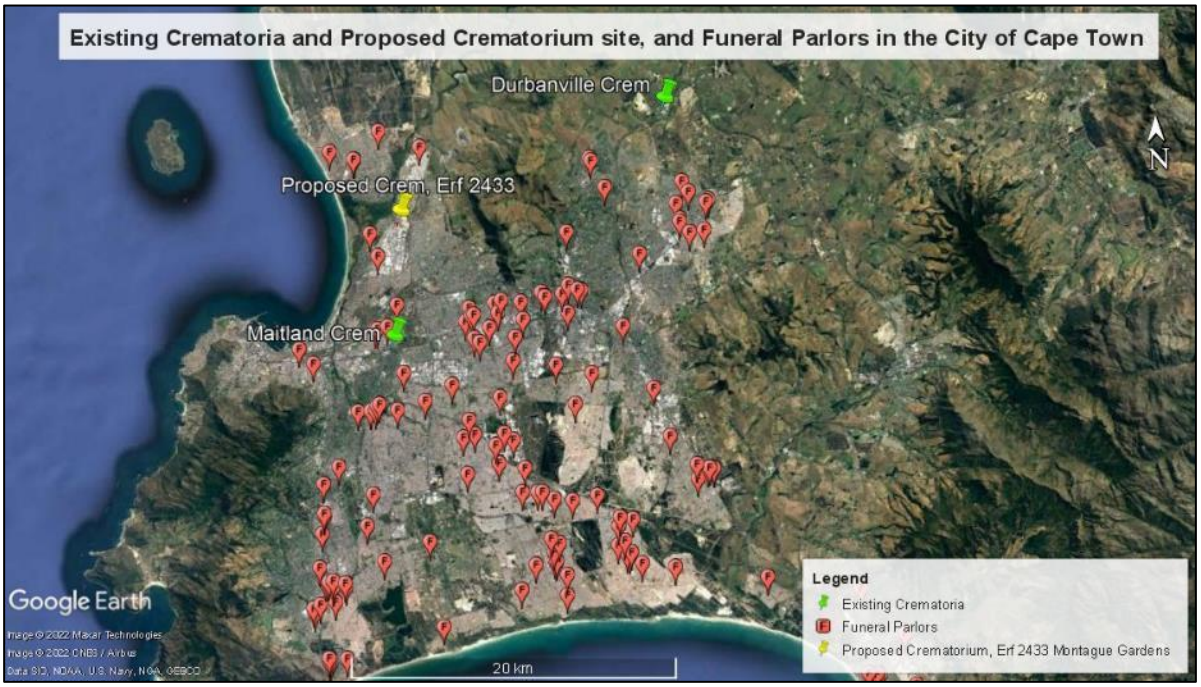


Figure 40: Existing funeral parlours and crematoriums.

Provide a description of any other operational alternatives investigated.

PROPOSED OPERATIONAL ALTERNATIVE 2: CEMETERY

Cemeteries are areas designated for the burial or entombment of human/animal remains. They are areas of natural ground, where individually excavated pit/burial plots are established, as needed, per family/person. Plots are required to be maintained, leading to on-going expenses for families. The area is usually required to be maintained on an on-going basis, due to common vandalism risks, etc. The establishment of excavation pits can lead to environmental risks, including contamination of soil and groundwater, *Dippenaar, et al., 2018, states that potential chemical substances used in the embalming process and following treatments of illnesses, metals from the ornamental hinges on coffins, jewellery and other nutrients and pathogens sources can have environmental consequences.

- *Dippenaar M. A; Diamond, R.E; Olivier, J; Lorentz, S; Ubomba-Jaswa E and Abia A. L. K (2018) Environmental Risk Assessment, Monitoring and Management of Cemeteries. Water Research Commission. Republic of South Africa.*

PROPOSED OPERATIONAL ALTERNATIVE 3: OTHER MANUFACTURING USES

The proposed site is currently being utilized manufacturing purposes, as is common in the surrounding area, zoned for industrial use. Other uses common in the surrounding area is take-aways, suppliers, commercial businesses, etc.

Provide a motivation for the preferred operational alternative.

Aspects relating to the three operational alternatives were compared below.

Table 19: Comparing aspects of the operational alternative to determine feasibility.

General Aspects	Specific Aspects	Preferred Proposed Operational Alternative 1: Crematorium Suitability	Proposed Operational Alternative 2: Cemetery Suitability	Proposed Operational Alternative 3: Other Manufacturing Uses Suitability
Legislative compliance	New Landowner permission granted	Yes	No	No
	Meets air quality emission standards	Yes	Not applicable	Unknown
	Distance from habitable dwellings	Within 500m's, therefore not compliant, however air quality standards are acceptable.	Within 500m's, therefore not compliant.	Within 500m radius, compliant, depending on emission levels (if any).
	Risk to groundwater	No	Yes.	Yes, based on activities on site could be significant risk to ground and surface water.
Development Phase: Environmental Impacts	Sense of Place: • Noise • Dust	Suitable • Predicted to be minimal considering transformed nature of site. • Surrounded by other industrial and	Unsuitable • Extensive dust creation and noise creation, even for an industrial area,	Suitable • Unlikely that impacts will be significant

		commercial practices.		
	Excavations and Earthworks	• Not required	Unsuitable • Extensive	Unknown, based on the need of the manufacturer.
	Clearance of vegetation	• Not required	Required.	Potentially natural area could be transformed.
	Alien Invasive Management	• Required.	Required.	Required.
	Loss of Land and Land-use Potential	• Not applicable. The site is suited to accommodate a crematorium.	• Definite.	• None.
	Traffic and accessibility issues	• Low traffic and suitable accessibility, without additional changes.	• Unsuitable • Extensive and long-term negative impacts.	• Unknown
	Site suitability	• Suitable. • Transformed and services available.	• Unsuitable. • Needs significant transformation and is too small to be feasible.	• Suitable
Operational Environmental Impacts	Alien Invasive Clearance	• Minimal and sporadic • In expensive.	• Expensive and on-going	• On-going.
	Excavations - graves	• Not applicable	• On-going	• None
	Need for expansion of facility	• Not applicable, furnace capacity can be improved if necessary.	• Definite. • Expensive. • Loss of land that could have been better utilized.	Potentially
	Groundwater Contamination	• Not applicable	• Highly probable	Potential based on activties, and highly likely.
	Air emissions	• Low and can be maintained.	• None	Based on activities but is likely.
Development Phase: Socio-Economic	Sense of Place: • Visual	• Low and temporary.	• Significant and negative.	Can be high but may be better aligned with the surrounding character.
	Land use and Location	• Mostly acceptable as long as air emissions standards are observed, and health and	• Not acceptable, as this would be significantly different to the	Can be found acceptable, depending on the activity. Mostly acceptable

		safety practices are enforced. • Located ideally in an industrial area, in close proximity to communities that would benefit, as well as funeral parlours.	surrounding area.	based on this being an industrial area.
Operational Phase: Socio-Economic	Sense of Place: • Visual	• Minimal, as the exterior would align with surrounding development	• Significant and negative, can result in long-term issues, from disgruntled neighbours.	Dependent on activities.
	Maintenance cost (to landowner/occupier)	• High	• Lower	• High
	Costs to consumer	• Once-off and cheaper. • Fee is inclusive of equipment required.	• Expensive and continuous. • Each time burial takes place separate costs must be designated for the equipment and labour is required to excavate pits and transfer coffin.	None.
	Security and Risk	• Low risk - site is already monitored and access controlled	• High risk – common for vandalism to occur, desecration of gravestones, and loitering.	Potentially high, depending on what is being stored/ manufactured on site.
	Acceptability • Culturally	• Gaining momentum	• More widely acceptable.	Not significant.
	• Health Concerns	• More widely acceptable.	• Risk to environmental features (ie, pathogen persistence in soil and water.	Depending on the activities, however, this cannot be ruled out.
	Need and desirability for service	• High. • There are a limited number of	• Low. • There are 38 cemeteries in the CoCT with	Unknown. The area has multiple manufacturing businesses, additional could

		crematoriums in CoCT, and over the years the media has flagged backlogs in this industry, both pre- and post-COVID-19.	an area of 529.1 hectares, where a lot of these areas good have been utilized for more beneficial land uses. • Excessive costs and impacts on the environment.	potentially compete with other businesses, create additional traffic impact long-term, and have other significant impacts.

Based on table 19, it was concluded that crematoriums have significantly less negative environmental impacts, especially when dealing with a brownfield site, coupled with the low-carbon fuel alternative, as compared to the adoption of cemeteries.

Manufacturing is already acceptable within this area and could potentially be more easily accepted depending on the activities on site. However, the new landowner has provided consent for the proponents intended purpose and this is in-line with the zoning of the site.

From a socio-economic perspective, crematoriums are better suited than a cemetery, as they are more affordable (as cremations are once off, vs maintaining a grave site for extended periods of time), and are more widely accepted, particularly in certain cultures, and considering health concerns related to pathogen outbreaks in recent years. As such, the development of a cemetery was found to not be feasible or reasonable in this instance. An additional manufacturing facility, depending on the activity could have significant air emissions, or create water contamination, traffic impacts, and could create competition amongst other businesses in the area.

According to current google information, see Figure 41, there are only two municipal crematorium facilities (in Maitland and Durbanville), and a small number of privately owned crematoria, within the City of Cape Town, that are having to shoulder the demand of the current population, approximately 4.4 million people (SDF for the City of Cape Town, 2019), as well as shoulder the demand from surrounding municipalities who do not have this service available/in operation.

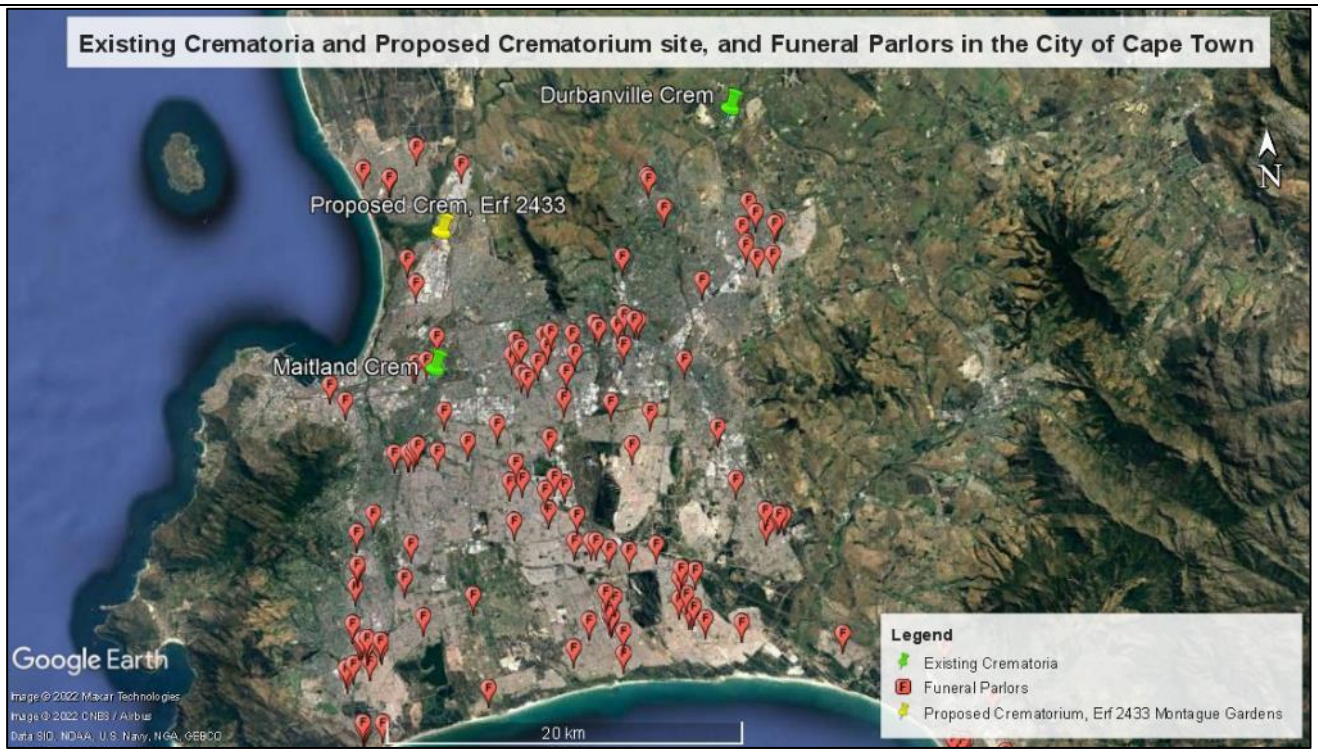


Figure 41: Crematorium facilities and funeral parlours located within the City of Cape Town.

The applicant, Platinum Pride Crematorium, is familiar with the cremation industry within the Western Cape. The applicant has noted strain on this industry, leading to backlogs, strain on existing facilities and has highlighted a need for this service in a location that can effectively provide support to the industry and communities.

Further to this, the applicant has committed to complying with all necessary procedures to support the implementation and efficient running of such a facility. Choosing to adopt furnaces that are designed to meet with regulatory requirements and thresholds, such the Air Emission requirements for new plants as specified by the National Environmental Management: Air Quality Act (NEM:AQA), and adopting cleaner fuel options such as LPG. Therefore, given the need for the proposed development, as well as the proponents willingness to ensure the development is undertaken in the most efficient and compliant manner, the Operational Alternative 1: Crematorium, is the preferred option, as this is the most feasible and reasonable alternative.

Provide a detailed motivation if no alternatives exist.

Alternatives were considered.

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

PREFERRED PROPOSED OPERATIONAL ALTERNATIVE: CREMATORIUM

Positive Impacts on the Environment:

- No excavations/earthworks required, as all services and supporting infrastructure exists.
- Cheaper for consumers (once off cost).
- Accepted in some cultures.
- Accepted in terms of health risks based on the increase in pathogenic incidents and outbreaks, such as COVID-19.
- No clearance of vegetation required during operational phase.
- Specific area, allocated for infrastructure that will likely never require expansion.
- Accommodation of green options to improve carbon footprint, such as LPG gas.
- Liable and held accountable by multiple legislations/by-laws, etc, that all require on-going monitoring. Therefore, better chance that on-going maintenance will be compliant.

- Providing support to an industry that has experienced strain in recent years.
- Fulfilling the need for this service to an area/region (west coast of City of Cape Town), that has no existing facility in close proximity, to be considered a feasible service.
- Multiple bodies can be processed over a 24hr period, at one location.

Negative Impacts on the Environment:
- Some CO_2 emissions (meeting air emissions standards).
- Energy demand.
- Cost to owner can be high.
- One body is permitted per process.

PROPOSED OPERATIONAL ALTERNATIVE 2: CEMETERY

Positive Impacts on the Environment:
- Biodegradable materials, and eco-friendly options can be adopted.
- Currently widely accepted in most communities and can accommodate at least two bodies under current municipal By-law.
- Small scale excavations over long-term basis, therefore, easier to manage and control.
- No need for extensive hardened surfaces.

Negative Impacts on the Environment:
- Not as efficient, in terms of space, limiting lifespan of cemeteries, therefore expansions, etc, will need to be done eventually.
- Utilizing land within urban areas that could have been better suited for other services required by the communities.
- Risk to ground water, depending on depth of grave, as groundwater depth is indicated to be approximately 6 – 10m's (CapeFarmMapper, 2022). This could further result in other impacts:
    - 200m radius from an estuarine functional zone.
- Caskets with metal hinges, and other potential pollutants.
- Geology of site may not support graves at acceptable depths.
- Site is already transformed, therefore will require earthworks to destroy already transformed surfaces to reach natural ground.
- Destruction to existing services.
- Rezoning implications.
- All alternative sites are too small to be considered feasible to accommodate a cemetery.
- Continuous disturbance to the area, as people visit, and graves are dug, leading to opportunity for alien invasive encroachment.
- Socio-economically this would be unacceptable in this area as:
    - The area is industrial and utilized as such.
    - Drastic change to sense of place, resulting potentially very high negative, and long-term impacts.
    - The cost to bury and maintain is expensive on consumers.

