

## 4.3

**ERF 2740, 19 ARGON ROAD, SANDBAAI (INDUSTRIAL AREA – HERMANUS BUSINESS PARK): APPLICATION FOR CONSENT USE (NOXIOUS TRADE) PLAN ACTIVE TOWN AND REGIONAL PLANNERS ON BEHALF OF BLUE HORIZONS PROPERTIES CC**

2740 HSB (3651)

(H Boshoff)

H van der Stoep

6 December 2021

(028) 313 8900

Hermanus Administration

**1. EXECUTIVE SUMMARY**

To consider an application received on 12 May 2021 from Messrs Plan Active Town- and Regional Planners on behalf of Blue Horizons Properties CC, the owners of Erf 2740, Sandbaai (the property), for the following:

- ❖ application in terms of Section 16(2)(o) of the Overstrand Municipality Amendment By-Law on Municipal Land Use Planning, 2020 (By-Law) for consent use for a “noxious trade” to accommodate a bulk storage tank of 45m<sup>3</sup> (45 000L) for the storage of LPG (“Liquid Petroleum Gas”) on the property for the filling of 9kg to 48kg gas cylinders after which the filled gas cylinders are stored on a portion of the property with a storage capacity of 20m<sup>3</sup> (20 000L) from where it will be dispersed to gas agencies in the greater Hermanus area.

The Locality Plan of the property concerned is attached as Annexure A, the Motivation Report from the applicant in support of the application is attached as Annexure B and the Site Development Plan is attached as Annexure C.

**2. DECISION AUTHORITY**

Municipal Planning Tribunal

**3. BACKGROUND / SITE HISTORY**

Erf 2740, Sandbaai is situated in the industrial area of Sandbaai at the southern section of Argon Road which section is a cul-de-sac. The property is zoned Industrial Zone 1: General Industry and forms part of the Hermanus Business Park industrial hub with an Owners Association. The property was previously used for recycling purposes but has in the meantime been cleaned-up and closed, thus no activities currently occur on the property. The property measures 1460m<sup>2</sup>. Refer to GIS extract below of the location of the subject property.



To the south and the north of the property, it is abutted by developed industrial erven, and to the east across the road are also developed industrial erven. Directly to the west it abuts a nearly fully developed medium density group housing development known as Mooizicht Gardens.

Gas Hub (Pty) Ltd which is an agency of Oryx Energies, will rent the property from the owner and develop and operate the proposed bulk storage Liquid Petroleum Gas (LPG) depot from the property should the application be successful.

#### 4. SUMMARY OF APPLICANT'S MOTIVATION

The applicants' Motivation Report is attached as Annexure B. The main grounds of motivation are summarized as follows:

- ❖ The property is situated within an industrial area.
- ❖ Gas Hub is a local supplier of LPG in the Overstrand area and is an agency for Oryx Energies who is one of Africa's largest and longest-established independent providers of oil and gas products across sub-Saharan Africa.
- ❖ There is a high demand for LPG for households as a result of unpredictable power outages and suppliers are therefore experiencing an LPG supply shortage.
- ❖ Normally refilled gas cylinders are obtained from a depot in Cape Town. Gas cylinders of 9kg, 19kg and 48kg may legally only be filled at approved LPG bulk depots. It has thus become an urgency to accommodate a bulk LPG vessel in the area for the refilling of gas cylinders.
- ❖ No sales of the gas cylinders to the public will take place from the property since the site will be used as a filling and distribution depot to gas agencies from where it is sold to the public.
- ❖ A bulk storage tank of 45m<sup>3</sup> is proposed, as well as the storage of LPG cylinders varying in size from 9kg to 48kg with a total size of 20m<sup>3</sup>.
- ❖ Cognisance must be taken of the fact that a service station is a primary right on the property and MHR Consultants prepared a risk assessment taking the following into consideration:
  - LPG is not a noxious gas.
  - It is not poisonous.
  - It is odourless and must be chemically scented to be detected.
  - It is clean burning and not a greenhouse gas.
  - The retailing of LPG is considered the same as that of petrol and diesel.
  - LPG is classified as a Class 1 flammable substance, the same as petrol.
  - LPG is a hazardous substance similar to petrol and diesel, but not a noxious substance.
  - Bulk LPG vessels of 45m<sup>3</sup> and more are a common occurrence at hospitals and shopping centres across the country.
  - A service station is a primary right in terms of the zoning of the property for the retailing of fuel.

With the above information it is clear that LPG compares well with the storage of fuel that falls within the ambit of the primary rights of the property.

- ❖ The proposed bulk storage vessel is small in relation to bulk fuel vessels of service stations since most service stations make use of 3 to 4 bulk fuel vessels each holding approximately 23.5m<sup>3</sup> with a total holding capacity from ±67.5m<sup>3</sup> to 90m<sup>3</sup>. The single bulk storage vessel of 45m<sup>3</sup> and together with the 20m<sup>3</sup> refilled gas cylinders combined are smaller than the quantity of fuel that could be stored on the site if the site was to be utilised as a service station.

- ❖ The risk assessment concludes that the proposed installation is a low risk installation and acceptable for this industrial area and the client has confirmed that all regulations and mitigating measures as set out in the risk assessment will be complied with to ensure the safety of personnel, surrounding landowners, and the public.
- ❖ A site development plan was drawn up by Petro Struct & Design that was endorsed by Profire Consulting (Pty) as a Fire Protection Plan.
- ❖ The off-loading and on-loading bay will be at close proximity of the southern boundary of the erf and Argon Road. It is easily accessible to the LPG tankers trucks as indicated on the SDP that will be used to fill the bulk storage LPG vessel that will in turn be used to fill the gas cylinders. The loading area is also easily accessible for smaller delivery vehicles that distributes gas cylinders to gas agencies in the area. The tanker loading bay's access is supported by Oryx Energies.
- ❖ The position of the bulk storage vessel is proposed 5m from the southern lateral boundary and 5m from the western rear boundary of the property. A fire safety wall will be constructed  $\pm 4$ m away from the boundaries around the bulk storage vessel. The fire wall will be 8.5m and 16.3m respectively along the southern and western sections around the storage vessel. The fire wall will be  $\pm 2.850$ m high being the same height as the storage vessel. Further safety measures such as pyro-coating the bulk vessel will be put in place.
- ❖ The filling shed will be positioned centrally on the site and will be  $\pm 3.75$ m X 6.40m that constitutes  $\pm 24$ m<sup>2</sup> in extent. The filling shed will be  $\pm 2.5$ m in height and will be used for the filling of LPG gas cylinders.
- ❖ The empty cylinder storage area will be situated to the north of the filling shed and will be 68.4m<sup>2</sup> in extent and will be on top of a concrete slab from where it will be transferred to the filling shed and when filled to the full cylinder storage area.
- ❖ The full cylinder storage area will be centrally located close to Argon Street that is 104.52m<sup>2</sup> in extent from where it will be dispatched.
- ❖ One of the shipping containers on site will be refurbished and upgraded to be used as a site office.
- ❖ The proposal will not be in contrast with the existing land use tendencies of the area.
- ❖ Two 6m sliding gates are proposed at the northern and eastern corners of the street boundary which is a requirement in terms of legislation for these types of installations.
- ❖ The site will generate little traffic since the public will not be allowed to purchase full gas cylinders at the site.
- ❖ It is anticipated that the bulk vessel will be filled once a week which process takes  $\pm 1$  to 1½ hours.
- ❖ Parking will comply with the Scheme Regulations. The street boundary wall is actually located 7.6m from the street boundary that provides ample space for three parking bays.
- ❖ The property is already serviced, and no additional services are required for the depot.
- ❖ There are no restrictive conditions in the title deed of the property that prohibits the proposed use.
- ❖ In terms of the SDF the property is earmarked for industrial purposes and the industrial component of the property will be retained once the consent use application is concluded.
- ❖ No densification is proposed in terms of the Growth Management Strategy.
- ❖ The property is not situated in the Heritage Overlay Zone and is not earmarked for heritage conservation purposes.

- ❖ The property is not associated with any important persons, groups, events or activities. It also has no association with the history of slavery and is not used for living heritage.
- ❖ The proposal does not trigger any activities in terms of NEMA. Listed activities are only triggered once the storage and handling of dangerous goods exceeds a combined capacity of 80m<sup>3</sup> or more. The combined capacity of the bulk vessel and filled cylinders is 65m<sup>3</sup>.
- ❖ The proposal is in line with the planning principles as set out in SPLUMA and LUPA.

#### 5. ADMINISTRATIVE COMPLIANCE

Methods of advertising		Date published	Closing date for comments
Press	Yes	9 June 2021	16 July 2021
Notices	Yes	11 June 2021	16 July 2021
Internal Departments	Yes	9 June 2021	16 July 2021
Ward councillor	Yes	9 June 2021	16 July 2021
Total comments	<b>EIGHT</b>		
Total letters of support	<b>NONE</b>		
Was public participation undertaken in accordance with Section 45 - 49 of the Proposed Draft By-Law on Municipal Land Use Planning?			<b>Yes</b>
Was the application processed correctly (if no, elaborate below):			<b>Yes</b>
Is the proposal consistent with the principles referred to in Chapter 2 of SPLUMA and Chapter VI of LUPA? (can be elaborated further below)			<b>Yes</b>

#### 6. SUMMARY OF COMMENTS FROM ORGANS OF STATE AND/OR MUNICIPAL DEPARTMENTS

Name	Date received	Summary of comments
Building Department	09/06/2021	No objection. Building plan applications to comply with all applicable law.
Fire Services	14/06/2021	The Fire Department has no objection subject to compliance with the provisions of SANS 10400 A: 2016, 10400-T: 2020, 10400-W and the By-Law Relating to Community Fire Safety.
Department of Environmental Affairs and Development Planning: <i>Development Management</i>	08/07/2021	The proposal is a low risk installation acceptable for this industrial area. (See full comments attached as Annexure F).
Department of Environmental Affairs and	09/07/2021	The proposed LPG depot with a maximum storage capacity of 65m <sup>3</sup> on an industrial erf located within the urban area of Sandbaai

Development Planning: <i>Environmental Impact Management Services</i>		does not trigger any listed activities and environmental authorisation is therefore not required. (See full comments attached as Annexure G).
Senior Manager: Fire and Emergency Services, Disaster Management and Security Services	20/12/2021	Attached as Annexure H.
Manager: Engineering Management	20/12/2021	Attached as Annexure I.
Engineering Services	29/06/2021	Attached as Annexure J.

## 7. SUMMARY OF COMMENTS RECEIVED DURING PUBLIC PARTICIPATION

It should be noted that notices were served on property owners within a radius of roughly 200m around the subject property. A total of 67 notices were served, that includes surrounding property owners, the Hermanus Business Park Owners Association, the Sandbaai Ratepayers Association, as well as state departments. The application was also advertised in a local newspaper (The Village News). It is therefore evident that a proper public participation process has been followed.

Four notices from surrounding property owners were not collected at the post office and returned to the Municipality. See aerial extract directly below indicating the surrounding landowners (highlighted in yellow) who commented on the application. The application property is highlighted in blue.



Comments/objections were received from the following persons/landowners:

- ❖ SG Clark, Erf 2328, Mooizicht Gardens
- ❖ C Swart on behalf of Die Christo Swart Familie Trust the owners of Erven 1794 and 2300, Sandbaai industrial
- ❖ Hermanus Business Park Owners Association
- ❖ P Hendrikz the owner of two sectional title units on Erf 1765, Sandbaai industrial
- ❖ M Kleynhans, Erven 1764 and 2163, Sandbaai industrial
- ❖ SJ Mercer, Erf 2320, Mooizicht Gardens
- ❖ EC Pool, Erf 1780, Sandbaai industrial
- ❖ IP van der Westhuizen, Erf 2319, Mooizicht Gardens

**Prior to addressing the points of comments received during the public participation process, the applicant in its introductory on its response to the comments/objections proposed an alternative bulk vessel installation which is summarised as follows:**

- The operator of the proposed bulk gas depot decided to introduce more safety measurements even though the Municipality's Fire Department supports the application in its current format.
- The layout remains the same, but instead of an above ground installation of the bulk tank, a mounded/buried bulk gas vessel is proposed above ground on top of a 100mm concrete slab, enclosed with terraforce retaining blocks of which the void surrounding the tank and the terraforce blocks will be filled with sand. A mounded installation will have the same effect as an underground tank.
- The new proposal will lower risks significantly even though the submitted proposal is found to be an acceptable low risk installation in terms of the risk assessment. The risk assessment has been amended to make provision for a mounded installation. The amended risk assessment is attached as Annexure K.
- The following information from MHR Consultants who prepared the amended risk assessment will have to be taken into consideration:
  - LPG is not a noxious gas.
  - It is not poisonous.
  - It is odourless and must be chemically scented to be detected.
  - It is clean burning and not a greenhouse gas.
  - The retailing of LPG is considered the same as that of petrol and diesel.
  - LPG is classified as a Class 1 flammable substance, the same as petrol.
  - LPG is a hazardous substance similar to petrol and diesel, but not a noxious substance.
  - Bulk LPG vessels of 45m<sup>3</sup> and more are a common occurrence at hospitals and shopping centres across the country.
  - A service station is a primary right in terms of the zoning of the property for the retailing of fuel.
  - A mounded tank cannot BLEVE (Boiling Liquid Expanding Vapor Explosion). (BLEVE). The failure of a closed container as a result of over pressurization caused by an external heat source. A major failure of a closed liquid container into two or more pieces when the temperature of the liquid is well above its boiling point at normal atmospheric pressure.

- With reference to the above information and the classification of LPG it is clear that it compares well with the storage of fuel (petrol) that falls within the ambit of the primary right under and Industrial Zone 1 zoning defined as a service station.

**Due to the majority of the points of comments/objections being similar and due to some comments/objections being comprehensive, only the main points of the comments are addressed. It should be noted that the applicant's responses to the comment are not necessarily addressed verbatim:**

Point 1 of comment

**Safety: A 45m<sup>3</sup> tank above ground next to residential properties for purposing of refilling and storage of filled gas cylinders. There is no limitation on the quantity of storage.**

Response from applicant

There is a limitation on storage capacity as stated in the motivation report and risk assessment. A bulk storage tank of 45m<sup>3</sup> LPG and a storage capacity of 20m<sup>3</sup> for storage is being applied for.

Response from town planner

The applicant's response is factual, and the commenter evidently did not familiarise itself with the contents of the documentation that accompanied the notice prior to making such a statement. Further, it is clearly stated in the public notice and media advertisement that the full application is open to inspection for the public at the Planning Department of the Municipality.

Point 2 of comment

**Safety: Explosion and Fire Prevention Plan – is there one available?**

Response from applicant

A Fire Protection Plan / Emergency Plan has been compiled by Mr J Schoeman of Profire Consulting that accompanies the risk assessment.

The Municipality's Fire Department has no objection to the proposal, subject to compliance with the relevant Parts of SANS and the By-Law Relating to Community Fire Safety.

Response from town planner

Applicant's response is not fully agreed with. A Fire Protection Plan (attached as Annexure L) accompanies the application, but not an Emergency Evacuation Plan. The Fire Protection Plan only has relevance to the placement of fire extinguish equipment on the property as required by the Fire Department. It is not an Emergency Plan per say and Fire Services' positive comment is only based on the Fire Protection Plan that is site specific and not on an Emergency Plan.

Point 3 of comment**Safety: Gas leaking prevention plan – is one available?**Response from applicant

There is no gas leaking detector since gas is transferred in an enclosed environment. The bulk vessel however does have safety measures for emergency shut offs on all connection valves from the tanker truck to the bulk vessel.

Response from town planner

Fire Services did take the above into consideration when the Fire Safety Plan was evaluated.

Point 4 of comment**Was a risk assessment undertaken especially with regard to the abutting residential development?**Response from applicant

A risk assessment was conducted by MHR Consultants in accordance with international standards which assessment accompanied the application. The assessment concluded that the installation is of low risk. The owner of the depot confirmed that it will conform to all legal requirements to guarantee the safety of its personnel, surrounding landowners and the public. Also refer to the revised risk assessment to further lessen any risks by proposing the installing a mounded bulk vessel instead of the above ground bulk vessel.

Response from town planner

It is factual that a risk assessment (attached as Annexure M) indeed accompanied the application and that an amended risk assessment (attached as Annexure K) was submitted at a later stage of the application for a mounded bulk vessel installation to further enhance safety measurements. The impacts of the alternative bulk vessel will be responded further on in this submission.