PROPOSED OPERATIONAL ALTERNATIVE 3: OTHER MANUFACTURING PURPOSES

Positive Impacts on the Environment:
- May not need to make changes to the facility.
- Currently widely accepted in this community.

Negative Impacts on the Environment:
- Could contribute to air emissions and water contamination.
- May not be as strictly monitored.
- May contaminate or destroy natural northern portion.
- Highly likely that it may cause strain on the existing services, including electricity.
- May create traffic impacts.

- May create competition amongst other businesses.

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

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

The No-Go Option would indicate that the status quo persists. This would mean that no renovations are undertaken, and a crematorium will not be established. The site would therefore continue as is. Existing disturbance to the site will persist as there would be no planned renovations to the building, and the facility would remain in a disturbed condition. No crematoria service will be supplied to the surrounding area, and the existing strain identified on the existing crematorium services will persist.

1.7.	Provide and explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.

Feasible and reasonable alternatives have been considered.

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

The Western Cape Guideline on Alternatives (March 2013) was adopted in this BAR, and it is key to note that while there are multiple alternatives that can be investigated, the Guideline states that, "…a range of alternatives exist, not all of which are necessarily appropriate for each EIA." In compliance with this Guideline, Alternative Fuel Sources were considered to ensure that the most energy efficient source was adopted. Operational Alternatives were considered as well.

Alternatives were considered in line with Page 10 of the aforementioned Guideline, "The "feasibility" and "reasonability" of and the need for alternatives must be determined by considering, inter alia, (a) the general purpose and requirements of the activity, (b) need and desirability, (c) opportunity costs, (d) the need to avoid negative impact altogether, (e) the need to minimise unavoidable negative impacts, (f) the need to maximise benefits, and (g) the need for equitable distributional consequences." If the Alternatives were found to be unreasonable or not feasible, this was stated and they were not carried forward for assessment.

Alternatives to be assessed further:

The preferred location/site is ERF 2433. As discussed, there are multiple socio-economic benefits, further to this it is suitable to accommodate the proposed facility, with significantly limited perceived negative environmental impacts to the natural environment. Alternative Site 2 would not be assessed, given that the site had two fatal flaws:

1) The proponent was not able to obtain an agreement to secure the site from the landowner.
2) The site is within 500m radius of a dense residential zoned area (approximately 400m's), and less than 400m's from a mall. Recently it has been noted that DEA&DP has declined a crematorium application for Environmental Authorization, in Strand, citing the distance to residential dwellings.

As the Preferred Alternative 1 Site is compliant in terms of its vicinity to habitable dwellings, is zoned appropriately, and the proponent has secured an agreement to lease the property from the landowner, it will be assessed further against the No-Go Alternative.

The preferred design alternative is the 12m stack height, as all other options would compromise the efficiency of the technology.

Both LPG and Natural Gas will be assessed along with the preferred site alternative. Given the efficiency and positive impacts on the environment.

The preferred operational alternative is a crematorium facility. Given the extensive disturbance, incompatibility with the considered sites, and multiple environmental impacts, a cemetery would not be acceptable, while a

crematorium would provide benefits on all considered aspects and is therefore the most feasible and reasonable alternative.

The preferred options mentioned above are the most feasible and reasonable alternatives.

2. "No-Go" areas

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

The north – eastern portion of the property should be considered a no-go area, unless management is required in terms of Section 28 of NEMA, Duty of Care as instructed by the landowner, to be undertaken by the applicant.

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

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

The assessment criteria utilized in this environmental impact assessment is based on, and adapted from, the *Guideline on Impact Significance, Integrated Environmental Management Information Series 5* (Department of Environmental Affairs and Tourism (DEAT), 2002) and the *Guideline 5: Assessment of Alternatives and Impacts in Support of the Environmental Impact Assessment Regulations* (DEAT, 2006).

Determination of Extent (Scale):

Site specific	On site or within 100 m of the site boundary.
Local	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to the construction phase.
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 2 years.
Medium term	The impact will last up to the end of the construction phase, where after it will be entirely negated.
Long term	The impact will continue for the entire operational lifetime of the development but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.

Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

No significance	The impact is not substantial and does not require any mitigation action.
Low	The impact is of little importance but may require limited mitigation.
Medium	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium-High	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Very High	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.
Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

Completely Reversible	The impact is reversible with implementation of minor mitigation measures
Partly Reversible	The impact is partly reversible but more intense mitigation measures

Barely Reversible	The impact is unlikely to be reversed even with intense mitigation measures
Irreversible	The impact is irreversible and no mitigation measures exist

Determination of Degree to which an Impact can be Mitigated:

Can be mitigated	The impact is reversible with implementation of minor mitigation measures
Can be partly mitigated	The impact is partly reversible but more intense mitigation measures
Can be barely mitigated	The impact is unlikely to be reversed even with intense mitigation measures
Not able to mitigate	The impact is irreversible and no mitigation measures exist

Determination of Loss of Resources:

No loss of resource	The impact will not result in the loss of any resources
Marginal loss of resource	The impact will result in marginal loss of resources
Significant loss of resources	The impact will result in significant loss of resources
Complete loss of resources	The impact will result in a complete loss of all resources

Determination of Degree to which an Impact can be avoided:

High	The impact is completely avoidable
Medium	The impact is avoidable with moderate mitigation
Low	The impact is difficult to avoid and will require significant mitigation
Unavoidable	The impact cannot be avoided

Determination of Degree to which an Impact can be managed:

High	The impact is completely manageable
Medium	The impact is manageable with moderate mitigation
Low	The impact is difficult to manage and will require significant mitigation
Unmanageable	The impact cannot be managed

Determination of Cumulative Impact:

Negligible	The impact would result in negligible to no cumulative effects
Low	The impact would result in insignificant cumulative effects
Medium	The impact would result in minor cumulative effects
High	The impact would result in significant cumulative effects

4. Assessment of each impact and risk identified for each alternative

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

- The Preferred Alternative 1 and No-Go Alternative will be assessed further. The Preferred Alternative will be assessed with both Natural Gas and LPG as the preferred fuel source. However, the only notable difference is the Storage and Handling of Hazardous Material: LPG & Natural Gas.

	PREFERRED ALTERNATIVE SITE	NO-GO ALTERNATIVE
PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	**WASTE MANAGEMENT** **Alternative 1 Layout:** No earthworks will be undertaken. However, waste that is both non-hazardous and hazardous, will be generated, such as paint cans, primers, old roofing materials, any discarded waste inside the premises and from the north western portion of the site, any rubble or glass, etc. removed during renovation activities. Waste will also be produced by labour appointed to undertake works, from lunches, etc. Improper management of this waste can result in pollution generation and potential contamination to stormwater and the surrounding area. **No-Go Alternative:** There will be no change to the existing status quo. The northern portion of the site contains extensive disturbance from stockpiling of building material, to alien invasive species, to stormwater infrastructure. The interior and exterior of the existing facility is in disrepair.	
Nature of Impact:	Negative	Negative
Extent, duration and magnitude of impact:	Site specific and short-term	Local and long-term
Consequence of impact or risk:	• Litter/ waste products (hazardous or non-hazardous) being improperly managed and dispersed on and around site.	• No repairs will be undertaken to the exterior or interior. • Waste dumped on site may not be removed thoroughly, or immediately.
Probability of occurrence:	Improbable - probable	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No loss of Resources	
Degree to which the impact can be reversed:	Completely	Partly
Indirect impacts:	• Contaminated water or waste dispersed into stormwater network. • Litter being washed into stormwater drains resulting in blockages, or onto adjacent properties.	• Alien invasive species may not be cleared as consistently as it should be leading to regrowth and of alien invasive species. . • Potential for further degradation of infrastructure, including rusting, collapsing

		roof, accidental fires internally, if not maintained thoroughly.
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium (-)**	**Medium (-)**
Degree to which the impact can be avoided:	Medium - High	Medium
Degree to which the impact can be managed:	Medium - High	Medium
Degree to which the impact can be mitigated:	Can be mitigated	Can be mitigated
Proposed mitigation:	General • Practice good house-keeping, and plan set-up and programme of works ahead of time. • Be mindful of weather patterns, that may interrupt work as well as safeguard waste areas so as to not be dispersed in bad weather. • Ensure storage of material is done in an orderly fashion. • Contain disturbance to the transformed areas within ERF. • No storm water runoff containing waste, or water containing waste emanating from renovation activities may be discharged into the environment. • Polluted stormwater must be contained on the site. • Development personnel, equipment and materials must be limited to the minimum practical working footprint. • Any accidental release of a hazardous substance during the construction phase of the proposed development, must be reported to the relevant authorities, including the Department of Environmental Affairs and Development Planning's Directorate: Pollution and Chemicals Management, in terms of Section 30 of the NEMA. • Dedicated waste bins or skips must be provided on site and kept in a demarcated area on an impermeable surface.	General: • In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. • Remove excessive waste materials discarded within the interior and replace interior roof insulation, which is falling apart, to avoid fire hazards from occurring. • Replace rusted roof sheeting that has the potential to be further damaged during storm events resulting in interior damage. • Ensure site is secured to prevent vandalism or encroachment. • Maintenance on site must be undertaken periodically.

	• Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. • Waste must be placed in the appropriate waste bins/skips/ stockpiles. • Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. • Waste bins/skips must be regularly emptied and must not be allowed to overflow. - Ensure that waste receptacles are weighted down, or have weighted covers, are labelled appropriately, and/or are cleaned by a reputable waste disposal company. - Obtain a disposal/cleaning slip for this waste, to file in the Environmental File. • The National Department of Water and Sanitation Berg - Olifants WMA must be informed if: - Should the refurbishment extend beyond the existing facility footprint. - There be any surface, ground or storm water pollution as a result of activities on the site. • No activities are permitted relating to the abstraction of surface or groundwater, nor storage of water • ECO monitoring must be undertaken. Educating Labour • Workers appointed for renovations must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. • The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed.	

	• Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). • Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • If the landowner so instructs, the applicant may be responsible for the clearance of alien invasive species located to the north of site along with any waste material. This should be undertaken as soon as possible, covered with a suitable crop cover, and then be demarcated to allow rehabilitation. - Disposal of alien invasive plant material must be undertaken in accordance the measures set out in the EMPr. • All waste, hazardous as well as general, resulting from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF). Pollution Management -Hydrocarbons (oil, fuel etc.) • While the site is transformed, any spills/leaks etc. has the potential to be washed into the existing stormwater network, leading to contamination. To ensure this is avoided the following is recommended: - Vehicles and machinery must be in good working order and must be regularly inspected for leaks. - If a vehicle or machinery is leaking pollutants it must, as soon as possible, be taken to an appropriate location for repair. The ECO has the authority to request that any vehicle or piece of equipment that is contaminating the environment be removed from the site until it has been satisfactorily repaired.	

	- Repairs to vehicles/ machinery may take place on site, within a designated maintenance areas where contamination cannot access the stormwater network. - Drip trays must be utilized when: ➢ Refuelling. ➢ During decanting of hazardous substances and when refilling chemical fuel storage tanks. ➢ Generators are being utilized on site where there is risk of leakage/spillage. - Where feasible, fuel tanks must be elevated so that leaks are easily detected. - A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be educated on how to utilise the spill kit. - Soil contaminated by hazardous substances must be excavated and disposed of as hazardous waste. Pollution Management – Ablution facilities • Utilize existing ablution facilities on site. • No labour may be permitted to utilize any natural or disturbed area of the site for ablution purposes. Pollution Management – Hazardous Substances • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases.	

	• Utilize existing bunded areas on site for hazardous storage and refuelling areas. If none of the existing areas can be utilized, ensure that no spills are able to contaminate the stormwater network. Cement Batching • Cement batching and wastewater from such activities must not be permitted to wash into the stormwater network, bunding must be applied where necessary. • No natural area may be used for cement mixing. • Unused cement bags must be stored in such a way that they will be protected from rain. Empty cement bags must be disposed of in an appropriate waste bin, for other hazardous waste materials. • All excess concrete/ cement must be removed from site and disposed of at an appropriately registered disposal facility. Fire safety • Avoid stockpiling waste material on site for excessive timeframes. • No waste may be stored on site for more than 90-days. • No uncontrolled or unpermitted burning of waste is permitted. • If utilized, ensure that gas or any flammable substances are stored according to industry standards. • Maintain fire hoses and extinguishers. • Erect fire safety signage, and warning signage to alert people that flammable items are stored in a certain area, etc. and to indicate where fire safety equipment (e.g. fire extinguishers) are located.	
Residual impacts:	• None	• As the site is exposed, alien invasive species may persist on the natural portion to the north of the site, if not routinely maintained.
Cumulative impacts post mitigation:		

Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	**Low - Medium**
Potential impact and risk:	**SOCIAL IMPACT: SENSE OF PLACE (NOISE & DUST)** **<u>Alternative 1 Layout:</u>** No earthwork activity is intended to be undertaken. However, increased noise levels may occur due to proposed renovation activities and removal of dated infrastructure may result in some dust. **<u>No-Go Alternative</u>**: No impacts will be generated, as the status quo will persist.	
Nature of Impact:	Negative	Not applicable, as the site will remain as it is. No development will occur.
Extent, duration and magnitude of impact:	Local and short-term	
Consequence of impact or risk:	• General nuisances i.e. dust, noise, odour, etc. will impact on the sense of place, although mainly temporary in nature, and insignificant, considering the site is currently being used as a chemical manufacturing site.	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss of Resources	
Degree to which the impact can be reversed:	High	
Indirect impacts:	None	
Cumulative impact prior to mitigation:	Negligible	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium**	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	

Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	Dust Mitigation • Stockpiles of material that may generate dust must be protected from wind erosion/dispersion (e.g. covered with netting, tarpaulin or other appropriate measures.) • Be mindful of influential weather events (significantly windy conditions, storms, etc.), when planning renovations to the exterior. • The location of stockpiles must take into account, the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding road-users and other land-users. • If dust appears to be a continuous problem the option of using shade cloth to cover the fence line, may need to be explored. This will also allow for some visual distortion of renovation activities. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Material loads should be properly covered during transportation. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. • A Complaints Register must be available at the site office for inspection by the ECO, documenting any complaints that may have been received. Noise Mitigation: • A complaints register must be available on site for any complaints received. • Any heavy machinery required, ie. cranes, trucks, etc. must be restricted to normal construction working hours (7:30 – 17:30), as far as possible.	

	• Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. • Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to.	
Residual impacts:	None	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**SOCIAL IMPACT: VISUAL** **Alternative 1 Layout Plan:** Renovation activities to the exterior, delivery and stockpiling of materials (waste or otherwise) will occur on the southern end of the site, which is the main exit/entrance and can be easily observed from Stella Road, creating visual impacts. The renovations planned for the facility will refurbish the exterior and restore the facility to its original condition which would align with the surrounding warehouses, with minor additions of the chimney stacks. **No-Go Alternative**: No visual impacts are expected, as the status quo will persist.	
Nature of Impact:	Negative	Not applicable as the status quo will persist, therefore no visual impacts will be observed.
Extent, duration and magnitude of impact:	Local and temporary.	