Point 5 of comment**Safety: Previous application for indoor shooting range – potential misfire and firearm misuse.**Response from applicant

An indoor shooting range has strict rules and regulations which all members and visitors must comply with. All firearm owners must obtain a competency certificate to own a firearm. An indoor shooting range must guarantee that all bullets be contained within the shooting range as a safety measurement that includes stray bullets.

An indoor shooting range will not pose a threat to the proposed LPG facility. The risk has been greatly reduced by changing the above ground tank to a mounded installation.

It must be emphasized that the shooting range is an indoor shooting range of which the discharge of firearms will only occur indoors.

Response from town planner

Although the applicant's response is agreed with it must be noted that the application for the indoor shooting range within the building on the adjacent Erf 1769 must still be considered. Thus, no further comment is offered on this point of comment.

Point 6 of comment

**Health and safety: Where are the guarantee that no noxious fumes will be released into the outside air and that adjoining residents will not be exposed to inhalation of lead or other noxious fumes from propellant gasses? Risk Assessment?**

Response from applicant

LPG is non-toxic. When the bulk tank is filled it takes place in a closed environment and when the filling hose of the filler tanker is connected to the tank it is secured to the tank by holding valves and it is opened when the LPG is pumped into the tank. Once the process is completed the valves are closed and the filling hose is disconnected. The same process applies when the LPG cylinders are filled, thus always in an enclosed environment and the LPG does not escape. When LPG is inhaled in excessive amounts it can induce headaches and dizziness. No excessive amounts of fumes are released during the filling of the bulk tank or the filling and storage of LPG cylinders.

Response from town planner

Author is not an expert in the field and can therefore not comment whether LPG is noxious or not, or if any fumes will be released at the depot or not. It should be noted that the Fire Services do not oppose the application subject to compliance with the provisions of SANS 10400 A: 2016, 10400-T: 2020, 10400-W and the By-Law Relating to Community Fire Safety. The District Health Department was also approached for comment, but it did not provide any comment and could not be contacted at the time of compiling of this submission. It is however the opinion that sufficient information and documentation is available to make a decision on the application.

It is important to note that the risk assessment was conducted by a well renowned company (Major Hazard Risk Consultants CC) that the Department of Employment and Labour registered as an Approved Inspection Authority: Type A, to conduct Major Hazard Installation Risk Assessments in terms of the Major Hazard Installation Regulations. The company's certificate number is CI MHI 0007 that is valid until the 20<sup>th</sup> of January 2025. The certificate forms part of the risk assessment attached as Annexure M. The company's references are as follows:

- "Risk Analysis and Risk Policy in the Netherlands and the EEC."
- "Methods for Determining and Processing Probabilities." (Red Book)
- "Methods for the Calculation of Physical Effects." (Yellow Book)
- "Methods for the Determination of Possible Damage." (Green Book)
- "Guidelines for Quantitative Risk Assessment." (Purple Book)
- "Offsite Consequence Analysis: Risk Management Programme Guidance."

- “Risk Criteria for Land Use Planning in the Vicinity of Major Hazards”, Health and Safety Executive, HMSO.
- “Climate of South Africa: Climate Statistics up to 1984.”
- “Reference Manual Bevi Risk Assessments Version 3.2.”
- “Planning advice for developments near hazardous developments.”
- “Handbook of Scenarios for Assessing Major Chemical Accident Risks.”
- “Distance Table Ammonia Refrigeration.”

In view of the above the competency of the safety assessment consultants is not doubted, as well as the safety assessment compiled by the consultants. However, the Municipality on the other hand has a responsibility towards the safety of its residents that cannot be gambled with. The latter will however be dealt with further in the desirability of the proposal in Paragraph 11 of this submission.

#### Point 7 of comment

**Environmental impact study: Has it been conducted bearing in mind the nearby residential properties?**

#### Response from applicant

No study has been conducted since NEMA only requires such study when the storage facilities for sites hold more than 80m<sup>3</sup>.

#### Response from town planner

Refer to the attached Annexure G. The Department of Environmental Affairs and Development Planning: *Environmental Impact Management Services* stated that the proposed LPG depot with a maximum capacity of 65m<sup>3</sup> on an industrial erf within the urban area of Sandbaai, does not trigger any listed activities in terms of the NEMA EIA Regulations and environmental authorisation is therefore not required. In other words, an environmental impact assessment is not required for the proposal.

#### Point 8 of comment

**Devaluation of property: Potential devaluation of Mooizicht properties due to high danger of gas storage and filling facility. Leak, fire and explosive potential.**

#### Response from applicant

The business park development was established well before Mooizicht Gardens and the developer and subsequent buyers of the properties within the development knew that they were buying property next to an established industrial area. Thus, these erven were sold at competitive prices that were lower than similar townhouse erven in the Sandbaai west area. Cognisance must be taken of the fact that the Hermanus Business Park has a zoning of Industrial Zone 1: General Industry.

The following land uses can be established on any of these industrial erven without having to go through an application process for consent use:

*“industry, agricultural industry, builder’s yard, caretaker’s accommodation, factory shop, funeral parlour, heavy vehicle service station, industrial café (subject to the*

*provisions of Chapter 16.10), motor repair garage, service trade, service station, transmission apparatus (subject to the provisions of Chapter 16.10), transport use, utility services, warehouse and workshop.”*

Taking the primary and consent uses into consideration versus the proposal, it is very clear that there are other land uses that will have a greater impact on land values than the proposed land use.

It is also worth to mention that the property was formerly used as a recycling plant where noisy industrial equipment was moved, sorted, as well as the compacting of recycling material. The operation made use of old shipping containers stacked on top of each other. An operation like this has a greater impact on property values than what is proposed. Applicant's client has agreed that the shipping containers will be removed, and the site will be developed in accordance with the architectural guidelines of the Hermanus Business Park.

The risk assessment concluded that the proposal is of low risk and acceptable for the placement in the area taking the existing surrounding land uses into consideration. As previously explained the client continued to investigate safer alternatives by changing the above ground tank to a mounded installation. Subsequently the risk has been significantly reduced and is still classified as a low-risk installation.

All precautionary measures will be put in place as per the risk assessment, the fire-and emergency plans, and all other regulations that govern the proposed facility will be adhered to. The public will not have access to the facility to purchase or refill LPG cylinders. The activities will therefore take place on a secured site. The bulk tank will be mounded and will not be visible from the street.

The LPG facility will be an asset to the Overstrand area since it will now be able to dispatch LPG cylinders locally.

#### Response from town planner

The response from the applicant that the business park development was established well before Mooizicht Gardens, is factual, but on the other hand it is also factual that the application under discussion was submitted well after the adjacent residential complex was approved and nearly developed to its full capacity which fact the applicant should also have taken into consideration. The bulk of the applicant's response can arguably be agreed with especially with regard to its references of the findings contained within the risk assessment. The applicant's response that the former use of the property as a recycling plant where noisy industrial equipment was moved, sorted, as well as the compacting of recycling material has a greater impact on property values than what is proposed, is noted. However, whether it will have a negative impact on property values or not, neither the commenter nor the applicant provided substantiated proof thereof and no further comment can be offered on this point.

#### Point 9 of comment

**The storage of 60m<sup>3</sup> liquid gases can be very dangerous for the owners of surrounding erven and the neighbourhood adjacent to Erf 2740.**

Response from applicant

The risks have been dealt with in detail in the risk assessment and the revised risk assessment for a mounded installation. The proposal is classified as a low-risk installation and there is a 1:30 000 000 change of an explosion taking place and if it should happen, it will be contained within a space of 10-15 m of the site that will not affect the surrounding areas.

Response from town planner

It should be mentioned that author and the Senior Manager of the Planning Department conducted a site visit at the premises of Totalgaz in Blackheath industrial area during June 2021 where a bulk gas filling depot is being operated from. Although the two mounded bulk storage vessels on the property have approximately five times the bulk storage capacity as the proposal under discussion the following can be observed from the extract of City of Cape Town's GIS aerial below:

- The property is very large in size.
- The property is not adjacent to any residential properties.
- The layout is designed in such a manner that bulk tankers trucks can easily do a U-turn manoeuvre on the property.



Discussions were also held with the operational manager of the plant and the risk assessment was presented to him for scrutiny. He indicated that the consultants who compiled the risk assessment are renowned and trusted consultants in the gas industry.

However, the following response of author is considered very important with regard to the proposed alternative mounded installation that should have a much lower risk impact in terms of the amended risk assessment than the above ground installation, but more specifically the contents of the amended risk assessment. Refer to pages 38 – 49 of the amended risk assessment (Annexure K). The content of these pages and illustrations addresses the various types of possible incidents that can happen on the site with a mounded bulk vessel, being:

- Jet fires at the proposed cylinder filling and storage area.
- Jet fires at the proposed bulk vessel.
- Loading hose shear jet fire at the proposed truck loading area.
- Flash fire from a hose shear at the proposed tanker point.
- Flash fire from a catastrophic leak at the bulk vessel.
- Vapour cloud explosion from a catastrophic failure of the bulk vessel.
- Vapour cloud explosion of a 48kg LPG cylinder at the storage area.
- Vapour cloud explosion from a catastrophic failure of the proposed LPG tanker truck area.
- A 48kg LPG cylinder Boiling Liquid Expanding Vapour Explosion (BLEVE).
- LPG tanker truck BLEVE.

It is evident from the amended risk assessment (pages 34 – 49) that the majority of possible incidents will have low to severe impacts beyond the boundaries of the property. It is therefore the opinion that regardless of whether it is a mounded installation, or an above ground installation, there still is risks of low to severe incidents that can occur on the site and therefore it is still regarded as undesirable for the specific site due to the close location of the plant to surrounding erven and especially the direct adjacent medium density residential development.

#### Point 10 of comment

**It is yet another deviation from the original intent of the Hermanus Business Park. The concept for the development was an attractive Business Park and not an industrial hub. The proposal gives the impression of an eyesore that does not belong to the Business Park. The drawings for the layout of the proposed structures most certainly do not comply with the requirements of the Design Guide and for that reason I would most definitely not condone approval of this application.**

#### Response from applicant

The client agreed that the new structures will be designed to comply with the Design Guide of the Business Park. The Business Park consists of Industrial Zone 1 erven which are limited in supply in the Overstrand Municipal area. Subsequently the Business Park can be classified as an industrial hub because of its primary land uses.

#### Response from town planner

(Only the main points of comment have been summarized, as set out above, since the other points of comment by the specific commenter has no relevance to the essence of the application at all.)

**It is important that the following information be conveyed prior to responding on the above points of comment:**

The commenter was the chairperson and simultaneously served as the development architect of the Management Committee of the Owners' Association of the Business Park but resigned earlier in July 2021. The managing agents who were appointed by the Management Committee confirmed the latter in writing on 12 August 2021 (attached as Annexure N) in respect of a different application on a property within the Hermanus Business Park.

In terms of paragraph 5.1 of the Business Park's constitution the Management Committee must consist of a minimum of three members/trustees elected at an Annual General Meeting who will individually serve as the Chairperson, Secretary and Treasurer of the Management Committee. The Management Committee must also appoint an Architectural Consultant to assist the Management Committee in exercising its powers, as well as to recommend waivers from its Design Guide, which consultant does not form part of the Management Committee. In the latter regards author's opinion is strengthened from the extract of paragraph 1.5 of the Design Guide attached as Annexure O, as well paragraph 5.10.9 of the extract of the association's constitution attached as Annexure P. (A complete copy of the association's combined constitution and Design Guide is attached as Annexure Q.)

Since the resignation of the chairperson, the Management Committee now consists of two "non-functioning" trustees with no architectural consultant that effectively makes the Management Committee dis-functional in terms of its constitution. When it was still functional the Management Committee appointed Havenga Makelaars as the owners' association's managing agents with certain mandates that were not properly disclosed on when requested. The question now arises whether the managing agents were actually approved by the majority of the members of the Association at an Annual General Meeting or Special Meeting and what its mandate is.

The above comment can therefore not be regarded as the formal comment of the Management Committee of the association but that of an individual person. The "remaining" two trustees cannot function legally in terms of the association's constitution and design guide. As mentioned above the Management Committee is currently dis-functional and the said comments must therefore also be regarded as an individual comment and not the formal comment of the Management Committee of the association.

The above matter was taken up with Legal Services of the Municipality for a legal opinion regarding other applications within the Business Park that is currently being processed. It is an overall opinion with regard to applications within developments with homeowners' associations. The comments from Legal Services are summarised as follows and must be read as a general opinion of applications in this respect, as well as the application under consideration (attached as Annexure R):

(Translated from Afrikaans to English)

- *Despite the fact that the Association came into effect in terms of its constitution when the first property was transferred, the association had to elect the Management Committee that must consist of three members of which two members forms a quorum.*

- *The Management Committee currently consists of two members and can therefore not decide since a third member has not been elected and for all practical purposes there is no constitutionally established Management Committee.*
- *The Management Committee is vested in the management and administration of the owners' association.*
- *The objection received is therefor not from the Management Committee but from an individual member. To be constituted as an objection from the Management Committee there should have been three members and two members had to vote against the application or in favour of the application with reasons.*
- *Section 32 of the By-Law makes provision that the Municipality may instruct the owners association to reconstitute itself in terms of the Community Schemes Ombud Services Act, 2011 (CSOSA), but if it will carry any weight is doubted since only the Ombud Services has the authority to enforce its law. The Municipality will most definitely not apply Sections 32(1)(b) and (c) of the By-Law since it would create a massive precedent and in the same breath the Municipality will not lay a complaint at the Ombud Services since the Owners Association / Management Committee does not carry out its functions.*

Section 32 read as follows:

**“(32. Owners’ association ceases to function**

- (1) *If an owners’ association ceases to function or carry out its obligations, the Municipality may –*
  - a) *.....*
  - b) *In terms of section 16(2)(p) for appropriate action by the municipality to rectify a failure of the owners association to meet any of its obligations in respect of the control over or maintenance of services contemplated in subsection 29(b) or*
  - c) *To the High Court to appoint an administrator who must exercise the powers of the owners association to the exclusion of the owner’s association.”)*
- *Section 43 of the By-Law cannot be laid in front of the applicant's door if the Owners Association or Management Committee does not carry out its functions, but the problem remains that the Municipality indeed needs their input to make a legally defensible decision.*

Section 43 read as follows:

**“43. Additional information**

- (1) *The applicant must provide the Municipality with the information or documentation required for the completion of the application within 30 days of the request there for or within the further period agreed to between the applicant and the Municipality.*
- (2) *The Municipality may refuse to consider the application if the applicant fails to provide the information within the timeframes contemplated in Subsection (1).*
- (3) *The Municipality must notify the applicant in writing of the refusal to consider the application and must close the application.*
- (4) *An applicant has no right of appeal to the Appeal Authority in respect of a decision contemplated in Subsection (3) to refuse to consider the application.*

- (5) *If an applicant wishes to continue with an application that the Municipality refused to consider under Subsection (3), the applicant must make a fresh application and pay the applicable application fees."*
- *The Planning Department's opinion not to decide on the application is agreed with since such decision can be justified in terms of the By-Law. The applicant has the right to approach the Ombud Services with a complaint against the Owners Association / Management Committee.*
  - *The Municipality will not get involved in a dispute on behalf of the applicant since CSOSA determines that only one of the parties may be directly involved in a dispute with the Property Owners Association / Management Committee and such complainant does not have to have any connection with the Owners Association or the Scheme which represents it.*
  - *The Municipality must obtain substantiated feedback from the Owners Association in the form of its consent with or without proposed conditions or refusal with reasons since an objection without reasons are pointless.*
  - *The applicant must be informed that the Municipality does not have the powers to simply make a decision without the inputs of the legal elected committee since it is not the duty of the Municipality to "fight" the applicant's "fight".*
  - *The Municipality **may not ignore a constitution of an owner's association and take a decision without its inputs** since it would be **an illegal administrative act** by the Municipality **that will probably trigger the Promotion of Administrative Justice Act (PAJA)** and everything that goes along with it. Author took this point telephonically up with Mr A Olivier of Legal Services to further elaborate thereon. Mr Olivier further elaborated by stating that should a party (i.e., the owner's association) take the matter up in the higher court to set aside a decision taken by the Municipality without such an association's inputs, **it could lead to unwarranted high financial risks for the Municipality.***

The following are extracts (not direct quotes) from the website of the Department of Justice and Constitutional Development in where it describes the role of PAJA:

*What is the Promotion of Administrative Justice Act (PAJA).?*

*The PAJA is the law passed to "give effect" to the right to just administrative action in the Bill of Rights. This says everyone has the right:*

- *To fair, lawful and reasonable administrative action (own underlining); and*
- *To reasons for administrative action that affects them negatively.*
- *It also makes sure that decisions are taken properly, and it makes sure you can challenge decisions that were not taken properly (own underlining).*
- *Administrators must follow fair procedures when making decisions.*

Point 11 of comment

**It is not a standard LPG outlet such as Hermanus Gas or the Gas Hub but an LPG depot with a filling plant. LP Gas is a heavy gas which requires ventilation whilst the premises is contained within four boundary walls that may result in gas build up on the premises with the only ventilation onto Argon Street. No provision is made for cross ventilation making it a super risky premises. The bulk tank equates to around 500 individual 48kg LPG cylinders that is about**

**shoulder height and in the event of a catastrophic explosion numerous cylinders might be distributed all over the area by the force of the explosion and there will not be much left of the surrounding area.**

Response from applicant

The proposal does not constitute a processing plant since LPG is delivered by specialised tanker trucks that fills the bulk tank on the site. The site is suitable to make provision for the proposed bulk storage, filling and cylinder storage and being outside has sufficient ventilation that is well within the storage regulations and poses no threat. The risk involvement is covered in detail in the risk assessment.

Response from town planner

The point of comment is noted, as well as the applicant's response thereto. Author will further comment thereon in the evaluation on the desirability of the application in this submission.

Point 12 of comment

**The LPG delivery truck must reverse into the premises which were the exact cause of the gas explosion in Worcester some time ago. It is not sure what the regulations state about reversing dangerous cargo onto sites and my logic tells me that reversing into a site should not be allowed.**

Response from applicant

There are no regulations as to the reversing of a tanker truck into the site. It is also safer for the tanker truck to leave the site moving forward. Both Oryx and Unitrans, the two bulk LPG transporters, have inspected the site and the reversing of the truck has been approved by them and Oryx provided the following reasons why they are comfortable having the tanker reversing into the site:

- The bulk tanker trucks are compliant in all legal aspects for transporting dangerous goods to customer sites.
- Personnel on these trucks are well trained and have all the required licenses to operate these tankers as well as its goods.
- They are trained in all aspects of safety and have a full understanding of all the safety precautions to be followed.
- A fellow driver assistant is available to guide truck driver when reversing is taking place.
- The 3<sup>rd</sup> party transporter needs to do their own Journey Risk Assessment when a site is ready to receive such tanker truck. A full report on this assessment will be generated by the transport company and such report will be available to all.

The access road is a cul-de-sac that does not carry much traffic and the filling of the bulk tank will only take place after general working hours and most probably once a week.

Response from town planner

The first part of the applicant's response is agreed with. Most heavy-duty trucks in the hauling industry reverse into delivery sites that are common practice and can be

observed daily. When reversing into a site there are road marking equipment warning vehicle drivers and the public to be cautious. It is also factual and much safer to exit a delivery site headfirst way (i.e., 1<sup>st</sup> gear), but the most desirable access and egress to and from this site would be a separate entrance and egress point for the bulk tanker trucks or a U-turn manoeuvre as is the case at Totalgaz's plant that can be observed on the aerial photo in point 9 above. It is however not the case with this proposal since provision cannot be made for an individual entrance and egress points or a U-turn manoeuvre for the tanker trucks since the extent of the property just does not allow for it. A much scaled down enterprise would most probably allow for it.

The response that the property is situated in a cul-de-sac and does not carry much traffic is totally disagreed with. It indeed carries vehicle traffic than stated and also a lot of pedestrian traffic from surrounding communities that can be observed daily. It is also in close proximity with the Bergsig Street intersection. The Senior Manager: Fire and Emergency Services, Disaster Management & Security Services in its comment (Annexure H) confirms that the road is quite busy during season- and festival times and especially with the influx of visitors to Hermanus that increases the population with up to 50%.

It is the opinion that huge concern should be placed on what the consequences would be for the residents and owners of surrounding properties and the public within the cul-de-sac section of the road should a major incident occur when the bulker truck reverses into the site. With potentially huge fires than can happen these people would be completely isolated from the rest of the area that could lead to many injuries and even fatalities. In this regard it must be stated that no Emergency Evacuation Plan of any format was submitted by the applicant for the area surrounding the subject property in case of a disastrous event. Further, the above Senior Manager also stated that its Fire Brigade are not yet equipped to handle such incidents. The flow of water and the water pressure of the water hydrant pipes in the immediate area are also questionable since it was not tested for compliance in the event of a major incident at the site and the subsequent surrounding area.

Further, with regard to the Worcester bulk tanker truck explosion addressed under point 12 above it must be mentioned that there is substantiated proof of widespread damage to buildings on surrounding properties where the incident occurred, and it cannot be guaranteed that it will not happen in case of a major incident at the proposed plant.

It is also not agreed with that the filling of the bulk vessel will only occur after general working hours and once a week since the applicant' client cannot guarantee such a schedule. It is the opinion that the influx of tourists can at times result in an over-demand for LPG cylinders at households, businesses, restaurants, and accommodation establishments resulting in the bulk tank be refilled more frequently, as well as the filling of the gas cylinders. It would further grow into a nuisance for the adjacent resident when gas cylinders are moved around after hours on the site. In addition, in terms of the SANS requirements alternative heating methods must be provided for new dwellings or additions of certain extents on a property or other type of buildings and most landowners prefer gas since it is much cheaper than i.e., solar heating.

The applicant indicates in its application that there is a 1:30 000 000 chance of a Boiling Liquid Expanding Vapour Explosion (BLEVE) which is the most powerful incident that can happen at the plant. For this reason, it is argued that the Municipality cannot gamble with the lives of surrounding property owners or the community at large, since there indeed exist a chance of a BLEVE occurring

regardless of how low the chance may be. **Who will then take the responsibility for people being injured or possible fatalities, as well as damage to nearby structures?** The risk assessment indicates that plant would be of low impact but does not guarantee that it would have no impact at all.

The Hermanus Business Park is a unique and well-planned industrial hub with a firm and harmonious architectural style amidst residential developments. It was further developed with the idea to serve as a soft industrial development hub that does not affect or impact on the safety of surrounding industrial property owners or residential property owners. The Business Park has almost been developed to its full capacity over the years and has drawn more and more vehicle- and pedestrian traffic from surrounding communities to the area on a daily basis, thus making the bulk filling sites located even more undesirable. In addition, the applicant did not demonstrate that it investigated alternatives sites in the broader Hermanus area that is more desirable for such a plant.

Point 13 of comment

**The reversing of the LPG delivery truck into the premises is exactly the cause of the gas explosion in Worcester some time ago and the reversing into the site should not be allowed.**

Response from applicant

The Worcester gas explosion has no similarities with the proposed site operation. The privately owned tanker contained low grade butane gas and was non-compliant for the transportation thereof. The exposed valve behind the tanker was damaged whilst reversing and should not have been exposed. The Oryx and Unitrans tankers are legal and compliant and do not have exposed valves or pipes. Litigation of the Worcester gas explosion is pending.

Response from town planner

Articles in the media of the Worcester gas explosion verifies the response of the applicant, but as stated the matter is still under litigation and the facts of the incident still need to be verified during the litigation process, thus no further comment on the reasons for the explosion of the tanker. It should however be mentioned that from media articles there is substantiated proof of widespread damage to buildings on surrounding properties where the incident occurred.

Point 14 of comment

**Some Mooizicht erven adjacent to the site are still vacant and when developed will increase the residential population adjacent to the proposed development. This adjacent residential development will place a higher amount of residents' lives at risk due to the close proximity. These residents cannot and will not limit the recreational activities of braais, smoking, and outdoor fireplaces etc. The rights of the residents cannot be infringed upon as a result of the proposed development. There needs to be adequate planning from the Municipality to allow such activities to take place in areas where there is no immediate risk to the immediate population.**

Response from applicant

The property is situated within a mixed land use area that the risk assessment has taken into consideration. The risk assessment makes it clear that the proposed plant is a low-risk installation and can be accommodated at the proposed location. Further, the filling of the bulk tank and the cylinders take place within a closed environment making use of specialised valves and pipes. The property is walled off between the subject property and Mooizicht Gardens. LPG is heavier than air and there is no possibility that in the event of a gas leak that the gas will leak into the residential area and the recreational activities will not be affected.

Response from town planner

The comment has mainly been addressed in Point 12 of the above comments already and there is no need to further response on it.

Point 15 of comment

**Hermanus has experienced protest actions during which tyres, wood, shops, etc. were set alight. The recent protests actions experienced in Gauteng and Kwazulu Natal also provides guidance at the risks associated with the commodity stocked businesses being targeted and subsequently setting alight. The proposed activity thus increases the risk for the surrounding residential and small business community.**

Response from applicant

No LPG depots were targeted during the latest protests and looting sprees. The majority of lower income residents depend on LPG as a primary source for cooking, warm water and heat in general during the winter season. The proposed mounded installation is also a much safer installation than a standard above ground installation.

Response from town planner

It is agreed with the applicant that there are no known LPG depots that were targeted during these protests and looting sprees. From author's knowledge no gas cylinder agencies in the Hermanus area have been targeted in the past during protest actions, but it cannot be argued that it will never happen at some stage in future since communities get more and more frustrated throughout South Africa as a result of the poor economic climate of the country, regarding basic services, the very high unemployment rate that is presently experienced for well-known reasons. This in fact leads to more and more emotional driven protest actions occurring daily and one can therefore not guarantee that at some point LPG depots or LPG cylinder depots will not be targeted in future just for protesters to make a statement.

The applicant now proposes a mounded type of installation that accordingly has a much lower risk impact in terms of the amended risk assessment. It is however still the opinion that regardless of whether it is a mounded installation, or an above ground installation, there are still low to severe incidents that can occur on the site in terms of the amended risk assessment (see author's response in point 12 above) and therefore it is still regarded as undesirable for the specific site due to the close location of the plant to surrounding erven and especially the direct adjacent medium density residential development. As already mentioned, there is substantiated proof

of widespread damage to buildings on surrounding properties where the incident in Worcester occurred.

Point 16 of comment

**LPG by virtue of the product specification is stored in liquid form in tanks and cylinders. Once exposed to atmospheric pressure it changes its phase to a “gas” phase. The product falls into a dangerous goods category and is recorded in the UN-1075 classification with a Hazchem warning of -2A flammable gas. The risk of the operation of the facility is unacceptably high for the local community.**

Response from applicant

LPG will be contained in a pressurised tank and cylinders. The examples that accompanied the objection are not relevant to this site’s operation. Professionals were appointed to deal with all risks involved in the facility. The outcome of the risk assessment is that the facility is a low-risk installation that can be accommodated on the property.

Response from town planner

The comment has mainly already been addressed in the above responses and there is no need to further elaborate on it.

Point 17 of comment

**The proposal would by virtue of its nature result in a financial impact being passed onto the surrounding residential and industrial communities by informing its insurance companies of the nearby increased risk operation. This would lead to insurance premiums being increased as a result of the proximity of the high-risk activity.**

Response from applicant

Moozicht Gardens is located to the west of the site and was developed after the Hermanus Business Park that consists of industrial erven only and under the primary land uses fuel tanks can be constructed on site with regard to the land uses such as service station, heavy vehicle station and motor repair garage. Insurance companies would have taken these risks into consideration when calculating their premiums. Some of these primary land uses pose a similar risk for what is being applied for such as the supply of fuel. The risk assessment makes it very clear that the proposed land use is of low-risk and can be accommodated on Erf 2740 taking the current surrounding land uses into consideration.

Response from town planner

Although the applicant’s response is mainly agreed with, the landowner will without doubt also be required to submit a similar consent use application for consideration since both LPG and fuel falls within the exact same high risk category classification in terms of the risk assessments.

Point 18 of comment

**The valuation of surrounding properties would now be negatively impacted as a result of the development of a flammable substance facility with substantial volumes next to it.**

Response from applicant

Applicant indicated that its response is the same as its response in Point 8 above.

Response from town planner

Whether the installation will have a negative impact on property values or not, neither the commenter nor the applicant provided substantiated proof in this regard and therefore no further comment can be offered on this point.

Point 19 of comment

**The proposal indicates a single driveway for access and exit. The operation of such dangerous goods requires that the property has dedicated entry and exit points. The industry practise in place is to ensure that no bulk tanker reverses into the loading/offloading area due to the dangers associated with it. This is a basic requirement for bulk LPG operators and wholesalers to ensure national conformity together with local municipalities' fire departments. The site is not suitable for such an operation.**

Response from applicant

Two entrance and exit points are provided on site. The southern entrance is solely for the delivery of bulk LPG by a specialised tanker and the northern access is solely for the distribution of LPG cylinders. The statement of the objector is incorrect. The access points have been endorsed by Oryx and Unitrans. The Municipality's Fire Department supports the application in its current layout and format.

Response from town planner

It is the opinion that the applicant is confused by what the commenter actually tries to convey about access points. The commenter refers to a separate access point and a separate exit point for the tanker trucks that cannot be provided as already mentioned in the above responses.

The rest of the points of comment have already been fully addressed in the above responses and no further comment is offered in this regard.

Point 20 of comment

**The storage risk is in the region of 22 tons for the tanker truck, 22 tons for the bulk vessel and 10 tons for the full cylinders that has never been stored in such large quantities in Hermanus before. Is the local Fire Department adequately prepped to handle an emergency which might arise from this?**

Response from applicant

All precautionary measures will be imposed as per the Fire Protection Plans / Emergency Plans that were compiled by Profire Consulting. The municipal Fire Department has no objection and the conditions imposed will be adhered to. With the proposed changes to the site plan to a mounded installation further reduces the risk.

Response from town planner

The commenter's point on the storage of 22 tons for the tanker truck, 22 tons for the bulk tank and 10 tons for the filled cylinders are confusing. If the bulk tank is filled and the cylinders are filled there is no need for a 22 ton tanker truck. The point of comment therefore does not make any sense.

The rest of the points have already been addressed in the above points of comment and therefore no further comment is offered.

Point 21 of comment

**The proposed plan shows the bulk tank close to the residential boundary which is a certain flaw as the bulk tank poses the greatest risk as this is the largest pressurised vessel on site. Damage to health and property is therefore extremely high.**

Response from applicant

It has been positioned in such a way that it is accessible to the bulk tanker. As mentioned, the above ground tank that is that is already classified as a low-risk installation will be changed to a mounded installation that does not pose a risk to neighbouring properties. The risk is in fact extremely low to property damage or one's health. SANS requires that a mounded tank be at least 1 meter from a building, boundary or equipment. The site plan indicates the placement of the tank to be 5 meters from the boundary wall.

Response from town planner

The above point of comment has already been addressed thoroughly by author in the above point 12.

Point 22 of comment

**Impact on services: The plant that will store over 50 tons of flammable product would require a substantial of water supply to be compliant since it would be used frequently as part of the fire system tests as required by OHSA for supply to on-site hose reel hydrants and the tanker truck and bulk tank sprinkler systems. Residential water supply would be impacted and with the current water shortages the municipality would have to prioritise the LPG operation by sacrificing supply to residential areas during periods of shortages.**

Response from applicant

A Fire Protection Plan has already been designed and approved. The Fire Department also has no objection against the proposal since enough water can be supplied to the site in case of a fire.

Response from town planner

The Senior Manager: Fire and Emergency Services, Disaster Management & Security Services in its comment (Annexure H) confirmed that the current resources of the Fire Brigade are of concern as it does not yet comply with the minimum requirements as prescribed by the SANS 10090: Community Protection Against Fires. The Fire Brigade does not have the minimum staff, nor the specialised vehicles required to cope with a Major Hazard Installation in the event of an incident occurring.

Point 23 of comment

**Major LPG installations are situated in the Western Cape in suitable industrial areas. To address the shortages, one should consider the additional storage locations in the Hermanus area of filled cylinders which can be supplied from Cape Town at lower risk to the surrounding area.**

Response from applicant

Due to high demand of LPG for households all over the municipal area as a result of unpredictable power outages and high electricity prices, LPG suppliers experience a supply shortage. The Department of Energy has notified all the LPG supplying companies that it needs to “double” the usage of LPG in South Africa over the next 5 years due to Eskom’s inability to provide sufficient electricity. Refilled gas cylinders are obtained from a depot in Cape Town. Gas cylinders come in various sizes and may only be filled at approved LPG depots. A factor that needs to be considered is the increase in traveling costs to deliver refilled gas cylinders due to the rising petrol and diesel prices and it has now become an urgency to accommodate a bulk LPG vessel within the area where the refilling of the gas cylinders can take place to fulfil the demand at reasonable prices.