Consequence of impact or risk:	• Change of visual aesthetics, due to construction disturbance.	
Probability of occurrence:	Definite	
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:	None	
Cumulative impact prior to mitigation:	None	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low-Medium**	
Degree to which the impact can be avoided:	Unavoidable	
Degree to which the impact can be managed:	Low - Medium	
Degree to which the impact can be mitigated:	Can be partly mitigated	
Proposed mitigation:	General: • The site camp, toilets, storage facilities, stockpiles, waste bins, and any other temporary structures on site, should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Utilize shade cloth, or other suitable material, along the fence perimeter of the site camp and construction site. • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended.	

Residual impacts:	None.	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS – CREATION OF MULTIPLE JOB OPPORTUNITIES & CAPITAL EXPENDITURE** **Alternative 1 Layout Plan:** Creation of temporary job opportunities for skilled and unskilled labour, with potential for skills transfer, for members of the local community/from previously disadvantaged communities. Goods, materials and services, should be sourced from local businesses (where possible). **No-Go Alternative:** The clearance of vegetation and waste, along with the on-going management of alien invasive species, will require labour (unskilled), however this will be vastly less than the number required for the preferred alternative, and far less frequent.	
Nature of Impact:	Positive	Positive
Extent, duration and magnitude of impact:	Site Specific and medium - term.	Site Specific and temporary
Consequence of impact or risk:	• Labourers (unskilled), will be able to earn a living. • Labourers (unskilled) can improve/build their skills. • Improved quality of life for these labourers, by establishing an income.	• Labourers (unskilled), will be able to earn a living. • Improved quality of life for these labourers, by establishing an income.
Probability of occurrence:	Definite	Probable, but no guarantee
Degree to which the impact may cause irreplaceable loss of resources:	No loss of a resources	Low
Degree to which the impact can be reversed:	Irreversible	Irreversible
Indirect impacts:	• Income generated by labourer will benefit their families/households, by improving the quality of their lives. • There may be opportunities to transfer skills from more experienced workers to less experienced workers.	• Income generated by labour will benefit their families/households, by improving the quality of their lives.

	• Local community/shops will benefit, as labour purchases goods through income generated, from local suppliers.	• The skills the labour develops on site, may assist them in undertaking other work. • Local community/shops will benefit, as labour purchases goods through income generated, from local suppliers.
Cumulative impact prior to mitigation:	Medium (+)	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**High (+)**	**Low (+)**
Degree to which the impact can be avoided:	Unavoidable	Unavoidable
Degree to which the impact can be managed:	Not applicable	Not applicable
Degree to which the impact can be mitigated:	No mitigation proposed, as it is a positive impact.	No mitigation proposed, as it is a positive impact.
Proposed mitigation:	• Positive, therefore no mitigation necessary. • It should be noted that this impact will benefit the local community and address the issue of unemployment within the Western Cape, and country of South Africa, particularly for unskilled labourers, although temporary. • The applicant is recommended to source local labour, contractors and sub-contractors, as well as utilize local materials and suppliers.	• Positive, therefore no mitigation necessary. • In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. • The landowner is recommended to source local labour, contractors and sub-contractors, as well as utilize local materials and suppliers.
Residual impacts:	• Labour that previously lacked construction skills and experience, who were hired for this project, will now be able to utilize this for future developments.	• Labour may be utilized in future to undergo maintenance activities on site for the landowner.

Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**High (+)**	**Low (+)**
Potential impact and risk:	**SOCIAL IMPACT: TRAFFIC & ACCESS** **Alternative 1 Layout Plan:** Stella Road will remain the main access to site during renovations, however this road is also utilized by the surrounding commercial and industrial properties therefore the movement of trucks and machinery is not uncommon. The two access gates will be utilized on site. **No-Go Alternative:** No change to status quo.	
Nature of Impact:	Negative	Not applicable, as no development will take place, the status quo will persist.
Extent, duration and magnitude of impact:	Local, short-term and minor	
Consequence of impact or risk:	• Some congestion may occur on Stella Road, when delivery vehicles enter and exit site with materials.	
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	
Degree to which the impact can be reversed:	Barely	
Indirect impacts:	• Congestion and delays.	
Cumulative impact prior to mitigation:	• Possible complaints from public traversing this road, daily. • Accidents may occur due to impatient or negligent drivers.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**	
Degree to which the impact can be avoided:	Low	
Degree to which the impact can be managed:	Medium	

Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: • Plan deliveries ahead of time, such as abnormal loads, to occur outside of peak traffic periods. • All construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care should be taken to ensure that the local traffic flow pattern is not significantly disrupted. • Utilize once access point as an entry, and the other as an exit. • All vehicle operators need to be educated in terms of "best-practice" operations to minimise unnecessary traffic congestion or dangers. Construction vehicles should therefore, not unnecessarily obstruct the access point or traffic lanes used to access the site. • Adequate signage, that is both informative and cautionary to passing traffic (motorists and pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. • If needed, appropriate traffic management measures and/ or points men (traffic marshals) should be utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic. • Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users.	
Residual impacts:	None.	
Cumulative impacts post mitigation:	Negligible.	
Significance rating of impact post mitigation	**Low**	

(e.g. Low, Medium, Medium-High, High, or Very-High)		
Potential impact and risk:	**SECURITY AND VANDALISM** **Alternative 1 Layout Plan:** Construction activities or opportunities for work, stockpiled materials, etc. can attract people with nefarious intentions. However, the site already has controlled access, and is in a busy area of Montague Gardens. **No-Go Alternative:** No change to status quo	
Nature of Impact:	Negative	Not applicable, as the status quo will persist.
Extent and duration of impact:	Local & short term	
Consequence of impact or risk:	• Damage to or loss of resources.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Irreversible	
Indirect impacts:		
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium**	
Degree to which the impact can be avoided:	Medium – High	
Degree to which the impact can be managed:	Medium – High	
Degree to which the impact can be mitigated:	Can be mitigated.	
Proposed mitigation:	General • Ensure access to site is controlled and restricted. • A register must be kept of all vehicles and personnel entering the site.	

	• At night, ensure that materials are covered/obstructed from view.	
Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	

	PREFERRED ALTERNATIVE SITE	NO-GO ALTERNATIVE
OPERATIONAL PHASE		
Potential impact and risk:	**AIR QUALITY – HEALTH AND ODOUR IMPACTS** **Alternative Layout Plan 1:** Failure to comply with acceptable air quality standards resulting in levels indicated to be a risk to human health and odour emissions that create a nuisance to the surrounding properties. However, given the technology compliance this is not anticipated. **No-Go Alternative:** No change to the status quo.	
Nature of Impact:	Negative	Not applicable, as the status quo will persist.
Extent and duration of impact:	Local and short-term	
Consequence of impact or risk:	• Complaints from neighbours based on smells/odours. • Dust/visible excessive gas emissions.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	• Compromise human health of surrounding occupiers. • Nuisance smells can impact on functioning businesses.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	

Proposed mitigation:	General • Erect chimney stacks to 6m's above roof height (12m's high). • Ensure all associated infrastructure, including cold rooms, etc, are maintained as per manufacturers instructions and capacity is not exceeded. • Labour should be provided with gloves, and masks for handling of human remains and ashes. • The crematorium should be cleaned as often as possible, and comply with all Health and Safety requirements for such a facility. Furnaces • Ensure an operating manual exists on site, with emergency numbers, in an accessible area. • **Operate furnaces as per manufacturers instructions.** • Ensure that operators of furnaces are trained on the correct and acceptable operation of furnaces in line with the manufacturers operational plan and specifications, and should be educated on the following: ➢ Correct operating practices. ➢ Signs of failure or inadequacies. ➢ Maintenance requirements and frequency. ➢ Who to report any issues to and what needs to be done in case of emergencies. • Avoid strain on furnaces and infrastructure. • Ensure that wastewater is collected and disposed of as per permits/licenses. Air quality • Ensure any non-compliances or unusual events are recorded and addressed by the relevant professional. • Ensure air quality monitoring is in line with the AEL.	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	

Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**AIR QUALITY – EXCEEDANCES NOTED BY THE ATMOSPHERIC IMPACT ASSESSMENT** **Site Alternative 1:** The Atmospheric Impact Assessment noted that as per the AERMOD outcome, it was predicted that daily exceedances of PM_{10} and NO_2 were predicted. The Specialist noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three-year period, which would not be the case in reality. However, the technology has proven compliance in terms of the compliance with the Air Emission Standards for New Plants. The Health specialist confirmed that there are negligible to no health concerns. **No-Go Alternative:** No change to the status quo.	
Nature of Impact:	Negative	
Extent and duration of impact:	Local and short-term	
Consequence of impact or risk:	• Non-compliance with the NAAQS.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	• Health risks surrounding community or workers and surrounding area.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium**	

Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: Annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit. Technology Compliance: • Operate technology as per the manufacturers specifications. • Ensure staff is trained appropriately, particularly operators. • Ensure all emergency plans are available on site, and all staff have been trained accordingly. • Ensure each cremation is conducted as per the manufacturers specifications, and temperature and other conditions are monitored appropriately. Health Compliance to applied as necessary/required: • Training: Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions; • Maintenance: Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained; • Monitoring instruments should be fitted with a visual alarm to warn the operator of arrestment machine failure. Authorities should decide whether additionally to specify an audible alarm, having regard to, amongst other things, the likelihood of the visual alarm	

	not being noticed, and the intrusiveness of any such alarm for those using the crematorium; • Exhaust flow rates should be installed. These should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment. • Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion; • Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings; • Monitoring of gas temperature and flue gas O_2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient air quality monitoring in the proximity of crematoria; • The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic; • Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized. • Operational controls, inspection and preventive maintenance; • Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge; • Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere; • All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded, and remains should not be scattered until 20 months after the date of implantation;	

	• Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants. • Carbon dioxide emissions from gas usage are the main greenhouse gas component of a crematoria's carbon footprint. The applicant may wish to note that the development of an energy reduction strategy will have the benefits of saving money and reducing their carbon footprint. A measure as simple as recording of gas consumption (e.g., comparison of quarterly gas bills) is a first step in managing energy use and therefore CO_2 emissions. • Source Control – Proponent to encourage clients: ➢ Removal of plastics ➢ Non-toxic and eco-friendly coatings or materials in caskets. ➢ Removal of Hg fillings ➢ Removal of medical devices containing radioactive material. • Operational Control – Operators to be Trained to operated equipment: ➢ Minimum 850°C (2nd chamber) ➢ Minimum residence time of 2s (2nd chamber) ➢ Adequate O_2 in combustion chamber ➢ Monitoring CO releases ➢ Air tightness of combustion chambers and casings ➢ Maintenance ➢ Operator training • Emission controls ➢ Dust control (filters and scrubbers), where necessary ➢ Activated carbon treatment, where necessary. ➢ Hg removal technology (binding, precipitation etc.), where necessary.	

	➢ Adequate chimney height (12m's)		
Residual impacts:			
Cumulative impacts post mitigation:			
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**		
Potential impact and risk:	**STORAGE AND USE OF HAZARDOUS MATERIAL: LPG & NATURAL GAS** **Alternative Layout Plan 1:** LPG (Liquid Petroleum Gas) can be a fire/safety risk given that it is extremely flammable, it is under pressure, which could lead to an explosion if mismanaged. Further to this it is considered an LPG is an asphyxiant gas that can cause unconsciousness and/or death if oxygen levels are sufficiently reduced. Exposure resulting in human health impacts include inhalation or by eye and skin contact. LPG released under pressure can cause frostbite burn due to rapid temperature decrease. LPG is has far lower carbon dioxide emissions than other petroleum-based fuel sources. LPG has become a popular fuel source and has become more easily accessible as the demand has grown. Storage and handling of LPG is a significant concern, and the proponent has committed to following all relevant process to ensure that the positioning of LPG tanks, and safety measures are implemented. Based on the increase of the LPG demand, supply has become more readily available, thereby indicating that there will be a reliable and continuous supply for the furnaces. **Natural Gas:** Natural gas is known to be sustainable, affordable, a low-carbon energy, and is considered a clean burning fuel source. However, one of the most significant issues is that of reliable supply, as there are no existing natural gas pipelines in the area, and none are planned for the near future. Therefore, if adopted there is no certainty that supply would be continuous, affecting the operational efficiency of the facility. Methane, the main component of natural gas, is a potent greenhouse gas and it is important to minimise direct releases or venting into the atmosphere at all stages of the gas chain. Exposure to methane in high levels may lead to reduced oxygen levels, headaches, nausea. **No-Go Alternative:** No change to the status quo.		
Fuel Source	LPG	Natural Gas	

Nature of Impact:	Negative	Negative	Not applicable, as the status quo will persist.
Extent, duration and magnitude of impact:	Site Specific and long-term		
Consequence of impact or risk:	• Risk to health of employees if mismanaged. • Non-compliance with legislation.	• Affects the efficiency of the crematorium, if supply isn't stable.	
Probability of occurrence:	Improbable	Highly Probable	
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	Significant	
Degree to which the impact can be reversed:	Irreversible	Reversible	
Indirect impacts:			
Cumulative impact prior to mitigation:	• Incidents could lead to damage to infrastructure, loss of life and environmental impacts, if mismanaged.	• Corpses have to be stored in reefer coolers for long periods of time. • Backlog may occur, and delays can have an effect on not just this service but can also negatively affect families during their grieving process.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**	**High**	
Degree to which the impact can be avoided:	Medium	Low	
Degree to which the impact can be managed:	Medium	Low	
Degree to which the impact can be mitigated:	High	Low	

Proposed mitigation:	General • Ensure all relevant permits/licenses required for storage and handling of dangerous goods/gas are obtained. • Ensure designated storage area is secure, well-ventilated and free of any fire risks. • Ensure storage tanks and connections are checked on a daily basis. • Ensure that safety plans are drafted and available to all employees. • Establish appropriate signage indicating hazardous material and prohibiting activities such as smoking. • Ensure a final layout depicting the location of the LPG storage area is undertaken. • Ensure that a risk assessment is undertaken to establish if the facility will constitute a Major Hazard Installation or if additional site-specific mitigation measures are required, for example, a blast wall between the LPG installation and perimeter or closest building, specific location of the LPG tanks on site where they pose the least risk, etc.	Limited, until a reliable source can be secured and infrastructure to support this is established in the greater area.	

	LPG Establishment • Ensure designated areas are acceptable as per all relevant legislative requirements. • Ensure tank/s are installed or filled appropriately in line with specifications. • Storage tanks must be clearly marked with the Hazchem placards, as listed in South African Bureau of Standards (SABS) 0232. • The proper safety signage must be erected on the security fence to alert individuals of the potential danger and these signs must comply with the SABS 1186: Part 1. Educating Labour • Ensure health and safety personnel are available on site. • Ensure operators are fully aware and trained on the following: ➢ Supplier of tanks and their details. ➢ Standard operating, maintenance and management measures as specified by operators. ➢ Emergency plans, including fire safety.		

	➢ Conditions required to comply with relevant permits/licenses required for storage and handling of dangerous goods/gas. ➢ Evidence of incidents/contamination, ie. signs of inhalation such as drowsiness or dizziness and respiratory irritation (cough, sneezing, headache, nose and throat pain). ➢ Ensure employees are fully aware of the standard reporting procedure should any incidents/complaints arise. Fire Safety • Ensure fire-fighting equipment is readily accessible, functioning, and in close proximity to areas where gas will be used. • Ensure emergency numbers are visible, with a working landline/phone to utilize. • Ensure all infrastructure is operating as per manufacturer specifications.		
Residual impacts:	None		
Cumulative impacts post mitigation:	None		

Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	**High (-)**	
Potential impact and risk:	**SOCIAL IMPACT: PROPERTY VALUE IMPACTS** **Alternative Layout Plan 1:** Potential for property values to decrease, as the desirability to reside close to a crematorium facility or operate a business in the food industry, is low. The area is zoned as an industrial zone with other existing air emitters already contributing emissions to the area (noted in the Air Quality Report), and other risk zones in close proximity. The zoning as an industrial area permits such a land use. Given the allowances for various activities in industrial zones, not permitted in other areas, the demand for property in industrial areas is high. This will be another business established in the correctly zoned area. Further to this Health Specialist confirmed that there is negligible – no human health risks anticipated, especially considering the technology compliance. **No-Go Alternative:** No change to the status quo.		
Nature of Impact:	Negative		No change to the status quo.
Extent, duration and magnitude of impact:	Local and short-term		
Consequence of impact or risk:	• Disgruntled landowners.		
Probability of occurrence:	Improbable		
Degree to which the impact may cause irreplaceable loss of resources:	Marginal to None		
Degree to which the impact can be reversed:	Reversible		
Indirect impacts:			
Cumulative impact prior to mitigation:	• Discomfort at proximity to crematorium based on perception.		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**		

Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General • Ensure air quality emissions are maintained at acceptable levels. • Ensure all measures recommended in the EMPr are implemented. • Ensure open communication with local community groups. • Ensure all visual/perception mitigation has been integrated and established.	
Residual impacts:	Perception impacts can persist, even after all necessary visual/perception mitigation is adopted, however this is dependent on the individual, not based on factual risks from air quality or health, as negligible – no human health risks have been anticipated.	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**ALIEN INVASIVE SPECIES CLEARANCE** **Alternative Layout Plan 1:** On-going maintenance of the northern portion of site must be undertaken by the landowner. The Landowner (as mentioned during the previous phase) may request that the Applicant maintain this area on their behalf. **No-Go Alternative:** The northern portion of the site will need to be maintained, in terms of Section 28 of NEMA. Once all waste and alien invasive species are cleared from this area, an acceptable indigenous cover crop must be established, and the area should be monitored to ensure the success of this crop cover and removal of any alien invasive incidents. If the site is not developed and not occupied there is no guarantee that maintenance will be done timeously. Clearing of alien invasive species can ensure that there isn't further degradation of natural area, as well as reduce fire risks.	
Nature of Impact:	Positive	Positive

Extent, duration and magnitude of impact:	Limited to site	Limited to site
Consequence of impact or risk:	Positive	
Probability of occurrence:	Probable	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No Loss of Resources	
Degree to which the impact can be reversed:	Positive	
Indirect impacts:		
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**	**Low (+)**
Degree to which the impact can be avoided:	Positive	Positive
Degree to which the impact can be managed:		
Degree to which the impact can be mitigated:		
Proposed mitigation:	General Recommendations • Ensure all waste and alien invasive species are cleared from the northern portion of the site. • Identify and establish an acceptable indigenous cover crop. • Monitor rehabilitated area. • Remove any alien invasive species that may re-occur. Waste Management • Prohibit further waste dumping in the area. • Ensure all waste is removed from site.	General Recommendations • In terms of Section 28, of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of Care, the landowner is responsible for the clearance of any potential pollution or harm to the environment. This includes waste dumped on site and alien invasive species success within the site. • Utilize indigenous vegetation to re-vegetate the disturbed area, once the waste and alien species are removed.

		• On-going alien invasive control should be implemented. • Prohibit further waste dumping on site.
Residual impacts:	None	None
Cumulative impacts post mitigation:	None	None
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**	**Low (+)**
Potential impact and risk:	**CONTAMINATION OF STORMWATER** **Alternative Layout Plan 1:** Contamination may occur from leaks/spills of any chemicals used on site, as well as when maintaining/washing ash trays, the facility or infrastructure. As the proposal will utilize LPG gas, there will be no risk to the stormwater network, should there be leaks. **No-Go Alternative:** No change to the status quo.	
Nature of Impact:	Negative	No development will be undertaken.
Extent and duration of impact:	Local and short-term.	
Consequence of impact or risk:	• Contamination to the stormwater network.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss of Resources	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:	• Contamination to point source where stormwater network is channelled to.	
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation	**Low - Medium (-)**	

(e.g. Low, Medium, Medium-High, High, or Very-High)		
Degree to which the impact can be avoided:	High	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: • Ensure good house-keeping practices. • Ensure all waste/wash water is collected and disposed of correctly: - In terms of the City of Cape Town Wastewater and Industrial Effluent By-law, 2013, the proponent is required to complete and submit the 'Permission to Discharge Industrial Effluent into Sewers Application Form' in the case of discharge into the municipal sewers, or in the case of transportation and disposal at wastewater treatment works, the proponent must complete and submit the 'Disposal of Waste Water Directly at CoCT Facilities Application Form'. - The City of Cape Town advised that in the event of the proposed development discharging any industrial type effluent into the municipal sewers, an application to discharge industrial effluent into the municipal sewer system will be required. The business owner essentially need to apply to Shahied Solomon (Shahied.Solomon@capetown.gov.za) or Molepana Ramonyai (Molepana.Ramonyai@capetown.gov.za) for permission to discharge. These City Officials will be able to guide the developer/owner with regards to the process. This has been included as a condition of Environmental Authorization. • Any wastewater from cleaning will be handled as above, alternatively disposal at Vissershok Hazardous Waste Disposal Site will be considered. However, it is recommended that cleaning of the facility be undertaken with chemicals that require as little	

	water as possible, for example Spray Klean Flight. Specifications include (The Go Green Store, 2022)*: - Tested by the SABS and is proven to kill 99.9% of all known bacteria. - Registered with the NRCS as an Anti-Bacterial detergent. - Biodegradable - Non-Toxic - Contains no Bleach or Ammonia - Non-abrasive - Non Flammable - Multi-Purpose Detergent - Can be diluted up to 25:1or used in its concentrated form. For full anti-bacterial effect spray on and leave for 5 minutes wipe off * https://ggstore.co.za/product/spray-klean-flight-5l-4/ • Ensure that all chemicals/liquid fuels are decanted within bunded, transformed areas and cannot be dispersed beyond this area. • It will be included in the mitigation tables, of both the BAR and EMPr, that should the refurbishment extend beyond the existing facility footprint, the National Department of Water and Sanitation Berg - Olifants WMA.	
Residual impacts:		
Cumulative impacts post mitigation:	Low	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**HEALTH IMPACTS – WORKERS WITHIN THE CREMATORIUM FACILITY** **Alternative Layout Plan 1:** As advised by the Health Specialist, the According to Cui et al., (2021) cremators, incinerators, and post-processing devices are all installed in cremation workshops and operated indoors. Consequently, a large quantity of unorganized odour emissions accumulates inside the workshop and impact the health of the workshop staff. Several studies	

	have highlighted the potential risks of inhaling radioactive ashes by crematorium staff or members of the public. Due to the prolonged half-life of some radioisotopes, if the patient dies soon after implantation, then the cremated remains would also remain radioactive (Smith et al.,2012). This causes a hazard to the staff and those who handle the remains, until placed into a metal urn. Pacemakers and expandable orthopaedic nails are also two potential dangers to cremation staff. Studies conducted by Korczynski (1997) and Maloney et al., 1998) exposure to Hg to be higher amongst crematoria staff than in a control population, and exposure to fine particulates may occur, particularly where there are no operational and engineering controls to reduce exposure to dust. The Health Assessment Report has advised that "odour is not expected to be a considerable nuisance for the proposed crematorium. Research shows that in a modern effectively functioning crematorium, after it all, there is nothing left to smell -little to no odour. The heat is high enough that everything that can be reduced to smoke is done. Considering that smoke is minute particles carried on hot gasses, even these particles are burned until they are almost completely broken down. There is hardly anything left to smell." However, in the case of the proposed technology, the manufacturer has guaranteed that the technology is odourless and smokeless. No concerns have been raised from the operating of the technology on other sites. **No-Go Alternative:** No change to the status quo.	
Nature of Impact:	Negative	No change to the status quo.
Extent and duration of impact:	Site-specific and short-term.	
Consequence of impact or risk:	• Health of workers compromised.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:	• Long-term health impacts on workers.	

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium (-)**	
Degree to which the impact can be avoided:	High	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. • A Complaints Register must be available at the facility. • Emission controls ➢ Dust control (filters and scrubbers), where necessary Health Specialist's Recommendations: • Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion; • Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings; • Monitoring of gas temperature and flue gas O2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient monitoring of soil and air in the proximity of crematoria; • The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic; • Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized;	

	• Operational controls, inspection and preventive maintenance; - Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge; - Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere (although they will be discharged to landfill); - All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded, and remains should not be scattered until 20 months after the date of implantation; - Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants. Monitoring: Annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit. Technology Compliance: • Operate technology as per the manufacturers specifications. • Ensure staff is trained appropriately, particularly operators. Ensure all emergency plans are available on site, and all staff have been trained accordingly.	

	Ensure each cremation is conducted as per the manufacturers specifications, and temperature and other conditions are monitored appropriately. Dust	
Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: JOB CREATION & LOCAL REVENUE** **Alternative Layout Plan 1:** The operation of the crematorium will provide permanent employment opportunities for labour of various skills levels. Employees will have an opportunity to gain and learn new skills and experience in terms of the functioning of a crematorium, as well as the operation of the furnaces. Job creation means salaries can be earned, improving the quality of life for the employee and his family, and can overall contribute to the local economy. **No-Go Alternative:** The site is currently being utilized for the manufacturing of chemicals, no change to the status quo.	
Nature of Impact:	Positive	
Extent, duration and magnitude of impact:	Local and long-term	
Consequence of impact or risk:	• Permanent employment available to locals. • Employees have the opportunity to earn wages that will contribute to their quality of life.	
Probability of occurrence:	Definite	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	

Degree to which the impact can be reversed:		
Indirect impacts:		
Cumulative impact prior to mitigation:	• Positive impact, no mitigation required. General • Unskilled labourers can be used. • Labour will earn a living to improve the lives, health and safety of their family members and households. • Employees are able to afford to educate their children. • Employees are able to provide food and shelter for themselves and their families. • Employment created with the development will have a positive influence on members in the community previously unemployed. Employees will source goods from the local community, contributing to the local economy. • Opportunity for skills transfer and growth for employees.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**	
Degree to which the impact can be avoided:	Not applicable, it remains a positive impact.	
Degree to which the impact can be managed:		
Degree to which the impact can be mitigated:		
Proposed mitigation:		
Residual impacts:		
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium (+)**	

Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: PROVISION OF CREMATORIUM SERVICES TO SURROUNDING COMMUNITIES** **Alternative Layout 1:** The proposal will provide essential cremation services, reducing the need for burial space and its associated costs and potential environmental impacts. Surrounding communities such as Blouberg, Atlantis, Montague Gardens etc. are located significant distances from existing crematoriums, which are already servicing other major areas and having to manage the demand in other areas. Given the fact that there are so few crematoriums functioning in and around the City of Cape Town, demand for these services have been influenced, by multiple factors, making it a feasible and acceptable means for human remain disposal. City of Cape Town has encouraged the establishment of crematoria in CoCT. **No-Go Alternative:** No change to status quo.	
Nature of Impact:	Positive	• No negative or positive impacts are predicted
Extent, duration and magnitude of impact:	Positive	
Consequence of impact or risk:	• Meeting the demand for crematorium services in the City of Cape Town that can be utilized by other municipalities given that it is privately owned. • Relieves the burden on other cremation facilities in the City of Cape Town ensuring that the local municipality is able to sustain the current demand, to support its residents' needs. • Utilizing space in an appropriate manner, contributing to smart land use in an urban area.	
Probability of occurrence:	• Definite	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:		
Indirect impacts:		
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation	**High (+)**	

(e.g. Low, Medium, Medium-High, High, or Very-High)		
Degree to which the impact can be avoided:	Unavoidable	
Degree to which the impact can be managed:	Does not need management	
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	
Proposed mitigation:	• Positive, no mitigation required. • The proposed development represents an enhancement measure on its own.	
Residual impacts:	Positive: • Meeting the need for community services within the municipality. • Promoting economic growth and interest for the municipality, as basic community services are available.	
Cumulative impacts post mitigation:		
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**High (+)**	
Potential impact and risk:	**SOCIAL IMPACT: VISUAL/PERCEPTION (SENSE OF PLACE)** **Alternative Layout 1:** While the proposed development will result in a positive change to the exterior of the facility, as the proposal aims to renovate the exterior, to not only improve the integrity of the outside structure (roof, etc.), but also to enhance the aesthetic appeal of the structure. Despite these renovations the only potential evidence of the crematorium facility would be limited to signage, the proposed six chimney stacks (chimney stacks are not uncommon in the industrial area) and off-loading of coffins and human remains from appropriate vehicles. These visual triggers can be disturbing to the surrounding public, as some people do have a negative perception of these facilities, influenced by any number of factors including cultural beliefs. **No-Go Alternative**: No alterations will occur therefore no visual impacts are proposed.	
Nature of Impact:	Negative	In terms of Section 28 of the National Environmental Management Act, 1998 (Act 107 of 1998), Duty of
Extent, duration and magnitude of impact:	Local and Long-Term.	

Consequence of impact or risk:	Change in sense of place	Care, the site must be maintained by the landowner, and all possible sources of pollution of harm, should be removed including alien invasive species.
Probability of occurrence:	Probable	
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources.	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:	• Discomfort from visual triggers.	
Cumulative impact prior to mitigation:	The current character of the site will improve, with some people feeling a sense of unease at the visual triggers that indicate the presence of a crematorium.	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium (-)**	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: • Plan and co-ordinate deliveries of human remains to site. • Utilize the two access gates on site, designate one as an entrance and one as an exit to control traffic flow. Delivery Area: Designate delivery areas. • If necessary, delivery vehicles should reverse into the delivery zone to ensure delivery vehicles off-load facing the building, and deliveries are stored in appropriate areas that cannot be seen from the surrounding properties/road.	

	• Ensure records are kept of all deliveries of human remains, made to site. • Establish a screen (potted plants/trees) for the transfer area between vehicle and building, within the delivery area. Maintenance of Infrastructure: • Ensure cremators are appropriately maintained to manufacturers specifications and no excessive air emissions are observed (ie: dark cloud emissions). • Ensure the facility is maintained, including freezers and other machinery that may give off bad odours if not in good condition. Storage on site: • All funeral paraphernalia, ie. Coffins, etc. should be stored inside the facility, and disposed of as soon as possible, at an appropriately registered disposal facility, unless another facility agrees on a waste exchange or to be re-purposed. Loading of this paraphernalia should take into account visual triggers. • Ensure no coffins, etc, are stockpiled in areas that are visible on site. • Ensure all waste is positioned in bins/skips, that are weighted down, to avoid toppling. • Visual: – Screening of off-loading site. – Prohibiting storage of funeral paraphernalia outside the facility (including coffins, waste, etc.), in view of Stella Road or the neighbouring properties. – Potted trees/plants purchased locally will be established along the interface of Stella Road and the site, creating a natural screen, in order to obscure the view of the site as well as to improve upon the natural aesthetic of the site. – The proponent shall ensure that the ECO is involved in selecting the appropriate potted vegetation.	