Response from town planner

The applicant’s response is agreed with, but the location of such a depot is of crucial importance and the proposed location, without demonstrating much more suitable locations as alternatives, cannot be supported since the proposed location is in a sensitive area with residential developments adjacent to it that is undesirable taking planner’s responses into consideration so far.

Point 24 of comment

**Current supply constraints are experienced as a result in bulk supply limitations as the local refineries are not currently supplying LPG to wholesalers. This has been well documented in the media. A bulk filling facility would only add to the supply chain constraints experienced.**

Response from applicant

The statement is disagreed with and the stance as per the comments under paragraph 23 above is maintained with.

Response from town planner

The commenter's statements are arguable since no substantiated proof accompanies these statements; thus, no comment can be made thereon.

Point 25 of comment

The term "noxious trade" has been regularly used in the application to have LPG linked to petrol and diesel. The properties of LPG differ from liquid fuels since LPG has its own UN number for a reason. LPG ignites faster than diesel and petrol and LPG incidents results in a rupture of pressurised vessels resulting in a catastrophic BLEVE which results in serious damage to people and properties. The reason being, that LPG is stored under pressure in specialised vessels unlike diesel and petrol. Once released to atmospheric pressure LPG expands rapidly and significantly which gives it its highly flammable risk.

Response from applicant

Cognisance is taken of the comment. The fact is that LPG, petrol and diesel are all flammable. LPG is handled within a closed environment when the bulk tank and cylinders are filled unlike diesel and petrol that is exposed to the atmosphere once a vehicle is filled with fuel. Being within a constant closed pressurised state the ignition of LPG is highly unlikely. The facility is also not accessible to the public whilst service stations are accessible to the public, thus the opinion that a service station has a greater risk of fuel accidentally ignited in comparison to the proposed LPG facility. All the relevant risks for the facility have been dealt with in detail in the risk assessment that concludes that the facility is of low-risk and can be supported.

Response from town planner

The applicant's response is agreed with, but the main factors remain unchanged being the location of the facility in an area that is regarded as not suitable for such a facility for the reasons as already mentioned in the above responses.

The definition of "noxious trade" as set out in the 2020 Land Use Scheme of the Municipality is hereby quoted:

*"**noxious trade**" means poisonous or potentially harmful trade, use or activity which, because of fumes, emissions, odours, vibrations, noise, waste products, nature of materials used, processes employed or other causes, is considered by the Municipality to be **a potential source of danger or health risk to the general public or persons in the surrounding area** (own underlining and highlighting). "noxious industry" has the same meaning;"*

Point 26 of comment

The equipment used for the handling of LPG varies significantly from the equipment used to handle petrol and diesel. LPG is stored in pressurised tanks as it is required to be stored under pressure at all times that includes the tanker truck, bulk tank and LPG cylinders.

Response from applicant

Refer to comments under paragraph 25 above.

Response from town planner

The applicant's response is noted.

Point 27 of comment

**As the owner of Erven 2163 and 1764, Sandbaai it is requested that the design guidelines be complied with at all times.**

Response from applicant

The client has agreed that the structures will be designed to comply with the architectural guidelines of the Business Park.

Response from town planner

The architectural consultant of the Management Committee of the Association can in terms of its constitution recommend waivers from the Guidelines and should the Management Committee except a recommendation it will endorse building plans submitted to it, accordingly.

Point 28 of comment

**Notice is taken that the installation compares well with the storage of fuel at a service station, but within meters from a residential area the perspective changes. The storage of fuel at a petrol station is underground and not right next to residential houses above ground. The risk assessment was not attached to the documentation supplied by the municipality. It states low-risk but definitely not no risk within meters of a residential area. The risk assessment also recognises LPG retail the same as petrol or diesel and certainly a flammable and hazardous substance. The proposal states that it will not have a negative impact on surrounding properties that I object to. Who would buy a property in close proximity of a gas refilling station, constant noise of gas containers being moved around and the potential danger of an explosion? Has the impact of this odourless "non noxious" LPG on the human body been considered?**

Response from applicant

As mentioned in our comments on the objections, our client has decided to implement a mounded installation that is similar to an underground installation further lowering the risk.

Response from town planner

The comment is based on various similar comments that have been thoroughly addressed in this submission already and no further comment is therefore offered. Refer to the author's response under point 12 above.

Point 29 of comment

**The application does not comply with the guidelines of the Business Park and requires the approval of the appointed architect. The concept of the Business Park was attractive hence my investment in the park. It is not suited for a gas supplier of a service station.**

Response from applicant

As already mentioned, our client has agreed that the containers will not be incorporated with the proposed facility. The proposed layout of the site remains the same with the exception of the above ground tank being changed to a mounded tank installation. Our client has agreed that the new structures will be designed to comply with the guidelines of the Business Park.

Response from town planner

Refer to the response on point 27 above.

Point 30 of comment

**LPG gas in its raw form is not toxic but with the processed product with additives it will most certainly be dangerous to the environment and adjacent buildings.**

Response from applicant

Refer to comments under paragraph 6 above.

Response from town planner

Commenter's points vary from that of the risk assessment and is further unsubstantiated.

Point 31 of comment

**The road towards the end is a cul-de-sac and parking space will be problematic as the larger trucks need two lanes to turn.**

Response from applicant

Refer to comments in paragraph 19 above.

Response from town planner

Refer to the responses in point 12 above, as well as the Senior Manager: Fire and Emergency Services, Disaster Management and Security Services' comment attached as Annexure H.

Point 32 of comment

**The property is too small for such a plant and too close to a residential area.**

Response from applicant

The site was inspected by Oryx and a risk assessment was done prior to the submission of the application to ascertain if the site is suitable and it was concluded that the site is suitable for the LPG facility.

Response from town planner

The comment is based on various similar comments that have been thoroughly addressed in this submission already and no further comment is therefore offered.

Point 33 of comment

**The property is situated next to a property that wants to develop a shooting range that is not a desirable idea.**

Response from applicant

Refer to comments under paragraph 5 above.

Response from town planner

The specific comment has already been addressed in point 5 above.

The remainder of the comments as set out in the applicant's response on the various comments are similar and has been addressed thoroughly by author already in the above responses and does not need further elaboration.

**8. SUMMARY OF APPLICANT'S REPLY TO OBJECTIONS**

See paragraph 7 above of this submission.

**9. MUNICIPAL ASSESSMENT OF COMMENTS**

See paragraph 7 above of this submission.

**10. MUNICIPAL PLANNING EVALUATION (REFER TO RELEVANT CONSIDERATIONS GUIDELINE)****10.1 (In)consistency with the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)**

The application is in line with the planning objectives applicable to this application.

The objectives relating to:

**Spatial Justice**

The application will not further perpetuate spatial injustices.

**Spatial sustainability**

Although the proposal will debatably be sustainable an economically viable that will eventually be to the benefit of future and current developments, it is not

regarded as a sensible placement/location for such a facility as already discussed in paragraph 7 of this submission.

#### **Efficiency**

It is the opinion that the proposed facility will not be optimally suitable for the specific area, thus the effectiveness thereof is questionable.

#### **Spatial resilience**

The application may ensure that the existing resource, land is used to its maximum in an affordable manner and in line with the Overstrand Municipality's forward planning documents, but it should be noted that although the installation will provide a necessary service to the community the risk factors must be taken into consideration, and there are indeed negative risk impacts on the immediate built environment and the community as set out in the various responses to the comments received.

#### **Good administration**

The application followed the required planning procedures to ensure that land use activity is in line with Municipal By-Laws and the public process has been followed.

#### **10.2 (In)consistency with the principles referred to in Chapter VI of the Land Use Planning Act, 2014 (Act 3 of 2014)**

Same as above.

#### **10.3 (In)consistency with the IDP/Various levels of SDF's/Applicable policies**

The proposed application is in line with the strategic documents.

#### **10.4 (In)consistency with guidelines prepared by the Provincial Minister**

Not applicable.

#### **10.5 Impact on Municipal engineering services**

The existing services are available.

#### **10.6 Outcomes of investigations/applications i.t.o other legislation**

Refer to the attached comments from the Department of Environmental Affairs and Development Planning.

#### **10.7 Existing and proposed zoning comparisons and considerations**

The Overstrand Zoning Scheme Regulations provide for the proposal as a secondary use on industrial properties, but with the closeness of residential developments make it undesirable at the proposed location.

#### **10.8 ADDITIONAL PLANNING EVALUATION FOR REMOVAL OF RESTRICTIONS**

N/A

## 11. THE DESIRABILITY OF THE PROPOSAL

The application can unfortunately not be supported due to the following reasons:

- The proposal will negatively impact on the vested rights of the owners of the adjacent residential properties.
- Although the applicant responds that the industrial area was developed well before the adjacent residential complex was developed, the applicant should on the other hand have considered the fact that its application was submitted well **after** the adjacent residential development was approved and nearly developed to its full capacity already.
- It must be noted that the legal tenant of the property who will be the owner of the bulk gas depot formally submitted building plans to the Building Department for the bulk gas depot without any pre-consultation with the Municipality. After the said building plans were formally submitted it was scrutinised by author who commented at that stage that a planning application would be required. The tenant subsequently had meetings with author during which he was informed that he should have had pre-submission consultation with the Planning Department before submitting the building plans since he would at that stage already been advised that is the opinion that the planning application would be a high-risk application. Nonetheless, the tenant still proceeded and appointed the consultant to submit the application under discussion. The tenant was therefore aware that the chances of the application being unsuccessful, weighs up more than it being successful. He was however not advised not to apply since due to any unforeseen reasons that the application may be successful, and due to the fact that the Planning Department may in any event not refuse to accept and process any applications in terms of its legislation.
- A Fire Protection Plan accompanies the application, but not an Emergency Evacuation Plan should the residents and landowners have to evacuate the area in the event of a major incident at the facility since the property is situated in a cul-de-sac that will leave people isolated in the event of such an incident. People may be injured or even killed, and damage could occur to the direct surrounding built environment - who will take responsibility in such an event? Fire Services' positive comment was purely based on the Fire Safety Plan that was submitted and not on an Emergency Evacuation Plan that did not accompany the application.
- The applicant submitted an amended risk assessment together with an alternative installation proposal at a late stage of the application process, but regardless, the opinion is still held that whether it is a mounded installation or an above ground installation there are still risks of low to severe incidents occurring on the site and therefore it is still regarded as undesirable for the specific site due to the close location of the bulk depot to surrounding industrial erven, the direct adjacent medium density residential development, as well as the fact that the property is situated within a cul-de-sac. In this regard it is of utmost importance that cognisance be taken of the contents of the amended risk assessment on pages 38 – 49 thereof. The content of these pages and illustrations addresses the various types of possible incidents that can happen on the site with a mounded bulk vessel. It is evident from the amended risk assessment (pages 34 – 49) that the majority of possible incidents will have low to severe impacts beyond the boundaries of the property. Thus, regardless of whether it is a mounded installation, or an above ground installation, there are still risks of low to severe incidents that can occur on and beyond the site and therefore the specific site is a totally undesirable location for such an installation.

- The Hermanus Business Park is a unique and well-planned industrial hub with a firm and harmonious architectural style amidst residential developments. It was further developed with the idea to serve as a soft industrial development hub that does not affect or impact on the safety of surrounding industrial property owners or residential property owners. Since the Business Park has almost been developed to its full capacity over the years it has drawn more and more vehicle- and pedestrian traffic from surrounding communities to the area on a daily basis, thus making the bulk filling site's location undesirable. The proposed location is therefore in a sensitive area with residential developments adjacent to it that is undesirable and risky.
- The location of such a gas depot is of crucial importance and the applicant did not demonstrate that alternative sites in the broader Hermanus area that are more desirable for such a plant have been investigated.
- The influx of tourists can at times result in an over-demand for LPG cylinders at households, businesses, restaurants, and accommodation establishments resulting in the bulk tank be refilled more frequently, as well as the filling of the gas cylinders. The applicant's statement that gas cylinders will only be filled after working hours and that the bulk tank will only be filled weekly can therefore not be guaranteed by the applicant making the risk factors higher.
- The response of the applicant that the property is situated in a cul-de-sac that does not carry much traffic is not agreed with. It indeed carries vehicle traffic and also a lot of pedestrian traffic from surrounding communities that can be observed daily. The Senior Manager: Fire and Emergency Services, Disaster Management & Security Services in its comment (Annexure H) confirms that the road is quite busy during seasonal- and festival times and especially with the influx of visitors to Hermanus that increases the population with up to 50%. It further confirmed that the current resources of the Fire Brigade are of concern as it does not yet comply with the minimum requirements as prescribed by the SANS 10090: Community Protection Against Fires. The Fire Brigade does not have the minimum staff, nor the specialised vehicles required to cope with a Major Hazard Installation in the event of a major incident occurring.
- The Manager: Engineering Management indicated that it scrutinised the GLS report submitted by the applicant but is unsure whether the necessary information is totally correct. The pressure and flow of the water in the main water pipes therefore needs to be measured by the Operational Department or the Fire Department or the applicant has to appoint someone to do the tests. It is therefore uncertain whether the pressure and flow of water in the mains of the water hydrant points for the Fire Brigade would be sufficient in case of a major incident occurring at the plant.
- The applicant indicates that there is a 1:30 000 000 chance of a Boiling Liquid Expanding Vapour Explosion (BLEVE) which is the most powerful incident that can happen at the plant. For this reason, it is argued that the Municipality cannot gamble with the lives of surrounding property owners or the community at large, since there indeed exists a chance of a BLEVE occurring regardless of how low the chance may be. The risk assessment indicates that plant would be of low impact, whilst it cannot guarantee that there are no risks at all.
- The applicant states that a service station can be operated from the site as a primary use, but it is doubted whether the Planning Department would not require a similar consent use application since in terms of the risk assessment both LPG and fuel falls within the exact same hazardous category and a service station will therefore also have risk impacts for the surrounding landowners in the specific area.

- The applicant's response that the former use of the property as a recycling plant where noisy industrial equipment was moved, sorted, as well as the compacting of recycling material has a greater impact on property values than what is proposed is, and that the proposal will have a lesser impact on property values, is not agreed with. The former activities on the property clearly and factually do not fall in the same category as the bulk gas filling depot's category classification. Whether it will have a negative impact on property values or not, the applicant did not provide substantiated proof in this regard.
- Although the Development Management section of DEADP indicated the proposal is a low-risk installation that is suitable for this area, and Environmental Impact Management section of DEADP indicated that the proposal does not trigger any listed activities in terms of NEMA regulations, Municipality still has an obligation to safeguard the residents of the area and the area itself as far as possible. DEADP thus only indicated that the proposal is in line with its legislation. It leaves the responsibility on the Municipality.
- No mention or proposal is made in the application for an Emergency Evacuation Plan for the area in the event of a major incident at the bulk depot - only a site-specific Fire Safety Plan was submitted with the application.
- For safety reasons it is the opinion that a separate access point and a separate exit point for the tanker trucks must be provided on the site, but it cannot be provided due to the relatively small extent off the property, as well as the size of the bulk depot.
- The Management Committee currently consists of two members and can therefore not decide since a third member has not been elected and for all practical purposes there is no constitutionally established Management Committee.
- In terms of the legal opinion from Legal Services, the Municipality may not ignore a constitution of an owner's association and take a decision without its inputs since it would be an illegal administrative act by the Municipality that will probably trigger the Promotion of Administrative Justice Act (PAJA) and everything that goes along with it. Author took this point telephonically up with Legal Services to further elaborate thereon. Legal Services further elaborated by stating that should a party (i.e., the owner's association) take the matter up in the higher court to set aside a decision taken by the Municipality without such an association's inputs, it could lead to unwarranted high financial costs for the Municipality.
- Legal Services also indicated that the applicant has the right to approach the Ombud Services with a complaint against the Owners Association / Management Committee, since the Municipality may not approve the application without the formal comment of the Management Committee of the Business Park Owners Association.

## 12. RECOMMENDATION

1. that the comments and the applicant's response thereto be noted;
2. that the application in terms of Section 16(2)(o) of the Overstrand Municipality Amendment By-Law on Municipal Land Use Planning, 2020 (By-Law) for consent use for a "noxious trade" applicable to Erf 2740, Sandbaai to accommodate a bulk storage tank of 45m<sup>3</sup> (45 000L) for the storage of LPG ("Liquid Petroleum Gas") on the property for the filling of 9kg to 48kg gas cylinders after which the filled gas cylinders are stored on a portion of the property with a storage capacity of 20m<sup>3</sup> (20 000L) from where it will be dispersed to the gas cylinder agencies in the greater Hermanus area, **not be approved** in terms of the provisions of Section 61

of the By-Law;

3. that the Hermanus Business Park Owners Association be instructed to comply with the contents of its approved constitution by electing a Management Committee and appoint an architectural consultant within 60 days from the date of this decision; and
4. that the applicant be notified of its right of appeal in terms of Section 78 of the Overstrand Municipality Amendment By-Law on Land Use Planning, 2020 with regard to the decision in 2 above.