	– The proponent shall be responsible for the maintenance of this screen and should not allow encroachment onto public properties. – If the facility is to be painted, only natural colours, aligning with the surrounding developments, will be utilized where necessary. – Non-descript vehicles will be utilized to transport human remains to the site, no hearses will be utilized by the proponent. – The proponent will minimize the use of signage, indicating the presence of a crematorium. • Social Initiative: – The proponent will join the local community group, allowing for open communication between the proponent and surrounding landowners/occupiers. – The proponent will make the air emissions reports available, to any interested party on written request. – The proponent will allow any interested party to raise any concerns or enquiries during operational phase. The proponent commits to: • Comply with all mitigation measures and conditions recommended in the Final EMPr, as and when applicable. • Comply with all the conditions of the Environmental Authorization, and any other relevant permits. • Will appoint an appropriately experienced service provider, to undertake the necessary risk assessment, to establish the need for a Major Hazard Installation. • Appoint an appropriately experienced service provider to undertake the recommended air emissions monitoring in line with the Air Emissions License. These reports will be released to any	

	person who wishes to view them, on written request, and may not be shared with a third party unless approved by the proponent. • Appoint only skilled and experienced staff to conduct the required functions during operations. • Will encourage the use of cardboard coffins amongst clients.	
Residual impacts: **Cumulative impacts post mitigation:**	Despite all efforts perception is difficult to overcome. However this will not be based on air quality or health risks, as the health risk has been confirmed to be negligible to none.	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**TRAFFIC IMPACT:** **Alternative Layout 1:** Traffic along Stella Road will not be significantly impacted during operational phase, as the site has two access points, and the expected deliveries to the site can be managed efficiently. Delivery vehicles expected per day, are non-descript trucks, approximately 1 – 3. Workers are estimated to be 8, therefore limited movement is expected on and off site. **No-Go Alternative**: No traffic impacts are predicted.	
Nature of Impact:	Negative	Not applicable, as no development will take place.
Extent, duration and magnitude of impact:	Local and long-term	
Consequence of impact or risk:	• Delivery of human remains for incineration will occur on a daily basis and can contribute to traffic on Stella Road.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:		
Cumulative impact prior to mitigation:		

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Degree to which the impact can be avoided:	High	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General: • Ensure deliveries are coordinated and planned ahead of time. • Utilize two access points, one as an entrance, the second as a designated exit, so as to avoid traffic generation, on entering and exiting Stella Road. • Establish signage indicating entrance and exit point.	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	
Potential impact and risk:	**POOR WASTE PRODUCTION AND HYGIENE – WORK-PLACE COMPROMISED** **Alternative Layout 1:** Poor waste management can result in unhealthy conditions. Waste from food and drink, office waste, as well as cleaning waste or machinery parts (if any), of both a non-hazardous and hazardous nature, needs to be stored, and disposed of appropriately. Negligence when removing ashes could lead to dispersal, or negligence during operation could make for unhygienic conditions. **No-Go Alternative**: no change to status quo, if no occupants are present.	
Nature of Impact:	Negative	No change to the status quo.

Extent, duration and magnitude of impact:	Site Specific and short-term	
Consequence of impact or risk:	• Unhygienic conditions created. • Contamination of facility and outer areas.	
Probability of occurrence:	Improbable	
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:	• Attraction of rodents. • Health impacts for workers.	
Cumulative impact prior to mitigation:		
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Medium**	
Degree to which the impact can be avoided:	Medium	
Degree to which the impact can be managed:	Medium	
Degree to which the impact can be mitigated:	Can be mitigated	
Proposed mitigation:	General • Practice good house-keeping, and plan set-up and programme of works ahead of time. • Be mindful of weather patterns, that may affect waste storage area (based on placement). • Ensure storage of waste is done in an orderly fashion.	

	• No storm water runoff containing waste, or water containing waste emanating from the waste area may be discharged into the environment. • Polluted stormwater must be contained on the site. • Any accidental release of a hazardous substance must be reported to the relevant authorities, including the Department of Environmental Affairs and Development Planning's Directorate: Pollution and Chemicals Management, in terms of Section 30 of the NEMA. • Dedicated waste bins or skips must be provided on site and kept in a demarcated area on an impermeable surface (may be permitted within, if non-hazardous, if hazardous utilize spill kits on site. • Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Green waste (if any) may be stockpiled in separate bin until removal. • Waste must be placed in the appropriate waste bins/skips/ stockpiles. • Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown (if exposed) waste or dust. • Waste bins/skips must be regularly emptied and must not be allowed to overflow. • Always dispose waste at a registered waste disposal site, unless there is a chance that the waste can be re-used etc. in which case utilize an appropriate facility. • Minimize office waste. • Remain as a paperless as possible. • Ensure that if necessary, any OH&S monitoring is undertaken as required by any permit/license etc. • Ashes are to be transferred from ashtray using cleaning tools provided with technology for smoothe transition (masks and gloves must be worn).	

	• Masks and gloves must be worn during handling of human remains. Ensure Good House-keeping: • Utilize gloves when cleaning. • Do not allow waste to accumulate to more than 90% fo the waste receptacle. • Waste should be disposed of as soon as possible. • Clean facility bi-weekly atleast. Manage waste water: - The City of Cape Town advised that in the event of the proposed development discharging any industrial type effluent into the municipal sewers, an application to discharge industrial effluent into the municipal sewer system will be required. The business owner essentially need to apply to Shahied Solomon (Shahied.Solomon@capetown.gov.za) or Molepana Ramonyai (Molepana.Ramonyai@capetown.gov.za) for permission to discharge. These City Officials will be able to guide the developer/owner with regards to the process. This has been included as a condition of Environmental Authorization. - Any wastewater from cleaning will be handled as above, alternatively disposal at Vissershok Hazardous Waste Disposal Site will be considered. However, it is recommended that cleaning of the facility be undertaken with chemicals that require as little water as possible, for example Spray Klean Flight. Specifications include (The Go Green Store, 2022)*: - Tested by the SABS and is proven to kill 99.9% of all known bacteria. - Registered with the NRCS as an Anti-Bacterial detergent. - Biodegradable - Non-Toxic - Contains no Bleach or Ammonia	

	- Non-abrasive - Non Flammable - Multi-Purpose Detergent - Can be diluted up to 25:1or used in its concentrated form. For full anti-bacterial effect spray on and leave for 5 minutes wipe off * https://ggstore.co.za/product/spray-klean-flight-5l-4/ Educating Labour • The proponent must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. • Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). • Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • All waste, hazardous as well as general, resulting from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF). Pollution Management – Hazardous Substances • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site.	

	Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases. • Utilize existing bunded areas on site for hazardous storage, in spillkits, if necessary. Fire safety • Avoid stockpiling waste material on site for excessive timeframes. • No waste may be stored on site for more than 90-days. • No uncontrolled or unpermitted burning of waste is permitted. • Ensure that gas or any flammable substances are stored according to industry standards. • Ensure that labour is fully trained and aware of dangers and appropriate management of LPG. • Ensure signage (for LPG etc. is in place) the proper safety signage must be erected on the security fence to alert individuals of the potential danger and these signs must comply with the SABS 1186: Part 1. • Maintain fire hoses and extinguishers. • Erect fire safety signage, and warning signage to alert people that flammable items are stored in a certain area, etc. and to indicate where fire safety equipment (e.g. fire extinguishers) are located.	
Residual impacts:	None	
Cumulative impacts post mitigation:	None	
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**	

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

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

ATOMSPHERIC IMPACT ASSESSMENT:

Summary of Findings:

Baseline ambient air quality in the area surrounding the proposed crematorium was collected from ambient air quality monitoring stations. Baseline data from the monitoring stations closest to the site, and with the highest level of data availability were chosen to be used further in the study.

An emissions inventory was compiled for the pollutants identified by G.N. 893 of 2013 to be of concern from crematoria: PM, CO, NOx, and mercury. Level 2 air dispersion modelling was conducted for these pollutants using the AERMOD View programme.

The ambient pollutant concentrations that were predicted by the AERMOD model were added to baseline air quality data to obtain cumulative predicted concentrations. These concentrations were compared to the NAAQS standards and international guidelines where no NAAQS are available. Ambient PM_{10} (using the Table View baseline data), $PM_{2.5}$, CO, mercury, and lead concentrations around the fence line of the site are predicted to remain in compliance with the NAAQS standards (and the international guideline for mercury) should the proposed crematorium be commissioned. While the annual cumulative benzene concentration would have exceeded the NAAQS in 2019, this was also the case in the baseline data before the contribution from the proposed crematorium was considered. Thus, the benzene concentration as a result of the proposed crematorium does not change the overall compliance status.

Maximum ambient hourly NO_2 concentrations at the fence line are predicted to exceed the hourly NAAQS standard. However, the concentration rapidly decreases with distance from the site, and no NAAQS exceedances are predicted in any of the surrounding residential areas. It must also be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum hourly concentration will be experienced every hour of every day in the three year period, which would not be the case in reality. The ambient annual NO_2 concentration at the fence line is predicted to comply with the annual NAAQS for NO_2.

When PM_{10} data from the Edgemead monitoring station is used as a baseline, the daily PM_{10} concentrations are predicted to exceed the NAAQS standard at the facility's fence line. Again, it should be noted that the cumulative air quality impact of the facility is estimated by assuming that the maximum daily concentration will be experienced every day in the three year period, which would not be the case in reality.

Summary of Impacts:

- Exceedance of NO_2 and PM_{10} predicted.

Summary of Management Measures:

- Increase of stack height to 16m's.

Recommendations and Influence on Proposed Development:

Although the engineering specifications of the cremators indicate that the stacks are to be 12 metres high, the AERMOD model was run using stack heights of up to 20 metres. The optimum height was determined to be 16 metres, which resulted in no NAAQS exceedances at the fence line for PM_{10} or

NO_2, unless these exceedances existed in the baseline data (i.e. daily PM_{10} in 2021 using the Edgemead baseline data). It is recommended that higher stack heights be considered by the proponent in order to minimise the effect of the proposed crematorium on ambient air quality.

AQUATIC COMPLIANCE STATEMENT

Summary of Findings:

No natural watercourses were identified within the study area. A riparian watercourse was identified outside the northern boundary of the study area. Considering that the proposed refurbishment activities will be limited to the existing footprint within the study area and that the study area is bounded by a solid precast concrete fence, from a watercourse management perspective, impacts on the freshwater receiving environment due to the proposed refurbishment activities are unlikely to impact upon any watercourse services or functions.

Summary of Impacts:

- None

Summary of Management Measures:

- Control measures that must be implemented during the refurbishment and operational phase of the proposed crematorium:
  - No runoff from the study area may be released or enter the stream during both the refurbishment activities and the operational phase. All stormwater runoff generated in the study area must be managed in appropriate stormwater management structures and released into the municipal stormwater infrastructure. Regular inspection of the stormwater management infrastructure in the study area must be undertaken to ensure proper functioning thereof;
  - Suitable dust management practices must be implemented for the duration of the refurbishment activities to prevent dust deposition in the stream that could lead to sedimentation thereof;
  - No construction personnel may enter the stream or access the study area along the northern boundary. Access to the study area must be limited to the existing access area along the southern boundary;
  - General good housekeeping practices must be implemented during all phases of the proposed development, to ensure limited direct, indirect and cumulative impacts to the stream.

Recommendations and Influence on Proposed Development:

Should the abovementioned control measure be implemented, the refurbishment and operation of the crematorium is expected to pose a low-risk significance to the stream.

The study area may potentially be subject to the 100 m zone of regulation in accordance with GN509 as it relates to the National Water Act, 1998 (Act No. 36 of 1998). The EAP has been in consultation with DWS regarding the relevant authorisation process. Based on initial discussions, it is unlikely that Water Use Authorisation would be required (to be confirmed) with the condition that the control measures as provided in this letter be adhered to. Considering this and should DWS agree with the outcome of this letter, the stream is considered a watercourse of aquatic biodiversity importance, however due to the nature of the proposed operation, the study area can be considered of low aquatic biodiversity sensitivity. This compliance statement must be submitted to the relevant competent authority for consideration as part of the EA process.

FINAL RAPID APPRAISAL HEALTH IMPACT ASSESSMENT

Summary of Findings:

It is acknowledged that design and operations parameters play a significant role in ensuring reduced emissions caused by the cremating processes, as such we confirm that Johnson Thermal Engineering are the designers of the JTE BA1 and BA2 Cremator Machines, locally manufactured and distributed in South Africa by Engineered Thermal Systems (Pty) Ltd, which is the machinery that Platinum Pride intend to use in the proposed Platinum Pride Crematorium Project. This machinery is expected to significantly reduce emissions and in turn reduces any health impact to the surrounding community which may occur due to the proposed Platinum Pride Crematorium Project.

The Management and control measure of odour emissions and contaminants in crematorium may be reduced and / or eliminated through installation of ventilators and exhaust fans, considering practical conditions, such that low concentration odour emissions can be promptly diluted and discharged. Furthermore, equipment will be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.

In addition, depending on proximity to other criteria air pollutant emission sources, some of the pollutants of concern listed in this Report may already be present in ambient air at the point of impingement of the crematorium plume, contributing to exposure concentrations in excess of those estimated in the AQIA. Individuals in the surrounding industrial area may also be exposed to, for example, elemental mercury through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, for example. Crematorium installations should implement processes such as filters to reduce their atmospheric emissions to limit mercury emission. The effects of multiple sources of air pollution (considering that the proposed Crematorium is to be located in an existing industrial area, surrounded by several contributors to air pollution) and routes/ pathways of exposure (dermal, air, consumption etc.) should be considered in an assessment of individual risk associated with exposure to any perceived pollutants from the crematorium - people may also be exposed to the identified pollutants such as mercury for example, through dermal contact with mercury present in soil, or through ingestion of contaminated food or water, etc. Section 10.1 of the Specialist Report has discussed impacts these pollutants and their potential impacts to human health.

The property is zoned as General Industry Zone 1 which permits a crematorium. It is of the opinion of the author that the proposed Project poses negligible to no risk to human health. The author does, however, recommend that the air quality emissions are monitored bi-annually upon operation of the crematorium and an analysis on those results should be conducted where a specific concern exists. To ensure that the proposed crematorium does not cause adverse health impacts to both the employees and the surrounding areas, the mitigation measure stipulated in the HIA and the air quality study should be implemented and the requirements stipulated in the National Health Act (Act 61 of 2003) should be adhered to.

Summary of Impacts:

- Workers of the Crematorium:
  - According to Cui et al., (2021) cremators, incinerators, and post-processing devices are all installed in cremation workshops and operated indoors. Consequently, a large quantity of unorganized odour emissions accumulates inside the workshop and impact the health of the workshop staff. Several studies have highlighted the potential risks of inhaling radioactive ashes by crematorium staff or members of the public.
  - Due to the prolonged half-life of some radioisotopes, if the patient dies soon after implantation, then the cremated remains would also remain radioactive (Smith et al.,2012). This causes a hazard to the staff and those who handle the remains, until placed into a

metal urn. Pacemakers and expandable orthopaedic nails are also two potential dangers to cremation staff. Studies conducted by Korczynski (1997) and Maloney et al., 1998) exposure to Hg to be higher amongst crematoria staff than in a control population, and exposure to fine particulates may occur, particularly where there are no operational and engineering controls to reduce exposure to dust.

- Potential odour, mercury and air quality concerns leading to health impacts.

Summary of Management Measures:

General mitigation measures recommended:

- Assessing and ensuring hygiene is maintained in line with funeral parlour legislation, regulations relating to the management of human remains, Government Notice No. 363 of 22 May 2013 - Condition of the Environmental Authorization.

- Training: Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions;
- Maintenance: Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained;
- Monitoring instruments should be fitted with a visual alarm to warn the operator of arrestment machine failure. Authorities should decide whether additionally to specify an audible alarm, having regard to, amongst other things, the likelihood of the visual alarm not being noticed, and the intrusiveness of any such alarm for those using the crematorium;

- Bi-annual air quality monitoring for the first year of operations, then annually for the rest of the duration of the operational phase of the Project.

- Exhaust flow rates should be installed. These should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.
- Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion;
- Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings;
- Monitoring of gas temperature and flue gas O2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient air quality monitoring in the proximity of crematoria;
- The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic;
- Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized.
- Operational controls, inspection and preventive maintenance;
- Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge;
- Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere;
- All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded, and remains should not be scattered until 20 months after the date of implantation;

- Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants.
- Carbon dioxide emissions from gas usage are the main greenhouse gas component of a crematoria's carbon footprint. The applicant may wish to note that the development of an energy reduction strategy will have the benefits of saving money and reducing their carbon footprint. A measure as simple as recording of gas consumption (e.g., comparison of quarterly gas bills) is a first step in managing energy use and therefore CO2 emissions.

Table 20: As extracted from the Specialist Health Assessment, Table 11 1: Measures for pollutants of most concern from crematoria emissions (O'Keeffe, 2020)

Control Measure(s)	Pollutants			
	PCDD/Fs	Hg	$PM_{2.5}$	Radioactivity
Source Control				
Removal of plastics	*		*	
Non-toxic and eco-friendly coatings or materials in caskets	*			
Removal of Hg fillings		*		
Removal of medical devices containing radioactive material				*
Operational Control				
Minimum 850°C (2nd chamber)	*		*	
Minimum residence time of 2 s (2nd chamber)	*		*	
Adequate O_2 in combustion chamber	*		*	
Monitoring CO releases	*		*	
Air tightness of combustion chambers and casings	*	*	*	*
Maintenance	*	*	*	*
Operator training	*	*	*	*
Emission controls				
Dust control (filters and scrubbers)	*		*	
Activated carbon treatment	*	*		
Hg removal technology (binding, precipitation etc.)		*		
Adequate chimney height	General dispersion and dilution of pollutants higher into atmosphere			

The table above indicates the measure which can help reduce emissions may be employed in order to monitor the various control on the key pollutants associated with the crematorium.

For comprehensive management and control of unorganized odour emissions in workshops, workshop ventilation should be improved, and exhaust fans should be installed considering practical conditions, such that low-concentration unorganized odour emissions can be promptly diluted and discharged. Additionally, equipment should be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.
The following table provides a summary of the best available techniques that can be used to control the cremation process (as provided by the specialist report):

Release	Substance	Control techniques	Technology compliance
Flue gas	Nitrogen oxides	No control	Technology has taken this into consideration, and has been designed accordingly. See Appendix L.
	Odour	Good combustion and a secondary combustion	
	Carbon monoxide	Good combustion and a secondary combustion	
	Volatile organic compounds	Good combustion and a secondary combustion	
	PAH	Good combustion and a secondary combustion	
	Mercury and its compounds	Abatement, or contribute via burden sharing scheme	
	Particulate matter	Good combustion, slow gas velocities and a secondary combustion zone. Abatement further minimises emissions*	
	Hydrogen chloride	Minimise halogens combusted, avoid excessive temperature in primary chamber. Abatement further minimises emissions*	
	PCDD/F	Minimise chlorine combusted and particulate matter emitted, good combustion and a secondary combustion zone, Abatement further minimises emissions*	
	Carbon dioxide	Measure gas consumption, good cremator design	

Cremated remains size reduction machine	Particulate matter	Filter on machine or external dispersion and filter if needed.	Ash is removed from ash tray, with cleaning tools, with minimal dispersion.
Spent gas-cleaning materials	Particulate matter, mercury	Keep containers tightly lidded	This will be included in the mitigation measures.
* if fitted for mercury abatement purposes			

Recommendations and Influence on Proposed Development:

The Specialist also acknowledges that design and operations parameters play a significant role in ensuring reduced emissions caused by the cremating processes, as such we confirm that Johnson Thermal Engineering are the designers of the JTE BA1 and BA2 Cremator Machines, locally manufactured and distributed in South Africa by Engineered Thermal Systems (PTY) Ltd, which is the machinery that Platinum Pride intend to use in the proposed Platinum Pride Crematorium Project.

It is of the opinion of the author that the proposed Project **poses negligible to no risk to human health.** The author does, however, recommend that the air quality emissions are monitored bi-annually upon operation of the crematorium and an analysis on those results should be conducted where a specific concern exists.

To ensure that the proposed crematorium does not cause adverse health impacts to both the employees and the surrounding areas, the mitigation measure stipulated in the HIA and the air quality study should be implemented and the requirements stipulated in the National Health Act (Act 61 of 2003) should be adhered to.

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

MANGEMENT MEASURE:

Air Quality

- Increase stack height to 16m's to avoid predicted exceedances.
- Annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit.

Health

General mitigation measures recommended:

- Assessing and ensuring hygiene is maintained in line with funeral parlour legislation, regulations relating to the management of human remains, Government Notice No. 363 of 22 May 2013 - Condition of the Environmental Authorization.
- Training: Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions.
- Maintenance: Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained.
- Bi-annual air quality monitoring for the first year of operations, then annually for the rest of the duration of the operational phase of the Project.

- Air quality monitoring should be conducted by appropriately trained operating staff.
- Exhaust flow rates should be installed. These should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.
- Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion.
- Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings.
- Monitoring of gas temperature and flue gas O2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient air quality monitoring in the proximity of crematoria.
- The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic.
- Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized.
- Operational controls, inspection and preventive maintenance.
- Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge.
- Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere.
- All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded and remains should not be scattered until 20 months after the date of implantation.
- Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants.
- Carbon dioxide emissions from gas usage are the main greenhouse gas component of a crematoria's carbon footprint. The applicant may wish to note that the development of an energy reduction strategy will have the benefits of saving money and reducing their carbon footprint. A measure as simple as recording of gas consumption (e.g., comparison of quarterly gas bills) is a first step in managing energy use and therefore CO_2 emissions.

Table 21: As extracted from the Specialist Health Assessment, Table 11 1: Measures for pollutants of most concern from crematoria emissions (O'Keeffe, 2020)

Control Measure(s)	Pollutants			
	PCDD/Fs	Hg	$PM_{2.5}$	Radioactivity
Source Control				
Removal of plastics	*		*	
Non-toxic and eco-friendly coatings or materials in caskets	*			
Removal of Hg fillings		*		
Removal of medical devices containing radioactive material				*
Operational Control				

Minimum 850°C (2nd chamber)	*		*	
Minimum residence time of 2 s (2nd chamber)	*		*	
Adequate O_2 in combustion chamber	*		*	
Monitoring CO releases	*		*	
Air tightness of combustion chambers and casings	*	*	*	*
Maintenance	*	*	*	*
Operator training	*	*	*	*
Emission controls				
Dust control (filters and scrubbers)	*		*	
Activated carbon treatment	*	*		
Hg removal technology (binding, precipitation etc.)		*		
Adequate chimney height	General dispersion and dilution of pollutants higher into atmosphere			

The table above indicates the measure which can help reduce emissions may be employed in order to monitor the various control on the key pollutants associated with the crematorium.

For comprehensive management and control of unorganized odour emissions in workshops, workshop ventilation should be improved, and exhaust fans should be installed considering practical conditions, such that low-concentration unorganized odour emissions can be promptly diluted and discharged. Additionally, equipment should be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.
The following table provides a summary of the best available techniques that can be used to control the cremation process (as provided by the specialist report):

Release	Substance	Control techniques	Technology compliance
Flue gas	Nitrogen oxides	No control	Technology has taken this into consideration, and has been designed accordingly. See Appendix L.
	Odour	Good combustion and a secondary combustion	
	Carbon monoxide	Good combustion and a secondary combustion	
	Volatile organic compounds	Good combustion and a secondary combustion	
	PAH	Good combustion and a secondary combustion	
	Mercury and its compounds	Abatement, or contribute via burden sharing scheme	

	Particulate matter	Good combustion, slow gas velocities and a secondary combustion zone. Abatement further minimises emissions*	
	Hydrogen chloride	Minimise halogens combusted, avoid excessive temperature in primary chamber. Abatement further minimises emissions*	
	PCDD/F	Minimise chlorine combusted and particulate matter emitted, good combustion and a secondary combustion zone, Abatement further minimises emissions*	
	Carbon dioxide	Measure gas consumption, good cremator design	
Cremated remains size reduction machine	Particulate matter	Filter on machine or external dispersion and filter if needed.	Ash is removed from ash tray, with cleaning tools, with minimal dispersion.
Spent gas-cleaning materials	Particulate matter, mercury	Keep containers tightly lidded	This will be included in the mitigation measures.
* if fitted for mercury abatement purposes			

Aquatic:

- No runoff from the study area may be released or enter the stream during both the refurbishment activities and the operational phase. All stormwater runoff generated in the study area must be managed in appropriate stormwater management structures and released into the municipal stormwater infrastructure. Regular inspection of the stormwater management infrastructure in the study area must be undertaken to ensure proper functioning thereof;
- Suitable dust management practices must be implemented for the duration of the refurbishment activities to prevent dust deposition in the stream that could lead to sedimentation thereof;
- No construction personnel may enter the stream or access the study area along the northern boundary. Access to the study area must be limited to the existing access area along the southern boundary;
- General good housekeeping practices must be implemented during all phases of the proposed development, to ensure limited direct, indirect and cumulative impacts to the stream.

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

The recommendation made by the air quality specialist to increase the stack height has been considered as a design alternative, however it has been found to not be feasible, as it will compromise the efficiency of the technology as designed, and if re-design is required, the costs and delays would be substantial. Considering the guarantee provided by the manufacturer and the proven efficiency of the furnaces, the 12m stack height is considered sufficient.

Furthermore, annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit.

Further to this the Health specialist has recommended bi-annual air quality monitoring, however the EAP will recommend that the annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit. As per the Air Quality Specialist recommendations.

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

The Figure 42 below depicts the surrounding zoning, as can be seen this is predominantly industrial/commercial, with utility and transport zones. No habitable dwelling are located within a 500m radius of the site.

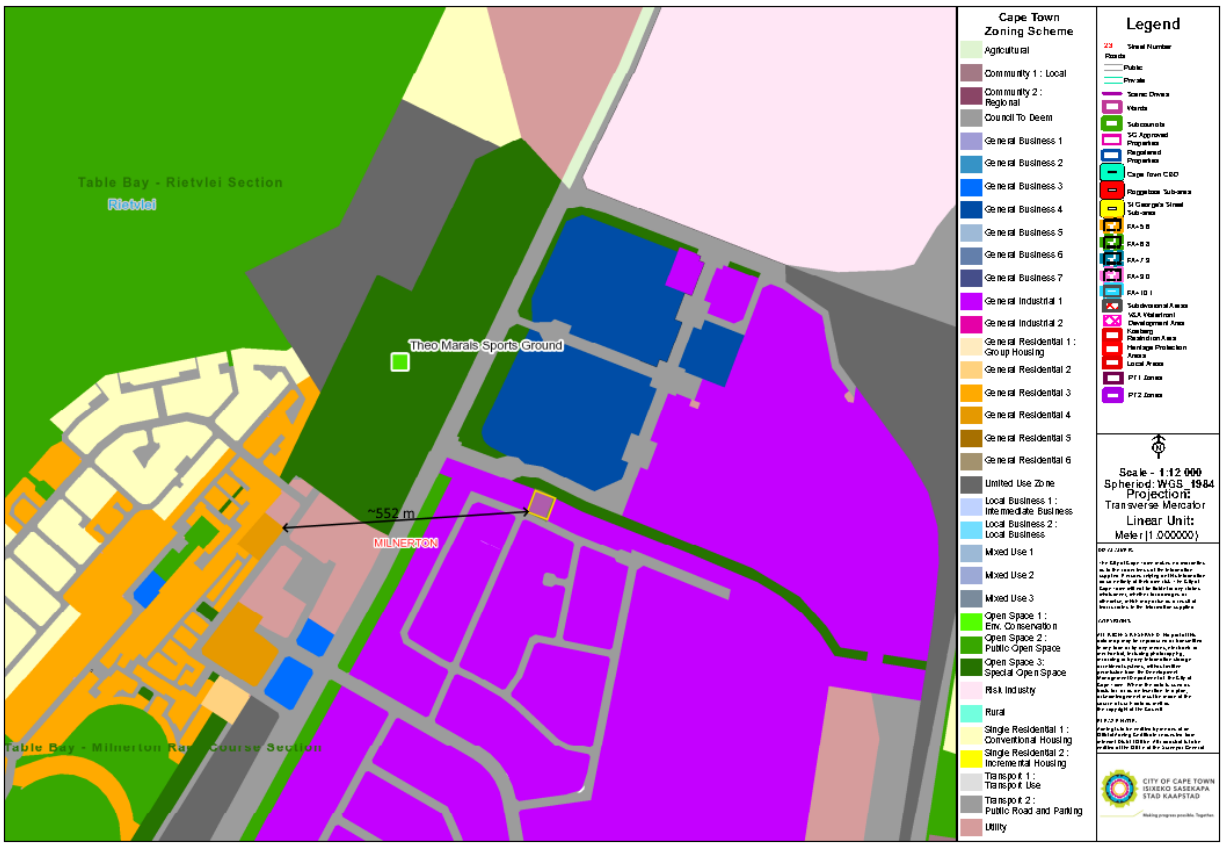


Figure 42: Zoning map with distance to closest residentially zoned area.

Positive Impacts on the Surrounding Community:

- Smokeless and odourless technology.
- All monitoring will be undertaken in accordance with the AEL and reports can be made available to public on request.

- Concerns can be raised directly to proponent during operation.
- Low carbon emissions and particulate matter emissions due to the use of LPG Tanks, therefore low impact on health of surrounding community.
- Temporary and permanent job creation, with opportunity for skill building and skills transfer.
- Support to local economy, including sourcing from local suppliers, and appointing local labour.
- Availability and access to appropriate cremation services.
- Aligned with surrounding land use.
- As confirmed by the Health Specialist, based on the technology intended to be adopted, the proposed developments emissions will be significantly reduced, and in turn will reduce the potential health impacts. The health impact is perceived to be negligible to no risk.
- All impacts will be applied to reduce potential visual triggers, including if necessary, screening of off-loading area, screening of interface, non-descript vehicles, and limited signage.

Negative Impacts on the Surrounding Community:

- Temporary noise generation during renovations. Noise generation from operation of furnaces is considered minimal (the Combustion Air Fan is noise attenuated and located on top of the Cremator roof).
- Temporary dust generation during renovations.
- Temporary and low traffic impacts during renovations.
- General unease being close to a crematorium facility (perception issues)

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

Table 22: Climate change impacts, and their consideration in the proposed development.

According to the Western Cape Department of Environmental Affairs and Development Planning, climate change will affect the Western Cape in the following ways:	***How has the potential climate change impacts been integrated in proposed development.***
Higher average annual temperature Higher maximum temperatures More hot days and more heat waves Higher minimum temperatures Fewer cold days and frost days	• Daily assessment of weather conditions should be completed during development stage, to ensure conditions are viable for labourers to be working outside (ie: temperatures are not excessive). • Potable water should be available for consumption during construction, to keep labourers hydrated.
Reduced average rainfall in the Western Cape, particularly the western parts	• A reduction in rainfall will have minimal impact on the proposed facility. Existing stormwater infrastructure does exist.
Rising sea levels	• The proposed development is positioned approximately 3km's inland.
Increased fire risks	• During development fires should be strictly prohibited, smoking should be discouraged on site, if it is allowed, there should be a designated area, with an

	appropriate bin to contain discarded cigarettes, with an appropriately heavy cover. • If security is positioned on site, at night, they should be briefed on fire hazard risks. • During construction no uncontrolled fires or excessive heating will be allowed close to the gas storage areas.
Increase in the frequency and intensity of extreme weather events, including floods, droughts, and storm surges	• It is recognized that the effects of climate change, as a result of alternating extreme weather events, are a very real impact all development, and long-term resilience planning is required. The site is transformed and all potential infrastructure related to stormwater management and drainage, have been implemented.