### 13. REASONS FOR RECOMMENDATION

- ❖ The proposal will negatively impact on the vested rights of the owners of the adjacent residential properties.
- ❖ Although the applicant states that the industrial area was developed well before the adjacent residential complex was developed, the applicant should on the other hand have considered the fact that its application was submitted well after the adjacent residential development was approved and nearly developed to its full capacity already.
- ❖ A Fire Protection Plan accompanied the application, but not an Emergency Evacuation Plan should the residents and landowners have to evacuate the area in the event of a major incident at the facility since the property is situated in a cul-de-sac that will leave people isolated in the event of such an incident. People may be injured or even killed, and damage could occur to the direct surrounding built environment and who will take responsibility in such an event? Fire Services' positive comment on the application was purely based on the Fire Safety Plan that is site specific and not on any form of a proposed Emergency Evacuation Plan.
- ❖ The applicant submitted an amended risk assessment together with an alternative installation proposal at a late stage of the application process, but regardless, the opinion is still held that whether it is a mounded installation or an above ground installation there are still risks of low to severe incidents occurring on the site and therefore it is still regarded as undesirable for the specific site due to the close location of the bulk depot to surrounding industrial erven, the direct adjacent medium density residential development, as well as the fact that the property is situated within a cul-de-sac. In this regard it is of utmost importance that cognisance be taken of the contents of the amended risk assessment on pages 38 – 49 thereof. The content of these pages and illustrations addresses the various types of possible incidents that can happen on the site with a mounded bulk vessel. It is evident from the amended risk assessment (pages 34 – 49) that the majority of possible incidents will have low to severe impacts beyond the boundaries of the property. Thus, regardless of whether it is a mounded installation, or an above ground installation, there are still risks of low to severe incidents that can occur on and beyond the site and therefore the specific site is a totally undesirable location for such an installation.
- ❖ The Hermanus Business Park is a unique and well planned industrial hub with a firm and harmonious architectural style amidst residential developments. It was further developed with the idea to serve as a soft industrial development hub that does not affect or impact on the safety of surrounding industrial property owners or residential property owners. Since the Business Park has almost been developed to its full capacity over the years it has drawn more and more

- vehicle- and pedestrian traffic from surrounding communities to the area on a daily basis, thus making the bulk filling site's location undesirable.
- ❖ The location of such a gas depot is of crucial importance and the applicant did not demonstrate that alternative sites in the broader Hermanus area that are more desirable for such a plant have been investigated.
  - ❖ Due to the size of the property, it is the opinion that a separate access point and a separate exit point for the tanker truck must be provided that cannot be provided with the proposed size of the filling plant.
  - ❖ The applicant's stated that gas cylinders will only be filled after working hours and that the bulk tank will only be filled weekly, but such a schedule cannot be guaranteed by the applicant that makes the risk factors higher. Further, the filling of gas cylinders after hours will lead to a nuisance to the adjacent residents of the residential erven.
  - ❖ The statement of the applicant that the property is situated in a cul-de-sac that does not carry much traffic is not agreed with. It indeed carries vehicle traffic and also a lot of pedestrian traffic from surrounding communities that can be observed daily. The Senior Manager: Fire and Emergency Services, Disaster Management & Security Services in its comment confirmed that the road is quite busy during seasonal- and festival times and especially with the influx of visitors to Hermanus that increases the population with up to 50%. It further confirmed that the current resources of the Fire Brigade are of concern as it does not yet comply with the minimum requirements as prescribed by the SANS 10090: Community Protection Against Fires. The Fire Brigade does not have the minimum staff, nor the specialised vehicles required to cope with a Major Hazard Installation in the event of a major incident occurring.
  - ❖ There is no proof that the pressure and flow of water in the mains of the water hydrant points for the Fire Brigade would be sufficient in case of a major incident occurring at the plant.
  - ❖ The applicant indicated that there is a 1:30 000 000 chance of a Boiling Liquid Expanding Vapour Explosion (BLEVE) which is the most powerful incident that can happen at the plant. For this reason, it is argued that the Municipality cannot gamble with the lives of surrounding property owners or the community at large since there indeed exists a chance of a BLEVE occurring regardless of how low the chance may be. The risk assessment indicates that plant would be of low impact, whilst it cannot guarantee that there are no risks at all.
  - ❖ The applicant stated that a service station can be operated from the site as a primary use, but it is doubted whether the Planning Department would not require a similar consent use application since in terms of the risk assessment both LPG and fuel falls within the exact same hazardous category and a service station will therefore also have risk impacts for the surrounding landowners in the specific area.
  - ❖ The Management Committee of the Hermanus Business Park Owners Association currently consists of two members and can therefore not decide since a third member has not been elected and for all practical purposes there is no constitutionally established Management Committee.
  - ❖ The Management Committee currently consists of two members that is in contradiction with its approved constitution that requires a minimum of three members and for all practical purposes there is no constitutionally established Management Committee for the Association. In terms of the legal opinion from Legal Services, the Municipality may not ignore a constitution of an owner's association and take a decision without its inputs since it would be an illegal administrative act by the Municipality that will probably trigger the Promotion of Administrative Justice Act (PAJA) and everything that goes along with it. The owner's association can apply at the higher court to set aside a decision taken

by the Municipality without such an association's inputs, which could lead to unwarranted high financial risks for the Municipality.

- ❖ Various objections and concerns were received from surrounding landowners.
- ❖ Being located adjacent to a residential development, as well as for the above reasons, the proposal is totally undesirable from a town planning perspective.

#### 14. Annexures

Annexure A:	Locality Plan
Annexure B:	Motivation Report
Annexure C:	Site Development Plan
Annexure D:	Objections
Annexure E:	Applicant's comment on the objections
Annexure F:	Department of Environmental Affairs and Development Planning: <i>Development Management</i>
Annexure G:	Department of Environmental Affairs and Development Planning: <i>Environmental Impact Management Services</i>
Annexure H:	Comment: Fire and Emergency Service Disaster Management and Security Services
Annexure I:	Comment: Manager, Engineering Management
Annexure J:	Services Report
Annexure K:	Amended Risk Assessment dated 12 September 2021
Annexure L:	Fire Protection Plan
Annexure M:	Risk Assessment dated 2 December 2020
Annexure N:	Appointment of Managing Agents of Hermanus Business Park
Annexure O:	Extract of paragraph 1.5 of Design Guide of Hermanus Business Park
Annexure P:	Extract of paragraph 5.10.9 of the constitution of Hermanus Business Park
Annexure Q:	Constitution and Design Guide of Hermanus Business Park
Annexure R:	Comment: Legal Services

#### **SIGNATURE**

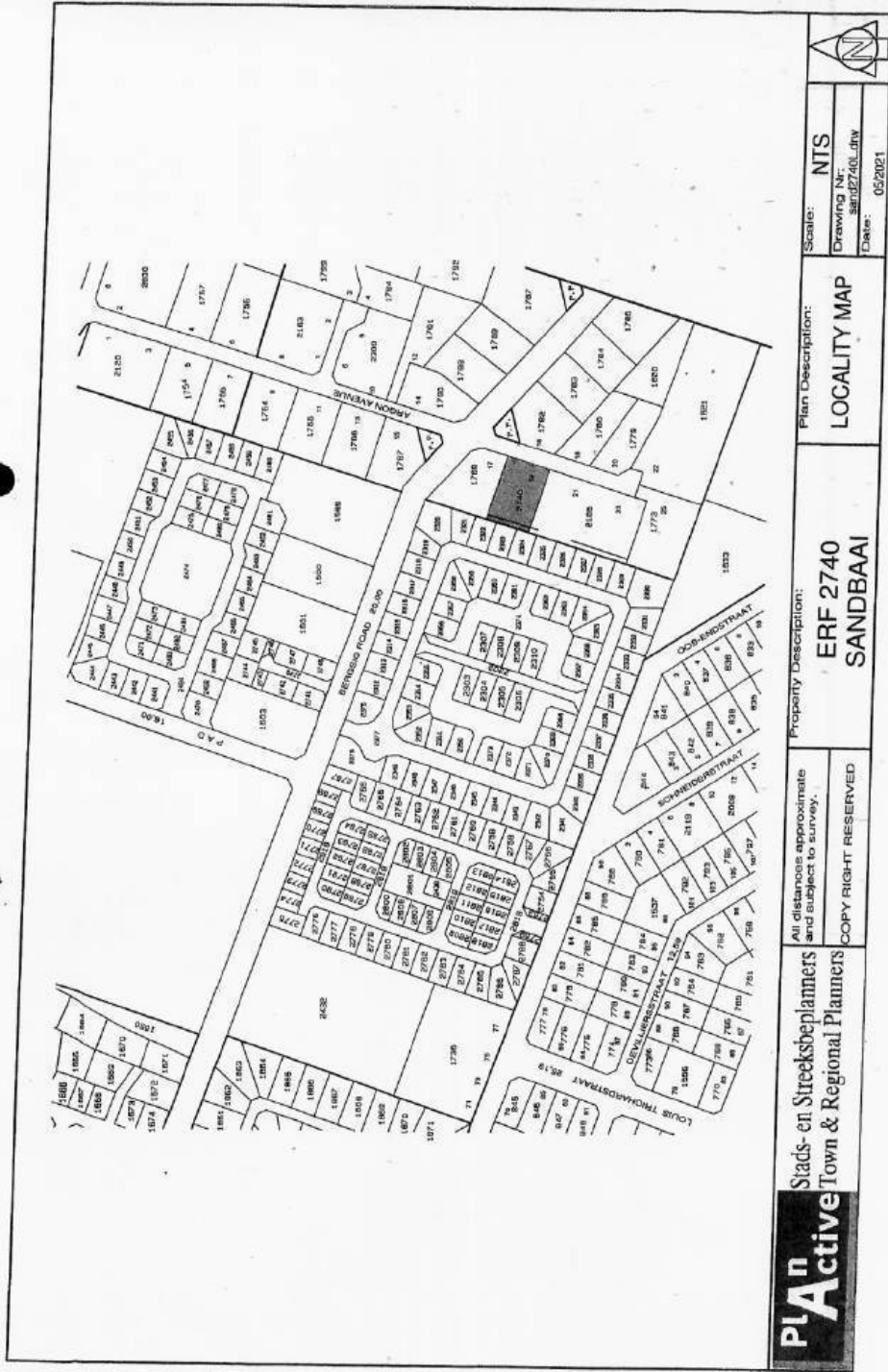
#### **REGISTERED PLANNER**

Name: **H VAN DER STOEP**

SACPLAN Reg No: **A/1708/2013**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



**PLAN**  
Active  
Stads- en Streeksbeplanners  
Town & Regional Planners

All distances approximate  
and subject to survey.

COPY RIGHT RESERVED

Property Description:  
**ERF 2740  
SANDBAAI**

Plan Description:  
**LOCALITY MAP**

Scale: **NTS**  
Drawing Nr: **SAR/2740L.dwg**  
Date: **05/20/21**

**PROPOSED CONSENT USE**  
**ERF 2740 SANDBAAI**  
**DIVISION: CALEDON**  
**OVERSTRAND MUNICIPALITY**

**MOTIVATION REPORT**

**1. BACKGROUND**

Mr. L.M. Lourens on behalf of Blue Horizons Properties CC, the owner of Erf 2740 Sandbaai, has instructed the company Plan Active to apply for a consent use of Erf 2740 Sandbaai.

Formerly a recycling plant was established on Erf 2740 Sandbaai and associated structures were established. The structures consisted mainly of converted shipping containers. Please refer to the aerial photograph below:



Plan Active Town & Regional Planners

It is the intention of the owner to apply for a consent use for noxious trade in order to establish a Liquid Petroleum Gas (LPG) bulk vessel on the site and also to distribute LPG cylinders. The site will be cleared and new infrastructure will be constructed as per the proposed site development plan, one shipping container will be retained. The site will not be utilised in its current state. No onsite sales to the general public will take place, LPG will only be stored and distributed from Erf 2740 Sandbaai. A risk assessment was compiled by MHR Consultants indicating that the installation is a low risk installation acceptable for this industrial area. Please note that even though the risk assessment makes mention of selling gas to general public, this will not be the case.

Even though the zoning makes provision for a service station for the retail supply of fuel as a primary right the Overstrand Municipality is of the opinion that Liquid Petroleum Gas does not fall within the ambit of the retail supply of fuel. Subsequently we have been appointed to apply for a consent use for noxious trade.

Erf 2740 Sandbaai is 1640m<sup>2</sup> in extent and is held by Title Deed Number T29086/09.

## **2. APPLICATION DETAILS**

Application is made in terms of:

- Chapter 4, Section 16(2)(o) of the Overstrand Municipality's Amended By-law on Municipal Land Use Planning, 2020, for the consent use of Erf 2740 Sandbaai.

## **3. DESIRABILITY**

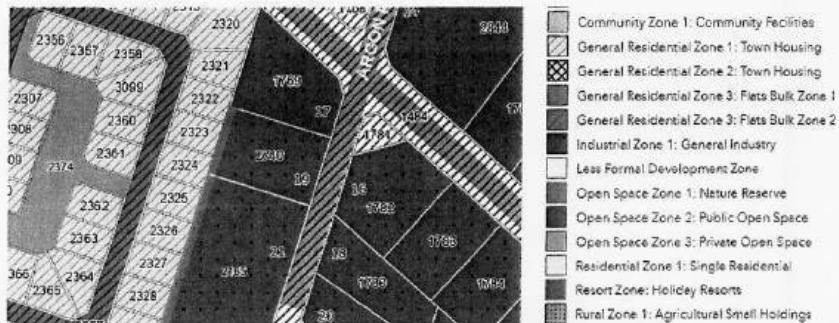
### **3.1 PROPERTY DESCRIPTION**

Erf 2740 Sandbaai is situated at 19 Argon Street, Sandbaai Business Park Industrial Area. Please refer to the enclosed locality plan. Erf 2740 Sandbaai is 1640m<sup>2</sup> in extent and is held by Title Deed Number T29086/09.

### 3.2 ZONING

Erf 2740 Sandbaai is zoned Industrial Zone 1: General Industrial and was formerly used as a recycling plant as mentioned earlier in this motivation report.

Surrounding properties are also zoned for industrial uses and public roads. A townhouse development, Mooizicht Gardens is located west and abutting Erf 2740 Sandbaai. The townhouse erven abutting the site, erven 2322, 2323 & 2324 Sandbaai are currently vacant. It is therefore evident that Erf 2740 Sandbaai is situated within a mixed use industrial area. Please refer to the zoning map below:



### 3.3 LAND USE

Erf 2740 Sandbaai was formerly used as a recycling plant as mentioned earlier in this motivation. Please refer to the photograph below taken from Argon Street.



Land uses that surround Erf 2740 Sandbaai are industrial premises, public roads and a townhouse development located west of the subject erf. The land uses consist of crane and truck specialists, transport businesses, upholsterers, vehicle repair, vehicle fitment centre, construction companies, cement silos and ready mix concrete and whole sale outlets. The subject property is situated within an industrial use area.

### 3.4 **PROPOSAL**

The following is proposed:

- A consent use in terms of Chapter 4, Section 16(2)(o) of the Overstrand Municipality's Amended By-law on Municipal Land Use Planning, 2020, to establish a noxious trade on Erf 2740 Sandbaai.

#### 3.4.1. **Proposed Consent Use**

The detail of the application can be described as follows:

Gas Hub (Pty) Ltd is a local supplier of Liquid Petroleum Gas (LPG) in the Overstrand area. Gas Hub (Pty) Ltd is an agency for Oryx Energies. Oryx Energies is one of Africa's largest and longest-established independent providers of oil and gas products and services. They source, supply, store and distribute the oil and gas products needed by consumers, businesses and maritime operations across sub-Saharan Africa.

Due to the high demand for the provision of LPG to households all over the Overstrand Municipal area as a result of unpredictable power outages, suppliers are experiencing a LPG supply shortage. Normally refilled gas cylinders are obtained from a depot in Cape Town. LPG cylinders that come in various sizes such as 9kg, 19kg and 48kg gas cylinders may not be filled locally. The filling of these LPG cylinders may only be done at approved LPG depots. It has now become an urgency to accommodate a bulk LPG vessel within the area where the refilling and distribution of the various gas cylinder sizes mentioned above can take place in order to fulfil the demand in the Overstrand area. No sales to the general public of the various size gas cylinders will take place from Erf 2740 Sandbaai. The site will be used as a filling and distribution depot that will distribute the LPG cylinders to gas agencies from where it is sold to the general public.

A bulk storage tank of 45m<sup>3</sup> LPG is proposed and the storage of 20m<sup>3</sup> LPG cylinders varying in size from 9kg to 48kg. Under the current zoning, Industrial Zone 1, a noxious trade can be accommodated by means of a **consent use** application. See below an abstract from the Overstrand Municipal Land Use Scheme, 2020 with reference to Industrial Zone 1 zoning:

**Primary uses** are: industry, agricultural industry, builder's yard, caretaker's accommodation, factory shop, funeral parlour, heavy vehicle service station, industrial café (subject to the provisions of Chapter 16.10), motor repair garage, service trade, service station, transmission apparatus (subject to the provisions of Chapter 16.10), transport use, utility services, warehouse and workshop.

**Consent uses** are: abattoir, adult entertainment business, aquaculture, business premises, crematorium, dwelling unit, mining, noxious trade, place of assembly, place of entertainment, place of instruction, recreational facilities, restaurant, sale of alcoholic beverages and scrap yard.

According to the zoning scheme regulations the definition of noxious trade read as follows:

"**noxious trade**" means poisonous or potentially harmful trade, use or activity which, because of fumes, emissions, odours, vibrations, noise, waste products, nature of materials used, processes employed or other causes, is considered by the Municipality to be a potential source of danger or health risk to the general public or persons in the surrounding area. "noxious industry" has the same meaning;

The Overstrand Municipality required that an application be submitted for a consent use for a noxious trade and that the provision of LPG does not fall within the ambit of fuel such as petrol and diesel. When this application is evaluated, cognisance must be taken of the fact that a service station is a primary right of which the definition read as follows:

"**service station**" means a property for the retail supply of fuel and includes trading in motor vehicles, oil, tyres or motor spares, general motor repairs to motor vehicles, exhaust fitment, washing of vehicles, and a shop of which the floor area does not exceed 50% of the total floor space of all buildings on the land unit but does not include spray painting, panel beating, blacksmithery or body work;

The type of fuel to be supplied is not specified in the above definition of a service station.

The following information from MHR Consultants, whom has prepared a risk assessment, will also have to be taken into consideration:

- LPG is not a noxious gas;
- It is not poisonous;
- It is odourless and must be stenchd for detection purposes;
- It is clean burning and not a greenhouse gas;
- The retailing of LPG is considered the same as the retailing of petrol and diesel;
- LPG is classified a Class 1 flammable substance, the same as petrol;
- LPG is a hazardous substance similar to diesel and petrol, but not a noxious substance;
- Bulk LPG vessels of 45m<sup>3</sup> and more are a common occurrence at hospitals and shopping centres all over the country;
- The retail of fuel as per the definition above of a service station is a primary right in terms of the zoning of Erf 2740 Sandbaai.

With reference to the above information and the classification of LPG is it clear that it compares well with the storage of fuel (petrol) that falls within the ambit of the primary right under an Industrial Zone 1 zoning defined as a service station.

With reference to the proposed bulk LPG storage vessel, the bulk storage vessel is small in relation to bulk fuel vessels used at services stations. Most existing service stations make use of 3 bulk fuel vessels utilised for lead free petrol, lead replacement petrol and diesel. Some service stations do not make provision for lead replacement petrol and these vessels are now being used for the storage of additional diesel.

The fuel storage vessels used by service stations are commonly 23.5m<sup>3</sup> in extent each. Subsequently a service station commonly makes provision for 3 to 4 bulk storage vessels with a total holding capacity of ±67.5m<sup>3</sup> to 90m<sup>3</sup>. (22.5m<sup>3</sup> of fuel per tank. Tanks are not 100% filled). The proposed single bulk LPG storage vessel with a capacity of 45m<sup>3</sup> and the LPG refilled storage cylinders are combined smaller than the quantity of fuel (petrol / diesel) that could be stored if the site was utilised as a service station.

A risk assessment was compiled by MHR Consultants for the proposed gas storage installation to accommodate a bulk LPG vessel with a capacity of 45m<sup>3</sup> and storage capacity of 20m<sup>3</sup> gas cylinders varying in size from 9kg LPG cylinders to 48kg LPG cylinders. The risk assessment includes the following:

- Identifying likely hazards associated with the processes of the installation;
- Quantifying the likely hazards in terms of their magnitude;
- Quantifying the consequences for each hazard;
- Determining the lethality of the effect of the consequences;
- Determining the frequency of all the hazardous events;
- Calculating the individual risk values considering all accidents, meteorological conditions and lethality;
- Using the population density around the facility to determine the societal risk posed by the facility;
- Reporting on the risk in terms of international acceptable criteria;
- Providing an assessment of the adequacy of emergency response programmes, fire prevention and firefighting measures;
- Proposing measures to reduce or eliminate the risks.

The risk assessment concludes that the proposed LPG installation is a low risk installation and acceptable for this industrial area. The owner has confirmed that the LPG depot will conform to all the prescribed regulations and mitigating measures proposed by MHR Consultants, as stipulated in their risk assessment, in order to guarantee the safety of the personnel, surrounding landowners and the general public. We have enclosed a copy of the risk assessment for your attention and records.

A site development plan was drawn by Petro Struct & Design that was also endorsed by Profire Consulting (Pty)Ltd as a Fire Protection Plan. All firefighting equipment, as indicated on the site plan, will be provided and the site will also conform to all the rules

and regulations as stipulated on the site development plan. Please refer to the enclosed copy of the site development plan. The site will consist of 6 usage areas that can be described as follow:

- **PROPOSED OFF LOADING AND LOADING BAY**

An off loading/loading bay is proposed in close proximity of the southern boundary and Argon Street. The off loading bay is easy accessible to LPG tankers as indicated on the site development plan, that will be used to fill the bulk storage LPG vessel that in turn will be used to fill the variety of smaller gas cylinders. The loading bay is also easily accessible to smaller delivery vehicles that will distribute the LPG cylinders to gas agency in the area. The tanker loading bay's access is supported by Oryx Energies. Please refer to the support letter attached as **Annexure A**. The off loading bay is accessed from Argon Street.

- **PROPOSED BULK LPG STORAGE VESSEL**

As mentioned earlier in this motivation report, a bulk LPG storage vessel is proposed with a capacity of 45m<sup>3</sup>. The position of the bulk LPG storage vessel is proposed 5m from the southern lateral boundary and 5m from the western rear boundary. For safety purposes a fire wall will be erected, ±4m away from the boundaries, around the LPG storage vessel. The firewall will be 8.5m and 16.3m respectively on the southern and western sections around the storage vessel, as indicated on the site development plan. The fire wall will be at the same height as the storage vessel and will be ±2.850 in height. Further safety measures will also be put in place such as pyro-coating the bulk LPG storage vessel.

- **PROPOSED FILLING SHED**

A filling shed is proposed that will be centrally located on the site. The proposed filling shed will be ±3.75m x 6.40m, that constitutes ±24m<sup>2</sup> in extent. The proposed filling shed will be ±2.5m in height and will be used for the purpose of filling LPG cylinders varying in size from 9kg to 48kg.

- **EMPTY LPG CYLINDER STORAGE AREA**

An empty cylinder storage area is proposed north of the proposed filling shed. The area utilised for the storage of the empty cylinders is 7.2m x 9.5m and 68.4m<sup>2</sup> in extent.

The storage of the empty cylinders will be on top of a concrete slab. The empty LPG cylinders will be transferred to the filling shed where it will be filled and transferred to the full cylinder storage area.

- **FULL LPG CYLINDER STORAGE AREA**

A full cylinder storage area is proposed centrally located in closed proximity to Argon Street, north of the proposed off loading and loading area. The concrete slab provided for the storage of the full LPG cylinders is 13.4m x 7.8m, 104.52m<sup>2</sup> in extent. The full LPG cylinders will be dispatched from this area.

- **EXISTING CONTAINER**

The site will be cleared and where applicable be provided with a hard surface that will consist of a combination of concrete slab sections and paved areas. One of the containers that is currently onsite will be retained. The shipping container will be refurbished and upgraded to be utilised as a site office.

The proposed consent use application to establish a noxious trade on Erf 2740 Sandbaai will not have a negative impact on the surrounding properties. The proposal will not be in contrast with the existing land use tendencies for the specific area.

### **3.5 ACCESS AND PARKING**

Vehicular access to and from Erf 2740 Sandbaai will be from Argon Street. Two, 6m sliding security gates are proposed on the northern and southern corners of the eastern street front. In terms of legislation is it a requirement that 2 entrances / exits be provided for this type of installations and uses. Please refer to the site development plan. The LPG depot will generate little traffic, due to the fact that the general public will not be able to purchase or refill LPG cylinders at the depot. Empty LPG cylinders will be collected from agencies, refilled and despatched to retail agencies in the area. Provision has been made for a dedicated offloading bay for a LPG tanker that will be used to fill the LPG bulk storage vessel onsite. It is anticipated that the proposed bulk LPG storage vessel will be refilled once a week. The filling process takes approximately 1 to 1½ hours.

The same offloading bay will be used for loading purposes of gas cylinders to be despatched. In terms of the Zoning Scheme Regulation 4 parking bays per 100m<sup>2</sup> GLA

office space will have to be provided. It is anticipated that an area of 27m<sup>2</sup> will be utilised as office space. Subsequently only 1.08 parking bays are required. The only other use that constitutes coverage is the proposed filling shed that is 24m<sup>2</sup> in extent. For an industry 2 bays are required per 100m<sup>2</sup> GLA. Subsequently 0.48 parking bays are required for the filling shed. It can therefore be argued that in terms of the Zoning Scheme Regulations 2 parking bays will be sufficient. (1.08 + 0.48)

The street boundary wall is located 7.6m from the actual street boundary line, providing ample space for the provision of 3 parking bays in this area. The proposed parking bays numbered 1 to 3 will be accessed from Argon Street at the northern side entrance, from where they will also exit. The proposed parking bays are all 2.5m x 5m and 9m manoeuvre space is provided due to the positioning of the 6m gate. In terms of our calculations mentioned above the 3 parking bays proposed are sufficient and excludes the proposed offloading and loading bay.

From the above it is evident that sufficient parking bays can be provided with adequate manoeuvre space on site. The impact on the traffic of the area will be minimal.

### 3.6 SERVICES

Erf 2740 Sandbaai is already serviced. All services exist, and no additional services would be required to make provision for the proposed change of land use to make provision for a LPG depot.

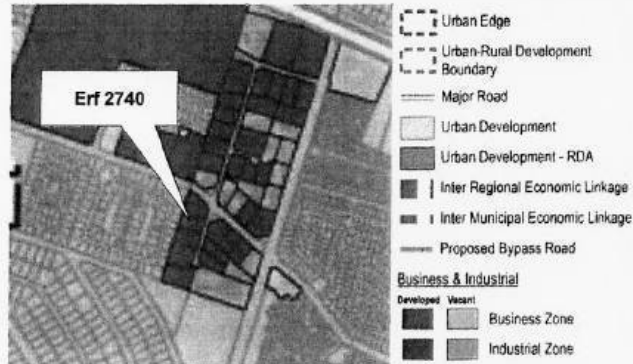
### 3.7 TITLE DEED

There are no restrictive Title Deed conditions in Title Deed, T29086/09 that will have to be addressed in order for the proposed application to be approved. There is no bond registered against Erf 2740 Sandbaai.

### 3.8 FORWARD PLANNING

#### **Overstrand Municipal Spatial Development Framework (2020)**

In terms of the Overstrand Wide Spatial Development Framework the subject property is earmarked for industrial purposes. The industrial component of the subject property will be retained after the consent use application of Erf 2740 Sandbaai concludes. The subject property is located in the industrial area on the eastern side of Sandbaai.



### Overstrand Growth Management Strategy

With reference to the Overstrand Growth Management Strategy the subject property falls within Planning Unit 2 that consists of the industrial area on the eastern side of Sandbaai. No densification is proposed for the area.

With reference to the above mentioned is it our opinion that the Growth Management Strategy is not applicable to the proposed application as no additional erven will be created with the proposed application.

It is therefore our opinion that the proposed consent use can be supported, and it is in line with forward planning strategies and also the current land use trends for the area.

### 3.9 OTHER RELEVANT LEGISLATION FOR CONSIDERATION OF THE APPLICATION

#### 3.9.1 HERITAGE VALUE

Erf 2740 Sandbaai is not situated within the Heritage Overlay Zone as determined by the Overstrand Municipality Growth Management Strategy (2010). The property is

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## Motivation report

developed and not earmarked for heritage conservation purposes in terms of the Overstrand Heritage Survey Report (2009).

The subject property is not associated with any important persons or groups or important events and activities. The subject property has no association with the history of slavery and is not used for living heritage.

In the light of the above mentioned it is evident that the proposed consent use will not have a negative impact on the heritage value of the subject property or the Greater area of Sandbaai.

### **3.9.2 IMPACT ON THE BIOPHYSICAL ENVIRONMENT**

The proposed consent use does not trigger any listed activities in terms of the National Environmental Management Act (NEMA), 1998 (Act no. 107 of 1998). A development only triggers listed activities once the storage or handling of dangerous goods exceeds a combined capacity of 80m<sup>3</sup> or more but not exceeding 500m<sup>3</sup>. The combined capacity of the proposed depot is 45m<sup>3</sup> for the bulk LPG storage vessel and 20m<sup>3</sup> for the refilled LPG cylinders that totals to a capacity of 65m<sup>3</sup>.

### **3.10 PLANNING PRINCIPLES**

The planning principles of spatial justice, spatial sustainability, efficiency and spatial resilience of this application can be described as follows:

Spatial Justice: With the proposed consent use, the industrial use of the subject property will be retained. A small section of the site will be utilised for the purposes of constructing a 45m<sup>3</sup> bulk LPG storage vessel and LPG cylinders will be stored with a total capacity of 20m<sup>3</sup>. The LPG storage capacity is far less than what could be developed if the property was to be used as a service station as explained earlier in this motivation. The necessary risk assessment was done by a very reputable company and indicates that the proposed depot is a low risk installation and that the site is suitable for this purpose. The proposal will be in line with the surrounding

character for the industrial area of Sandbaai. There are no restrictive Title Deed conditions that prohibit the consent use of the subject property. The land use restrictions in terms of the Overstrand Municipal Zoning Scheme under a zoning of Industrial Zone 1 will still apply, and no departures are required.

Spatial sustainability: The consent use is in line with the current character of the established area. The proposed application will have no impact on the conservation worthy areas of the Sandbaai area. Spatially the proposed land use will be in line with the existing land use tendencies for the specific area of Sandbaai.

Efficiency: The proposed application for the consent use will fulfil the LPG shortages experienced in the Overstrand region and promoted the optimisation of the use of space within a developed industrial area. The subject property is also situated within an existing industrial area that is easily accessible for the offloading and distributing of LPG in the Overstrand area.

Spatial Resilience in the context of land use planning refers to the need to promote the development of sustainable livelihoods for the poor (i.e., communities that are most likely to suffer the impacts of economic and environmental shocks). Spatial resilience also refers to the requirement for flexibility in spatial plans, policies, and land use management systems to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks. The spatial plans, policies and land use management systems should enable the communities to be able to resist, absorb and accommodate these shocks and to recover from these shocks in a timely and efficient manner, which includes the preservation and restoration of essential basic infrastructure and functions, but also adaptation in order to ensure increased resilience in terms of future shocks (United Nations Office for Disaster Risk Reduction, 2009). Spatial resilience is not applicable to this application.

Good administration: Our Company is committed to the principle of good administration and will cooperate with the Overstrand Municipality to ensure a time efficient, uncomplicated land use planning process. The land use application will follow due process as stipulated in the relevant municipality's bylaw and related provincial and national land use planning legislation. All measures will be taken to ensure an efficient

and streamlined process within the applicable timeframes as stipulated by the Overstrand Municipality's Amended By-law on Municipal Land Use Planning, 2020.