In terms of the proposed development LPG will be utilized as the preferred fuel source. LPG considered a low-carbon, low-polluting fuel. LPG's environmental benefits include:

- Reduced CO_2 emissions when burning, compared to biomass, fuel oil and, in many countries, electricity.
- LPG emits virtually no particulates.

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

The Health Specialist has indicated that bi-annual monitoring be undertaken, however the Air Quality Specialist has advised that annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit.

Given that the area of concern is air quality, the Air Quality Specialists recommendations will be recommended, however if the AEL authority advises on additional monitoring this will be adopted, as the recommendation for the EA is to comply with all relevant permits/authorizations/licences.

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

The findings and recommendations have been integrated into the impact tables (Section F, of this document), and the EMPr, so as to guide the various phases of the project.

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

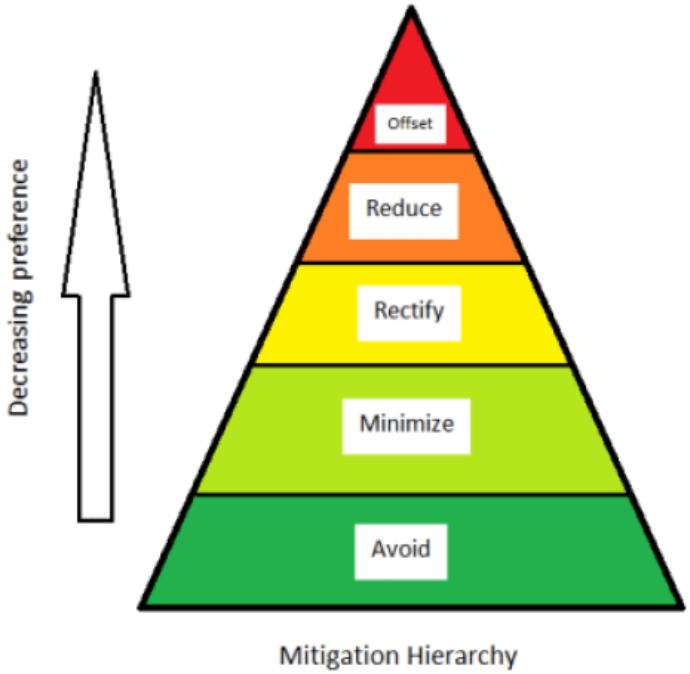


Figure 43: Mitigation Hierarchy.

The Mitigation Hierarchy was considered while determining the best practicable environmental option for the proposed development. Activities related to the proposed development/renovations have been considered. Where possible activities have been avoided, therefore all activities included in the proposal of this development are essential for the successful implementation and operation of this development.

All impacts that could not be avoided, have been investigated to establish mitigation measures to minimize and rectify, where possible or radically reduce the predicted impacts. As all the proposed impacts can be sufficiently reduced in significance, and no residual negative biodiversity impacts will remain, no biodiversity offset was considered for this development.

SECTION J: GENERAL

1. Environmental Impact Statement

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

The key findings of the EIA indicate that the proposed development, has significant positive impacts and minimal negative impacts, these can be summarised below:

SOCIO-ECONOMIC:
POSITIVE IMPACTS

- Meeting a demand for a service that is desired within the City of Cape Town (as confirmed Appendix E15).
- Reducing the strain on the funeral services industry.
- Local labour will be sourced from the local communities, particularly those of a historically disadvantaged background, various genders, educational and socio-economic levels. The proposed development will provide:
  - Jobs for people with a low education level.

- Provide an opportunity for uplifting and education through the adoption of new skills and also economical upliftment through earning a salary.
- Boosting of the local economy by creating jobs, paying salaries, and using locally sourced goods, services, and labour.
- Creating social stability by providing jobs which not only give a person a sense of self worth but also an opportunity to provide for their family

- Making CoCT a more desirable location to settle down, as this will boost service availability in this industry.
- Providing a cheaper service for consumers, versus the excessive costs for burial.
- Consumers have access to this high-quality technology.
- Health Specialist has confirmed that the risk to health is negligible to none, as long as the relevant mitigation measures are applied. This is integrated into the EMPr for implementation.
- Extensive mitigation for perception, and client has provided written commitment to comply (Appendix E24).
- Technology proven track record for compliance with NEM:AQA.

NEGATIVE IMPACTS

- Temporary, such as noise, odour and visual impacts from renovation activities.
- Predicted Air Quality Exceedances.
- Perception concerns.

ENVIRONMENTAL IMPACTS
POSITIVE IMPACTS

- No direct impacts on a natural environment.
- Opportunity for alien invasive clearance if permitted by landowner.
- Opportunity to implement an EMPr that can be enforced for renovation phase and operational phase and supports the implementation and compliance with multiple legislation.
- Opportunity for on-going monitoring.
- Health Specialist has confirmed that the risk to health is negligible to none, as long as the relevant mitigation measures are applied. This is integrated into the EMPr for implementation.
- LPG – lower CO_2 emissions.

NEGATIVE IMPACTS

- Potential for air emissions if neglected, that could lead to health impacts if technology is not operated as per manufacturer's specifications.
- Temporary nuisances.

As per the findings the **proposed development is acceptable, as long as mitigation measures are implemented.**

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

No environmental sensitivities were encountered during the investigations conducted on site.

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

Table 23: Summary of positive and negative impacts/risk.

DEVELOPMENT/CONSTRUCTION/RENOVATION PHASE

	PREFERRED ALTERNATIVE 1: SITE	
IMPACT	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE AFTER MITIGATION
WASTE MANAGEMENT	Low - Medium (-)	Low
SOCIAL IMPACT: SENSE OF PLACE (NOISE & DUST)	Low - Medium (-)	Low
SOCIAL IMPACT: VISUAL	Low - Medium (-)	Low
SOCIO-ECONOMIC IMPACTS – CREATION OF MULTIPLE JOB OPPORTUNITIES & CAPITAL EXPENDITURE	High (+)	
SOCIAL IMPACT: TRAFFIC & ACCESS	Medium (-)	Low
SECURITY AND VANDALISM	Low - Medium (-)	Low
OPERATIONAL PHASE		
	PREFERRED ALTERNATIVE 1: SITE	
IMPACT	IMPACT SIGNIFICANCE BEFORE MITIGATION	IMPACT SIGNIFICANCE BEFORE MITIGATION
AIR QUALITY – HEALTH AND ODOUR IMPACTS	Low	Low
AIR QUALITY – EXCEEDANCES NOTED BY THE ATMOSPHERIC IMPACT ASSESSMENT	Low - Medium (-)	Low
STORAGE AND USE OF HAZARDOUS MATERIAL: LPG & NATURAL GAS respectively	Medium (-) / High	Low / High
SOCIAL IMPACT: PROPERTY VALUE IMPACTS	Medium (-)	Low
ALIEN INVASIVE SPECIES CLEARANCE AND REHABILIATION	Low +	
CONTAMINATION OF STORMWATER	Low - Medium (-)	Low
HEALTH IMPACTS – WORKERS WITHIN THE CREMATORIUM FACILITY	Low - Medium (-)	Low
SOCIO-ECONOMIC IMPACTS: JOB CREATION & LOCAL REVENUE	Medium (+)	
SOCIO-ECONOMIC IMPACTS: PROVISION OF CREMATORIUM SERVICES TO SURROUNDING COMMUNITIES	High (+)	
SOCIAL IMPACT: VISUAL/PERCEPTION	Medium (-)	Low (-)
TRAFFIC IMPACTS	Low (-)	
POOR WASTE PRODUCTION AND HYGIENE – WORK-PLACE COMPROMISED	Medium (-)	Low (-)

2. Recommendation of the Environmental Assessment Practitioner ("EAP")

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

Objective 1: Ensure Air Emissions are of Acceptable Standards

Impacts to Avoid:

- Point source maximum emission rates are exceeded.
- Failure to comply with acceptable National Ambient Air Quality Standards (NAAQS), during monitoring.
- Compromising surrounding air quality.
- Evidence of fugitive emissions.

Impact Management Actions:

- Perform routine maintenance on infrastructure.
- Comply with guidelines for functioning of equipment.
- Avoid strain on infrastructure.

Objective 2: Acceptable Storage and Handling of Hazardous/Dangerous Goods (LPG Tanks)

Impacts to Avoid:

- Incidents due to incorrect storage/handling of LPG tanks.
- Fugitive emissions from LPG tanks.

Impact Management Actions:

- Renovation/Development Phase
    - During renovations ensure that the condition of building/rooms are fit for storage, as per manufacturers instructions.
    - Ensure that any relevant permit/authorization required for the safe storage the tanks is obtained from the relevant authority.
    - Storage areas should not be positioned near exits, staircases, busy areas, entryways or near an uncontrolled heat sources.
    - Ensure that the area is well ventilated.
- Operational Phase
    - Restrict public access to storage areas.
    - Comply with recommended storage regulations for LPG Tanks, as per manufacturers' instructions.
    - Ensure safety checks are conducted on a regular basis.
    - Ensure fire extinguishers are positioned at acceptable locations on site and are easily accessible.
    - Comply with guidelines for functioning of equipment.
    - Avoid strain on infrastructure.

Objective 3: Worker's health must not be compromised

Aspects to Avoid:

- Compromised long and short-term health of employees.
- Noxious odours.
- Mishandling or leaks from LPG tanks.

Impact Management Actions:

General mitigation measures recommended:

- Assessing and ensuring hygiene is maintained in line with funeral parlour legislation, regulations relating to the management of human remains, Government Notice No. 363 of 22 May 2013 - Condition of the Environmental Authorization.
- Training: Staff at all levels need the necessary training and instruction in their duties relating to control of the process and emissions to air. In order to minimise risk of emissions, particular emphasis should be given to control procedures during start-up, shut down and abnormal conditions.
- Maintenance: Effective preventative maintenance plays a key part in achieving compliance with emission limits and other provisions. All aspects of the process including all plant, buildings and the equipment concerned with the control of emissions to air should be properly maintained.
- Bi-annual air quality monitoring for the first year of operations, then annually for the rest of the duration of the operational phase of the Project.
- Air quality monitoring should be conducted by appropriately trained operating staff.
- Exhaust flow rates should be installed. These should be consistent with efficient capture of emissions, good operating practice and meeting the requirements of the legislation relating to the workplace environment.
- Minimum furnace temperature (850 °C), residence time in the second chamber (2 seconds for combustion gases) and enough air to ensure combustion in the second chamber and avoid generating products of incomplete combustion.
- Suitable air pollution control equipment, which could include temperature controls, dust control, carbon injection, fabric filtration, air tightness of combustion chambers and casings.
- Monitoring of gas temperature and flue gas O2 and CO concentrations, application of relevant emission limit values and additional monitoring, including ambient air quality monitoring in the proximity of crematoria.
- The presence of PVC, metals and other contaminants (particularly chlorine compounds) in the coffin material and furnishings should be avoided to reduce the generation of persistent organic.
- Use of waste-derived or other fuels potentially contaminated with persistent organic pollutants should be minimized.
- Operational controls, inspection and preventive maintenance.
- Sealed furnaces are essential to contain fugitive emissions while permitting heat recovery and collecting off-gases for abatement or discharge.
- Particulate matter should be removed to reduce PCDD/PCDF emissions to atmosphere.
- All crematorium staff involved in such a case should wear a mask and rubber gloves when handling the cremated materials, all cremated remains should be put in a metal urn, any unwanted radionuclides should decay in storage for 20 months before being discarded and remains should not be scattered until 20 months after the date of implantation.
- Other good practice measures to protect crematoria workers, such as removal of radioactive implants before cremation, informing crematoria workers of recent radiotherapy treatments for deceased patients, and safe handling practices for ashes, can also reduce possible environmental releases of pollutants.
- Carbon dioxide emissions from gas usage are the main greenhouse gas component of a crematoria's carbon footprint. The applicant may wish to note that the development of an energy reduction strategy will have the benefits of saving money and reducing their carbon footprint. A measure as simple as recording of gas consumption (e.g., comparison of quarterly gas bills) is a first step in managing energy use and therefore CO2 emissions.

Table 24: As extracted from the Specialist Health Assessment, Table 11 1: Measures for pollutants of most concern from crematoria emissions (O'Keeffe, 2020)

Control Measure(s)	Pollutants			
	PCDD/Fs	Hg	$PM_{2.5}$	Radioactivity
Source Control				
Removal of plastics	*		*	
Non-toxic and eco-friendly coatings or materials in caskets	*			
Removal of Hg fillings		*		
Removal of medical devices containing radioactive material				*
Operational Control				
Minimum 850°C (2nd chamber)	*		*	
Minimum residence time of 2 s (2nd chamber)	*		*	
Adequate O_2 in combustion chamber	*		*	
Monitoring CO releases	*		*	
Air tightness of combustion chambers and casings	*	*	*	*
Maintenance	*	*	*	*
Operator training	*	*	*	*
Emission controls				
Dust control (filters and scrubbers)	*		*	
Activated carbon treatment	*	*		
Hg removal technology (binding, precipitation etc.)		*		
Adequate chimney height	General dispersion and dilution of pollutants higher into atmosphere			

For comprehensive management and control of unorganized odour emissions in workshops, workshop ventilation should be improved, and exhaust fans should be installed considering practical conditions, such that low-concentration unorganized odour emissions can be promptly diluted and discharged. Additionally, equipment should be operated in an intermittent working mode to reduce odour accumulation in the workshop associated with the workload.

The following table provides a summary of the best available techniques that can be used to control the cremation process (as provided by the specialist report):

Release	Substance	Control techniques	Technology compliance
Flue gas	Nitrogen oxides	No control	Technology has taken this

	Odour	Good combustion and a secondary combustion	into consideration, and has been designed accordingly. See Appendix L.
	Carbon monoxide	Good combustion and a secondary combustion	
	Volatile organic compounds	Good combustion and a secondary combustion	
	PAH	Good combustion and a secondary combustion	
	Mercury and its compounds	Abatement, or contribute via burden sharing scheme	
	Particulate matter	Good combustion, slow gas velocities and a secondary combustion zone. Abatement further minimises emissions*	
	Hydrogen chloride	Minimise halogens combusted, avoid excessive temperature in primary chamber. Abatement further minimises emissions*	
	PCDD/F	Minimise chlorine combusted and particulate matter emitted, good combustion and a secondary combustion zone, Abatement further minimises emissions*	
	Carbon dioxide	Measure gas consumption, good cremator design	
Cremated remains size reduction machine	Particulate matter	Filter on machine or external dispersion and filter if needed.	Ash is removed from ash tray, with cleaning tools, with minimal dispersion.
Spent gas-cleaning materials	Particulate matter, mercury	Keep containers tightly lidded	This will be included in the mitigation measures.
* if fitted for mercury abatement purposes			

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

- An Environmental Control Officer must be appointed to monitor the compliance and implementation of the Environmental Management Programme, mitigation measures and the Environmental Authorization conditions.

- Annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit.