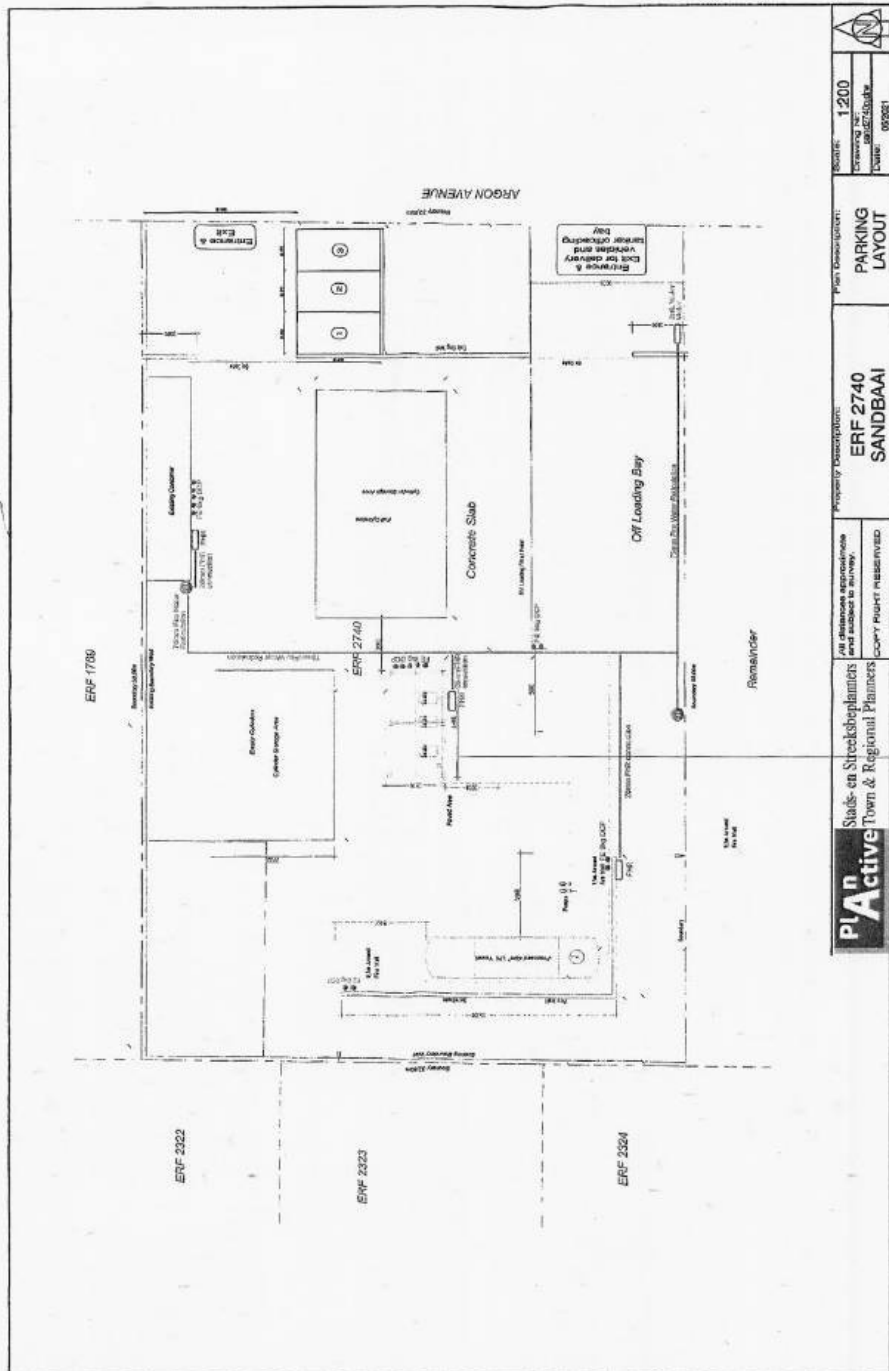
#### 4. **RECOMMENDATION**

When this application is evaluated, it is important to take note of the following:

- The zoning makes provision for a service station for the retail supply of fuel.
- The LPG storage capacity is far less than what could be developed if the property was to be used as a service station.
- The classification of LPG compares well with the storage of fuel (petrol) that falls within the ambit of the primary right under an Industrial Zone 1 zoning defined as a service station.
- The proposed consent use falls within the existing industrial land use tendencies in the area;
- There will be no impact on services as no additional services will be required.
- Sufficient parking bays can be provided on the subject property;
- The proposal will create an opportunity for more permanent employment for the local community;
- The proposed consent use will not have a negative impact on the current character and land values of the surrounding erven;
- The risk assessment prepared by MHR Consultants clearly indicates that the LPG installation is a low risk installation that can be supported on Erf 2740 Sandbaai.
- The proposed LPG depot will be an asset to Overstrand area due to the fact that it will address the shortage experienced for the purchase of LPG from the retail agencies.
- Empty and refilled cylinders do not have to be transferred from Cape Town to the retail agencies in the Overstrand area and can now be refilled and distributed locally.
- The proposed application is in line with Spatial Planning Land Use Management Act, 2013 (SPLUMA) and the Land Use Planning Act, 2014 (LUPA).

With regards to the above mentioned it would be appreciated if the Overstrand Municipality would consider the application favourably for the consent use of Erf 2740 Sandbaai.





**PLAN**  
**PI'n Active**  
 Stads- en Streeksplanners  
 Town & Regional Planners

Property Description:  
**ERF 2740**  
**SANDBAAI**

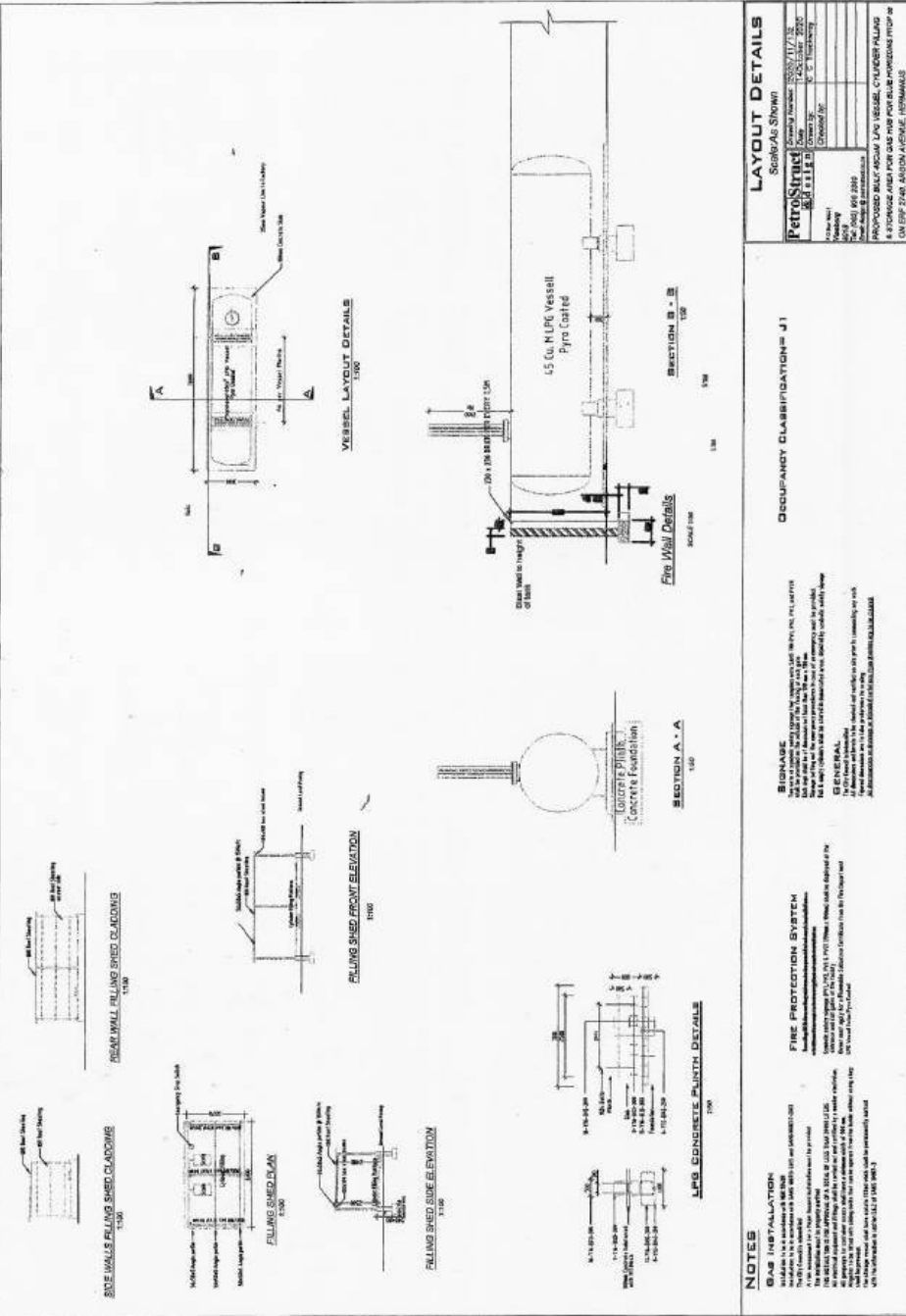
Scale: 1:200  
 Drawing No: 2022/08/01  
 Date: 08/01/2022

Plan Description:  
**PARKING**  
**LAYOUT**

All dimensions approximate  
 and subject to survey.  
 COPYRIGHT RESERVED

03 December 2008

08/08/08



**LAYOUT DETAILS**  
Scale: As Shown

<b>PETROS (INC)</b>	Contract Number: 0802117/13
10000 1/2 St. N.E.	Contract Date: 08/08/08
Kennerly, WA 98032	Contract No. 0802117/13
Phone: 206-835-9200	Contract No. 0802117/13
Fax: 206-835-9200	Contract No. 0802117/13
Website: www.petros.com	Contract No. 0802117/13

Project Name: 45 Cu. Ft. LPG Vessel  
 Project Location: 4500 SW 24th Avenue, Renton, WA  
 Project No: 0802117/13

**NOTE**

**GAS INSTALLATION**  
 Installation shall be performed in accordance with ASME B31.9 and applicable local codes. All piping shall be installed and tested in accordance with applicable codes. All piping shall be installed and tested in accordance with applicable codes.

**FIRE PROTECTION SYSTEM**  
 The fire protection system shall be installed in accordance with applicable codes. The fire protection system shall be installed in accordance with applicable codes.

**NOTE**

**SIGNAGE**  
 Signs shall be installed in accordance with applicable codes. The signs shall be installed in accordance with applicable codes.

**GENERAL**  
 All work shall be installed in accordance with applicable codes. The work shall be installed in accordance with applicable codes.

**NOTE**

**FIRE PROTECTION SYSTEM**  
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Page # of 10

**A Conradie**

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**From:** suzanne clark <  
**Sent:** Tuesday, 29 June 2021 16:06  
**To:** A Conradie  
**Cc:**  
**Subject:** ERF2740 APPLICATION FOR CONSENT USE - OBJECTION

Dear Mr Boschoff,

With reference to the application for ERF 2740 for consent use in terms of Section 16 (2) in terms of 'noxious trade' to accommodate bulk storage tank of 45 cubic meters for LPG (Liquid Petroleum Gas) and trade in filling 9kg cylinders, I hereby lodge my OBJECTION.

I object under the following points:

1. SAFETY - 45 cubic meter tank above ground next to residential property for purposes of refilling and storage of other gas cylinders.  
No limitation on quantity of storage.
2. SAFETY - Explosion and Fire Prevention Plan - is there one available?
3. SAFETY - Gas leakage Prevention and Plan - is there one available?
4. RISK ASSESSMENT UNDERTAKEN ? - especially in lieu to residential area backing onto gas supplier.
5. SAFETY - Previous application of a shooting range indoor - potential misfire, firearm misuse?
6. HEALTH and SAFETY - where is the guarantee no noxious fumes will be released into the outside air and that adjoining residents will not be exposed to inhalation of lead or other noxious fumes from propellant gases? Risk Assessment?
7. ENVIRONMENTAL IMPACT STUDY - has this been conducted, bearing in mind residential property near by?
8. DEVALUATION OF PROPERTY - potential devaluation of properties of Mooizicht Gardens due to HIGH danger of gas storage and filling facility, leak, fire and explosive potential.

It is the responsibility of the Overstrand Municipality to ensure to keep its population safe and to mitigate any potential risk to health and lives. Health and Safety are of paramount importance and residents peace of mind.

I therefore object to any action of the proposed change of use to ERF 2740 for storage of LPG.

Best regards

Suzanne Clark  
17 Mooizicht Gardens.

## Die Christo Swart Familie Trust

Tel:  
Sel:  
BTW Reg.nr: 4130221148  
E-pos:

Posbus 2016  
HERMANUS  
7200

02 Julie 2021



STADSBEPLANNING  
HERMANUS

TP - A Theart  
(H Olivier)

AAN WIE DIT MAG AANGAAN

INSAKE: BESWAAR - ERF 2740

Hiermee maak ek as eienaar van Erf 1794 en Erf 2300 sterk beswaar teen die aansoek van Erf 2740 vir die gebruik as 'n gasaanleg.

Ek waardeer dit dat die Overstrand Munisipaliteit ons in kennis stel van hierdie uiters gevaarlike praktyk.

Die stoor van 60 kbm<sup>3</sup> vloeibare gas kan uiters gevaarlik wees vir die eienaars van die omliggende erwe, om nie eers te praat van die woonbuurt teenaan Erf 2740 nie.

Groete

Christo Swart  
Trustee / Eienaar

FILE NO: EL 2740 - HSB
SCAN NO: 54
COLLABORATOR NO: 1556414

TP  
02 JUL 2021

TP n. (Heart)  
(H. Olivier)



**A Conradie**

**From:** Havenga Makelaars <  
**Sent:** Monday, 12 July 2021 14:44  
**To:** A Conradie  
**Subject:** FW: APPLICATION FOR CONSENT USE - ERF 2740 EMAIL 1  
**Attachments:** PastedGraphic-1.png; ATT01422.htm; IMG\_20210702\_0001.pdf; ATT01425.htm

Alida

Sien ons brief van Hermanus Business Park se Approval Element Officer.

Groete

Mallita Nigrini  
:turede Agente

FILE NO:	ERF 2740
	Sandbaai
SCAN NO:	2740158
COLLABORATOR NO:	1559248

**From:** David Shakeshaft [r  
**Sent:** 02 July 2021 12:46  
**To:** Havenga Makelaars  
**Subject:** Re: APPLICATION FOR CONSENT USE - ERF 2740 EMAIL 1

Malita

I find this to be yet another serious deviation from the original intent of the Hermanus Business Park, and it's Design Guide. From my documentation this erf 2740 was previously 1770, and no application was ever made for my pre submission design approval or comment on that erf number. When it was changed to 2740 I have no knowledge, equally I have never been involved in pre submission approval for it as erf 2740. I can say with certainty that had existing the recycling property container structures been put forward to me for comment I would most certainly not have approved it. The concept for the development was an attractive Business Park, not an Industrial hub. From the photos within the Motivation it gives the impression of an eyesore that does not belong to the Hermanus Business Park.

Somewhere in the management structure it seems that over the years many changes and approvals have been made without reference to me, equally there appears to be no on site inspection process to ensure that approved plans are/were being constructed in compliance thereof, and that approved structures and their environments are well maintained. This consent use application contains design drawings for layout and structures that most certainly do not comply to the requirements of the Design Guide, for that reason alone I would most definitely not condone approval of this proposal.

Kind regards,

David Shakeshaft

SHAKESHAFT ARCHITECTURE  
Stellenbosch

12 JUL 2021

TP. N. Ahoort  
(1). Alida



**A Conradie**

**From:** Petrus Hendriksz <  
**Sent:** Monday, 12 July 2021 12:43  
**To:** A Conradie  
**Cc:** Havenga Makelaars  
**Subject:** APPLICATION FOR CONSENT USE ERF 2740 HERMANUS BUSINESS PARK

Good Day Alida,

My wife, Estelle Hendriksz and I are owners of two units in Great Force Center, Argon Street (erf 1765) some 200 meters up the road from erf 2740. We wish to advise that we do not provide our consent for the change in land use as presented in the application, reasons being as follows:

This is not a standard LPG outlet as we know it e.g. Hermanus Gas or Gas Hub. This is a LPG depot with a filling plant or is I refer to it "a LPG processing operation".

The first issue is the volume of LP gas contained in a single container or storage tank on this specific premises. The proposed 45 cub. meter bulk storage tank equates to around 500 individual 48 kg LPG cylinders. A 48 kg cylinder's height is about shoulder height. In the event of a catastrophic explosion in an area with multiple 48 kg cylinders, numerous of these cylinders might be distributed all over the area by the force of the explosion rendering the bulk of them harmless. If there is a catastrophic event with a 45 cub. meter bulk storage tank, there will not be much left of the surrounding environment.

Bearing in mind the potential impact of such an event, the specific premises is not only located in an area with numerous other small light industrial businesses, but also right next door to a residential area. In the event of a catastrophe, not only will the surrounding businesses be affected but also the residential areas of Sandbaai and Zwelihle.