- The Applicant is to ensure that all relevant applications are made for compliance purposes related to the operation of a crematorium and storage of hazardous goods, this should include as a minimum:

    - In terms of the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, the applicant is to apply for an:
        - Exemption, in terms of Chapter 2, from compliance with 18(1)(g) if air quality, exceedances are noted. Certificate of Competence (application as per Appendix G of this legislation) in respect of Regulation 3(1) from the local authority.
    - The applicant is to apply for written authorisation in terms of Section 11 of the City of Cape Town Air Quality Management By-law, 2016, to install, alter, extend, replace and operate fuel-burning equipment (through a separate application process subsequent to the Granting of the EA).
    - In terms of City of Cape Town Cemeteries, Crematoria and Funeral Undertakers By-law (2011), Section 52(1) of the By-law, the proponent must obtain written approval from the COCT to cremate or cause to cremate human remains within any crematorium after obtaining approval of the City and complying with all conditions as determined by the City.
    - In terms of Section 53(3) of the By-law, the crematorium facility must be fitted with abatement equipment to prevent the dispersion of ash into the atmosphere.
    - In terms of the City of Cape Town Community Fire Safety By-law, 2002 (as amended 2015), an application for a flammable substance certificate must be submitted to the controlling authority, which in this case is the COCT Chief Fire Officer. This is to include:
        - A final layout plan must be provided depicting the location of the Liquified Petroleum Gas (LPG) storage tanks.
        - A screening risk assessment to establish if the facility will constitute a Major Hazard Installation or if additional site-specific mitigation measures are required, for example, a blast wall between the LPG installation and perimeter or closest building, specific location of the LPG tanks on site where they pose the least risk, etc.
        - A fire plan which complies with SANS 10400-T:2020 and the By-Law relating to Community Fire Safety of 2002 will have to be submitted prior to approval from Fire and Rescue Services.
    - In terms of the City of Cape Town Wastewater and Industrial Effluent By-law, 2013, for disposing wastewater from cleaning of ash trays, the proponent is required to complete and submit the:
        - 'Permission to Discharge Industrial Effluent into Sewers Application Form' in the case of discharge into the municipal sewers, for authorization by the CoCT.
        - or in the case of transportation and disposal at wastewater treatment works, the proponent must complete and submit the 'Disposal of Waste Water Directly at CoCT Facilities Application Form'.
        - If applicable, for disposal of (solids) incinerator ash and other residual medical waste, the proponent Is required to firstly register on the Western Cape Department of Environmental Affairs and Development Planning's Integrated

Pollutant and Waste Information System (IPWIS) and obtain a Waste Information Regulations certificate.

- In the event of the proposed development discharging any industrial type effluent into the municipal sewers, an application to discharge industrial effluent into municipal sewer system will be required.
  The business owner will essentially need to apply to Shahied Solomon (Shahied.Solomon@capetown.gov.za) or Molepana Ramonyai (Molepana.Ramonyai@capetown.gov.za) for permission to discharge. These City Officials will be able to guide the developer/owner with regards to the process. This will be undertaken should the environmental authorization be awarded.

- An Air Emissions License in accordance with NEM:AQA Section 37, from licensing authority of the area (City of Cape Town).
- Upon receipt of the Environmental Authorization the proponent will appoint appropriately experience and skilled operators where necessary.

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

The proposed development should be authorised for the following reasons:

- As confirmed by the Health Specialist, based on the technology intended to be adopted, the proposed developments emissions will be significantly reduced, and in turn will reduce the potential health impacts, it was concluded **health risks are negligible to no risk**.
- Environmental impacts, other than air quality and health, were not applicable based on the transformation of the site.
- Utilization of existing transformed infrastructure, for a permissible landuse.
- The applicant is willing to shoulder the economic burden that will arise from such a development, and pursue all legal requirements to implement a legitimate organization. The applicant has also committed to implement screening and other measures to address visual triggers of such a development.
- Cremators of high quality and technology, and sourced from South African manufacturers, have been chosen to be integrated into this proposal.
- A compliance letter has been provided by the manufacturer, along with the extracts of current sites employing this technology.
- LPG is to be the preferred fuel source, which is a low-carbon emitter, and no particulate matter emissions. Thereby, reducing risk to human health.
- Multiple social impacts have been flagged including:
  - There is a need/demand for this service (Appendix E15).
  - Transportation of human remains from the west-coast areas of Cape Town to a crematorium will now be significantly reduced.
  - Job creation.
- The environmental assessment has highlighted multiple relevant legislative conditions and requirements that the applicant will need to obtain prior to commencement. These have been included in the EMPr and if authorized, the applicant will be forced to ensure compliance as per the EMPr. Further to this the EMPr supports on-going monitoring and compliance with conditions of other licenses.

Conditions recommended:

- An Environmental Control Officer must be appointed to monitor the compliance and implementation of the Environmental Management Programme, mitigation measures and the Environmental Authorization conditions.
  Annual emissions sampling from the chimney stacks for PM, CO, NOx and Hg is required as per GN 893 of 2013. More frequent emissions sampling can be specified in the AEL, if the licensing authority sees fit.
- The Applicant is to ensure that all relevant applications are made for compliance purposes related to the operation of a crematorium and storage of hazardous goods, this should include as a minimum:
  - In terms of the National Health Act, 2003 (Act No 61 of 2003), Regulations Relating to the Management of Human Remains, May 2013, the applicant is to apply for an:
    - Exemption, in terms of Chapter 2, from compliance with 18(1)(g) if after monitoring air quality (as specified in the AEL), that exceedances are noted. Certificate of Competence (application as per Appendix G of this legislation) in respect of Regulation 3(1) from the local authority.
  - The applicant is to apply for written authorisation in terms of Section 11 of the City of Cape Town Air Quality Management By-law, 2016, to install, alter, extend, replace and operate fuel-burning equipment (through a separate application process subsequent to the BAR approval).
  - In terms of City of Cape Town Cemeteries, Crematoria and Funeral Undertakers By-law (2011), Section 52(1) of the By-law, the proponent must obtain written approval from the COCT to cremate or cause to cremate human remains within any crematorium after obtaining approval of the City and complying with all conditions as determined by the City.
  - In terms of Section 53(3) of the By-law, the crematorium facility must be fitted with abatement equipment to prevent the dispersion of ash into the atmosphere.
  - In terms of the City of Cape Town Community Fire Safety By-law, 2002 (as amended 2015), an application for a flammable substance certificate must be submitted to the controlling authority, which in this case is the COCT Chief Fire Officer. This is to include:
    - A final layout plan must be provided depicting the location of the Liquified Petroleum Gas (LPG) storage tanks.
    - A screening risk assessment to establish if the facility will constitute a Major Hazard Installation or if additional site-specific mitigation measures are required, for example, a blast wall between the LPG installation and perimeter or closest building, specific location of the LPG tanks on site where they pose the least risk, etc.
    - A fire plan which complies with SANS 10400-T:2020 and the By-Law relating to Community Fire Safety of 2002 will have to be submitted prior to approval from Fire and Rescue Services.
  - In terms of the City of Cape Town Wastewater and Industrial Effluent By-law, 2013, for disposing wastewater from cleaning of ash trays, the proponent is required to complete and submit the:
    - 'Permission to Discharge Industrial Effluent into Sewers Application Form' in the case of discharge into the municipal sewers, for authorization by the CoCT.
    - or in the case of transportation and disposal at wastewater treatment works, the proponent must complete and submit the 'Disposal of Waste Water Directly at CoCT Facilities Application Form'.
    - If applicable, for disposal of (solids) incinerator ash and other residual medical waste, the proponent Is required to firstly register on the Western Cape Department of Environmental Affairs and Development Planning's Integrated

Pollutant and Waste Information System (IPWIS) and obtain a Waste Information Regulations certificate.

- In the event of the proposed development discharging any industrial type effluent into the municipal sewers, an application to discharge industrial effluent into municipal sewer system will be required.
- The business owner will essentially need to apply to Shahied Solomon (Shahied.Solomon@capetown.gov.za) or Molepana Ramonyai (Molepana.Ramonyai@capetown.gov.za) for permission to discharge. These City Officials will be able to guide the developer/owner with regards to the process. This will be undertaken should the environmental authorization be awarded.

- An Air Emissions License in accordance with NEM:AQA Section 37, from licensing authority of the area (City of Cape Town).
- Upon receipt of the Environmental Authorization the proponent will appoint appropriately experience and skilled operators where necessary.

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

ATMOSPHERIC IMPACT ASSESSMENT:

- NOx is comprised of two chemicals: nitric oxide (NO) and nitrogen dioxide (NO_2). NOx that is released from combustion installations is almost completely comprised of NO, with minimal NO_2 present. However, once released into the atmosphere, NO rapidly reacts with ozone to form NO2. Dispersion models do not have sufficiently detailed descriptions of atmospheric chemistry to accurately account for NO's conversion to NO_2, and thus one of two assumptions must be made:
  1. Total conversion method: It is assumed that all of the NOx that is released from a point source converts into NO2. If the maximum NOx concentrations are less than the NAAQS, then no further adjustments need to be made. If the NOx concentrations exceed the NAAQS, the ambient ratio method (ARM) should be used.

  2. Ambient ratio method (ARM): It is assumed that the ratio of NO2 to NOx is 0.8.30

FINAL RAPID APPRAISAL HEALTH IMPACT ASSESSMENT

- This Baseline HIA has focused on understanding the high-level health issues associated with the proposed Crematorium Project site. The Final HIA will also assess health data gaps that may exist and determined whether additional information would be required to inform a more comprehensive health evidence-base.
- The gap analysis included a critical appraisal of data quality of sources identified during the HIA process.
- The following are the recognised limitations of the HIA study:
  - The HIA study often refers to local level data which has some limitations that need to be understood and respected. Recording and reporting of the health data within the visited Healthcare facilities is completed manually, and it is likely that the recording may lack required accuracy. However, this information is invaluable in understanding the health challenges in the area, although the limitation must be considered when evaluating information, as its ability to be used as a robust baseline and to monitor relevant health impacts is limited; and
  - Interviews are normally based on respondents' self-declaration which may be prone to recall or response bias. Moreover, when it comes to questions on one's private life, study

participants tend to be affected by a social desirability bias, where they may choose to give answers that are socially acceptable.

- This HIA must be viewed as a prospective / predictive study as there has as yet been no initiation of any construction activities on the proposed site.

AQUATIC COMPLIANCE STATEMENT

The determination of any wetland or riparian zone boundaries is confined to the study area and is based on a single site visit undertaken on the 30th of May 2022. All watercourses identified within the investigation area were delineated in fulfilment of GN 509 of the National Water Act, 1998 (Act No. 36 of 1998) using various desktop methods including the use of topographic maps, historical and current digital satellite imagery, and historical aerial photographs;

- No access to the study area could be obtained, as such, the aquatic biodiversity sensitivity thereof was inferred from desktop analysis. Considering the study area is completely built-up, the deduced sensitivity (as presented in Section 6 of Appendix G2) is considered accurate bearing the constraints noted;
- The delineation of the watercourses as provided in this report, is considered the best estimate taking into consideration the limitations and conditions at the time of assessment;
- No Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) assessment of watercourses were undertaken as part of the scope of work as the objective of this study was to primarily identify the presence and extent of any watercourses that could pose a constraint to development within the study area. An ecological assessment as well as risk/impact assessment of any watercourses must be undertaken as part of the Environmental Authorisation phase (should it be applicable);
- Global Positioning System (GPS) technology is inherently somewhat inaccurate, and some inaccuracies due to the use of handheld GPS instrumentation may occur; however, the delineations as provided in this report are deemed appropriately accurate to fulfil the authorisation requirements;
- Wetlands and/or riparian zones and terrestrial zones create transitional areas where an ecotone is formed as vegetation species change from terrestrial to obligate/facultative wetland or riparian species. Within this transition zone, some variation of opinion on the watercourse boundaries may occur. However, if the Department of Water Affairs and Forestry (DWAF)1 (2008)2 method is followed, all assessors should get largely similar results; and
- With ecology being dynamic and complex, certain aspects (some of which may be important) may have been overlooked. However, the delineations as provided in this report are deemed appropriately accurate to guide any future development plans.

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

- The period for which the EA is required = 10 years.
- The date the activity will be concluded = 5 years.
- When the post construction monitoring requirements should be finalised = 10 years.

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.
Development, Design and Construction. • Labour will be encouraged to utilize buckets of water to clean tools and machinery, rather than running water, to preserve water.

- Labour will be encouraged to capture rainwater for utilization on site.

Operation:
- The facility will utilize minimal amounts of water during operational phase.

4. Waste

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

The EMPr has encouraged waste management through the various phases of the project.

Renovation Phase:
- An integrated waste management approach (AVOID first, then REDUCE, then REUSE, then RECYCLE, then DISPOSAL) must be adopted.
- Adequate waste receptacles, bins and skips should be available for the collection and removal of waste.
- Individual recycling bins for the various categories (paper, glass, plastic, etc.) must be provided, labelled and have a designated area on site, close to access points (for easy removal), away from any natural areas, and should have appropriately weighted lids, to prevent the wind from toppling the bins, resulting in waste dispersal.
- These bins must be emptied on as often as possible and dropped off at a collection point for recycling, by recycling companies, ensure that a waste slip is obtained as proof of this, and have this filed in the Environmental File.
- Infographics and educational notices to create awareness around sustainable waste management should be provided.
- Environmental awareness training will be conducted for all site workers to create awareness.
- Any solid waste intended for disposal must be disposed of at a landfill site, licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) or the National Environmental Management: Waste Act (Act No. 59 of 2008).

Operational Phase:
- Appropriate waste receptacles should be established, for permanent use during operational phase.
- Separation of waste, in separate, labelled waste receptacles, should be encouraged.
- Littering should be restricted, and signage should be erected accordingly

5. Energy Efficiency

8.1.	Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

Construction Phase:
- Infographics and educational notices will be established on site to create awareness encourage energy efficiency.

Operational Phase:
- LPG will be utilized as the preferred fuel source for the proposed furnaces.
- Energy efficiency should be encouraged during the operational phase. Where opportunities arise to reduce energy demand, this should be explored.
- If biogas supply is available, this will be considered.

Future consideration will be given to the adoption of solar panels, however this will be considered only once the facility is fully operational, and will not require environmental authorization.

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

Note: Duplicate this section where there is more than one Applicant.

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

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

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

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

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

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

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

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

Signature of the Applicant: Date:

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I …Ameesha Sanker…… EAPASA Registration number (registration approval pending) as the appointed EAP hereby declare/affirm the correctness of the:

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

Ameesha Sanker	09/09/2022
Signature of the EAP:	Date:

Sharples Environmental Services

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I ……, EAPASA Registration number …….. as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

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

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

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

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

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

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

Signature of the EAP: Date:

Name of company (if applicable):

DECLARATION OF THE REVIEW SPECIALIST

I ……., as the appointed Review Specialist hereby declare/affirm that:

- I have reviewed all the work produced by the Specialist(s):
- I have reviewed the correctness of the specialist information provided as part of this Report;
- I meet all of the general requirements of specialists as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP: Date:

Name of company (if applicable):

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

Note: Duplicate this section where there is more than one Applicant.

I, Sybrand Tubes, ID number 8902105227085, in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;
- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;
- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;
- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;
- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

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

Signature of the Applicant: Date: 07/09/2022

Ikamva Green Holdings

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I …Ameesha Sanker…… EAPASA Registration number (registration approval pending) as the appointed EAP hereby declare/affirm the correctness of the:

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

Ameesha Sanker 09/09/2022

Signature of the EAP: Date:

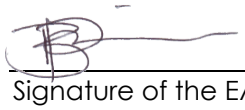
Sharples Environmental Services

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I Betsy-Jane Ditcham……, EAPASA Registration number 1480…….. as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.



08/09/2022

Signature of the EAP: Date:

Sharples Environmental Services cc

Name of company (if applicable):