Thirdly, LP Gas is a heavy gas which requires ventilation. This specific premise is basically contained in 4 boundary walls. The proposal provides for 2 x 6 meter gates on Argon street. This may result in gas build up on the premises with only area to ventilate onto Argon street. There is no provision for cross ventilation making this a super risky premise.

Lastly, we have noted that the LPG delivery truck has to reverse into the premises. This was exactly the cause of the gas explosion in Worcester some time ago. I am not sure what the regulations state about reversing of dangerous cargo onto sites. My logic just tells me, and following on from the Worcester event, that reversing into a site should not be allowed.

In view of the above, we can not provide our support for change in land use for this specific business proposal on this specific location.

Petrus and Estelle Hendriksz  
Owners Units 14 and 18, Great Force Centre.

FILE NO:	Sf 2740
	Sandbaai
SCAN NO:	2740158-1
COLLABORATOR NO:	1569294

1

12 JUL 2021

### Application Response

1. Mooizicht – Refer Erven 2322, 2323 and 2324 Sandbaai are vacant. Note this is residential use which is going to increase the residential population immediately adjacent to the proposed development. This if adequately factored into the risk assessment will demonstrate that the proposed operation will now place a higher amount of residents lives at risks due to the close proximity. As the residential area is adjacent to the proposed development, it must be noted that residents cannot and will not limit the activities like recreational activities of Braais, smoking and outdoor fireplaces etc. We cannot infringe on the rights of existing residents as a result of the proposed development. There needs to be adequate planning from the Municipality to allow such proposed activities to take place in areas where there is no risk to the immediate population of Hermanus.
2. Hermanus has historically experienced protest action during which tyres, wood, shops etc were set alight. The recent protest action experienced in both Gauteng and KZN also provides guidance as the risks associated with these with commodity stocked businesses being targeted and subsequently set alight. This proposed activity thus increases the risk for the surrounding residential and small business community.
3. LPG – By virtue of the product specification is stored in liquid form in tank and cylinders. However once exposed to atmospheric pressures changes phase to a “gas” phase. The product falls into a dangerous goods category. It is recorded as the UN – 1075 classification with a Hazchem warning of – 2A (Flammable Gas). The risk as a result of this operation and the large Bulk and cylinder storage is unacceptably high for the local community. We attach real examples of the catastrophe’s experienced here in the Western Cape resulting in significant damage to the surrounding areas.
4. The development would also by virtue of the nature of the product stored and handled, also result in a financial impact being passed onto the surrounding residential and industrial community in the form of having to now inform insurance companies of the nearby increased risk operation. This would lead to the premiums of the community being increased as a result of the high-risk activity proximity.
5. Valuation of surrounding properties – Residential developments would not be negatively impacted as a result of the proposed development being next to a Flammable substance facility (With substantial volumes). New development will be impaired and the existing property values negatively affected as a result of allowing such an operation within the close proximity on residential developments.
6. The current proposed location indicates a single driveway for the entrance/exit. The current expected design for such dangerous goods operation requires that the premises have a dedicated entry point and a dedicated exit point. The industry practice in place is to ensure no bulk LPG tanker reverses into a loading/offloading area due to the dangers associated with the equipment in close proximity to the road tanker. This is a basic layout requirement for a bulk LPG operation and major wholesalers ensure conformity to these requirements nationally together with local municipalities/Fire Departments. This is certainly a high-risk item which further indicates the site is not suitable for such an operation.
7. Storage risk is in the region of – 22 Tons (Road Tanker), 22 Tons (Bulk Tank) and 10 Ton (Full Cylinders). This has never been stored in Hermanus in such large quantities before. Has the local Fire department been adequately prepped to handle an emergency which might arise from this?

8. The proposed plan shows the Bulk tank to be located close to the residential boundary. This is a certain flaw as the bulk tank poses the greatest risk of the operation as this is the largest pressurized vessel on-site. The damage to both health and property is therefore extremely high.
9. Impact on services - An operation which stores over 50 Tons of flammable product would require a substantial amount of water supply to be compliant. These would be used regularly as part of fire system tests as required by the OHSA for supply to on-site hose reel hydrants and the road tanker and bulk tank sprinkler systems. Planned residential development water supply would be impacted and with the current water shortages experienced the municipality would have to prioritize the LPG operation by sacrificing supply to residential areas during periods of shortages.
10. The major LPG filling plants are situated in the Western Cape in suitable industrial areas. To address the shortages, one should consider the additional storage location in the Hermanus area of filled cylinders which can be supplied from Cape Town at lower risk to the surrounding area.
11. The current supply constraints are experienced as a result of bulk supply limitations as the local refineries are not currently supplying LPG to wholesalers. This has been well documented in the media. A bulk filling facility would only add to the supply chain constraints experienced.
12. The term "Noxious Trade" has been regularly used in the application to have LPG likened to Petrol and Diesel. It must be highlighted that the properties of LPG differ from liquid fuels (Petrol and Diesel). LPG is a flammable gas and has its own UN number (1075) for a reason. LPG ignites faster than both Diesel and Petrol and as per the attached articles, an LPG incident results in a rupture of pressurized vessels resulting in a catastrophic "Blevy" which results in serious damage to people and properties. The main reason for this is that LPG is stored under pressure in specialized pressure vessels unlike Petrol and Diesel. Once released to atmospheric pressure LPG expands rapidly and significantly, which give LPG the highly flammable risk. We have attached an example of an MSDS sheet for your attention.
13. It must be further noted that the equipment used for the handling of LPG varies significantly from the equipment used to handle both Petrol and Diesel. LPG is stored in pressurized tanks as it is required to be stored under pressure at all times. This includes the road tanker, Bulk tank and the LPG cylinders themselves.
14. The concerns mentioned above together with the information provided on the LPG properties, equipment and handling is in contrast to the application submitted.
15. In Conclusion we must state that the operation is strongly opposed and urge the local municipality to reject the application.

A Member of The Linde Group

## MATERIAL SAFETY DATA SHEET (MSDS) LIQUEFIED PETROLEUM GAS AND PROPANE

Page 1 of 2

Please ensure that this MSDS is received by the appropriate person

DATE: March 2014

Version 2

Ref. No.: MS111

### 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT IDENTIFICATION

**Product Name:** HANDIGAS (LIQUEFIED PETROLEUM GAS)  
**Chemical Formula:** C3H8 PLUS C4H10 PLUS C3H6  
**Trade name:** Handigas  
**Colour Coding:** Plascon Dark Admiralty Grey (SABS 109) - G.12) body, with a Handigas decal affixed to the cylinder. All cylinders fitted with an internal eductor tube for liquid withdrawal shall be clearly marked with two Yellow (B.49) stripes painted diametrically opposite each other along the length of the cylinder.  
**Valve:** Brass 5/8 inch BSP left hand female, either single or two-way outlet.  
**Company Identification:** African Oxygen Limited  
 23 Webber Street  
 Johannesburg, 2001  
 Tel. No. (011) 490-0400  
 Fax. No. (011) 490-0506

**EMERGENCY NUMBER** 0860 020202 or +27(0) 11 821 3000  
(24 hours)

### 2 COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical Name:** Butane / Propane / Propylene  
**Chemical Family:** Aliphatic Hydrocarbons  
**CAS NO.:** BUTANE 106-97-8 UN NO. 1075  
 Propane 74-98-6 UN No. 1978  
 Propylene 115-07-01 UN No. 1077  
**UN No.:** 1075  
**ERG No.:** 115  
**Hazchem Warning:** 2A Flammable gas

### 3 HAZARDS IDENTIFICATION

Vapourised liquefied petroleum gas is highly flammable and can form explosive mixtures with air. The vapourised liquid does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in the air below the levels necessary to support life. It can act as a simple asphyxiant.

#### Adverse Health effects

The liquefied petroleum gases are non-toxic. Prolonged inhalation of high concentrations has an anaesthetic effect.

#### Chemical Hazards

Propane and butane (known as extensively in commercial and popular terms as Lpgas or LPG) have an extremely wide range of domestic, industrial, commercial, agricultural and internal combustion engine uses. It is estimated that two gases, un-mixed and in mixtures, have several thousand industrial applications and many more in other fields. Their very broad application stems from their occurrences as hydrocarbons between natural gas and natural gasoline, and from their corresponding properties. As a result of their wide application, misuse could result in serious chemical hazards.

#### Biological Hazards

Contact with the liquid phase of liquefied petroleum gases with the skin can result in frostbite.

#### Vapour Inhalation

As the vapourised liquid act as a simple asphyxiant death may result from errors in judgement, confusion, or loss of consciousness which prevents self-rescue. At low oxygen concentrations, unconsciousness and death may occur in seconds without warning.

#### Eye Contact

The liquid can cause severe burn-like injuries.

#### Skin Contact

Contact with the liquid phase can cause severe burn-like injuries.

#### Ingestion

No known effect

#### Hazard Category



**Danger**  
Extremely  
flammable gas

### 4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to vapourised liquefied petroleum gas. Rescue personnel should be equipped with self-contained breathing apparatus. In the case of frostbite from contact with the liquid phase, place the frost bitten part in warm water, about 40-42°C. If warm water is not available. Or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to-mouth resuscitation and supplemental oxygen.

#### Eye contact (with liquid phase)

Eye contact Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.

#### Skin Contact

See above for handling of frostbite  
No known effect

### 5 FIRE FIGHTING MEASURES

#### Extinguish media

Do not extinguish fire unless the leakage can be stopped. DO NOT USE WATER JET. Use dry chemical, CO2 or foam.

#### Specific Hazards

The rupturing of cylinders or bulk containers due to excessive exposure to fire could result in a BLEVE (Boiling Liquid expanding Vapour Explosion), with disastrous effects. As the flammability limits in the air for the main constituents of liquefied petroleum gas vary between approximately 2 and 11% by vol, extreme care must be taken when handling leaks.

#### Emergency actions

If possible shut off the source of spillage. Evacuate area. Post notices "No Naked lights - No Smoking". Prevent liquid or vapour from entering sewers, basements and workpits. Keep cylinders or bulk vessels cool by spraying with water if exposed to fire. If tanker has overturned, do not attempt to right or move it. CONTACT THE NEAREST AFROX BRANCH.

#### Protective Clothing

Self contained breathing apparatus. Safety gloves and shoes, or boots, should be worn when handling containers.

#### Environmental precautions

Vapourised liquefied petroleum gas is heavier than air and could form pockets of oxygen-deficient atmosphere in low lying areas.

### 6 ACCIDENTAL RELEASE MEASURES

#### Personal Precautions

Do not enter any area where liquefied petroleum gas has been spilled unless tests have shown that it is safe to do so.

#### Environmental Precautions

The danger of widespread formation of explosive LPG/Air mixtures should be taken into account. Accidental ignition could result in massive explosion.

#### Small spills

DO NOT extinguish the fire unless the leakage can be stopped immediately. Once the fire has been extinguished and all spills have been stopped, ventilate the area.

#### Large spills

AFROX is a member of The Linde Group  
The Stripe Symbol and the word "AFROX" are AFROX Group Trademarks.

Page 1 of 2

### A Member of The Linde Group

Stop the source if it can be done without risk. Contain the leaking liquid, with sand or earth, or disperse with special water/fog spray nozzle. Allow to evaporate. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced-draught if necessary. All electrical equipment must be flameproof.

#### 7 HANDLING AND STORAGE

Cylinders containing liquefied petroleum gas should only be handled and stored in the vertical position. Cylinders should never be rolled. Do not allow cylinders to slide or come into contact with sharp edges and they should be handled carefully. Ensure that cylinders are stored away from oxidants. Comply with local legislation.

#### 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

##### Occupational Exposure Hazards.

As vaporised LPG is a simple asphyxiant, avoid any areas where spillage has taken place.

##### Engineering control measures.

Engineering control measures are preferred to reduce exposure to Oxygen-depleted atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation, separate from other exhaust ventilation systems. Ensure that all electrical equipment is flameproof.

##### Personal Protection.

Self-contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes, or boots, should be worn when handling containers. Skin. Wear loose-fitting overalls, preferably without pockets.

#### 9 PHYSICAL AND CHEMICAL PROPERTIES

##### Physical Data

Specific Volume @ 20°C & 101,325 kPa	471 ml/g
Auto ignition temperature	450°C
Relative density ( Air=1 ) @101,325kPa	+1,75
Flammability in air	2,2-9,5%
Colour - Liquid	Clear
Taste	None
Odour	EthylMercaptan
Specification	SANS 1174

#### 10 STABILITY AND REACTIVITY

##### Conditions to avoid

The dilution of the oxygen concentration in the atmosphere to levels which cannot support life. The formation of explosive gas/air mixtures.

##### Incompatible Materials

Any common, commercially available metal may be used with commercial (or higher) grades of liquefied petroleum gases because they are non-corrosive, though installations must be designed to withstand the pressure involved and must comply with all state local regulations.

##### Hazardous Decomposition Products.

The constituents of liquefied petroleum gas are relatively stable. However, on combustion, toxic compositions, typically carbon monoxide, may be formed, depending on conditions.

#### 11 TOXICOLOGICAL INFORMATION

Acute Toxicity	TLV 1000 VPM
Skin & eye contact	No known effect.
Carcinogenicity	Severe cold burns can result in carcinoma (For Further Information see Section 3, Adverse Health Effects)

#### 12 ECOLOGICAL INFORMATION

Vaporised liquefied petroleum gas is heavier than air, and can cause pockets of oxygen-depleted atmosphere in low-lying areas. It does not pose a hazard to the ecology, unless the gas/air is ignited.

#### 13 DISPOSAL CONSIDERATIONS

#### Disposal Methods

Disposal of Propane, as with other flammable gases, should be undertaken only by personnel familiar with the gas and the procedures for disposal. Contact the supplier for instructions. In general, should it become necessary to dispose of Propane, the best procedure, as for other flammable gases, is to burn them in suitable burning unit available in the plant. This should be done in accordance with appropriate regulations.

#### Disposal of packaging

The disposal of cylinders must only be handled by the gas supplier.

Page 2 of 2

#### 14 TRANSPORT INFORMATION

##### ROAD TRANSPORTATION

Road Transportation	
UN No.	1075
ERG No.	115
Hazchem warning	2A-Flammable gas
SEA TRANSPORTATION	
IMDG	1075
Label	Flammable gas
AIR TRANSPORTATION	
ICAO/IATA Code	1075
Class	2.1
Packaging group	
Packaging instructions	Cargo 200 Passenger Forbidden

Maximum Quantity allowed	Cargo 150kg Passenger Forbidden
--------------------------	------------------------------------

#### 15 REGULATORY INFORMATION

SUPPLEMENT TO SANS 10234:2008  
Edition 1  
Annex A Index No. 608-011-00-8

##### Hazard & Precautionary statement codes

H220	Extremely Flammable Gas
P210	Keep away from heat/sparks/open flames/ hot surfaces - NO SMOKING ( Manufacture, supplier or the competent authority to specify ignition sources)
P377	Leaking gas fire: Do not extinguish unless leak can be stopped safely
P381	Eliminate all ignition sources if safe to do so
P403	Store in a well-ventilated place

#### 16 OTHER INFORMATION

##### Bibliography

Handbook of Compressed Gases - 3<sup>rd</sup> Edition  
Matheson, Matheson Gas Data Book - 6<sup>th</sup> Edition  
Supplement to SANS 10234 - List of classification and labelling of chemicals in accordance with Globally Harmonized System (GHS)

##### EXCLUSION OF LIABILITY

Whilst AFROX made best endeavour to ensure that the information contained in this publication is accurate at the date of publication, AFROX does not accept liability for an inaccuracy or liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.

<https://www.news24.com/news24/video/southafrica/news/watch-gas-tanker-fire-in-joburg-closes-n1-for-more-than-36-hours-20201102>

<https://www.news24.com/news24/southafrica/news/worcester-blast-they-were-thrown-into-the-air-fire-chief-20190711>

<https://www.news24.com/news24/SouthAfrica/News/update-gas-tanker-explosion-in-worcester-destroys-buildings-injures-firefighters-20190710>



A Conradie

From: Marius Kleynhans < >  
Sent: Monday, 12 July 2021 09:56  
To: A Conradie  
Subject: Fwd: Municipal Notice No. 89 : I2O21APPLICATION FOR CONSENT USE ERF 2740 HERMANUS BUSINESS PARK

TP. N. (head)  
(i.l. Olivia)

Begin forwarded message:

From: Marius Kleynhans < >  
Subject: Municipal Notice No. 89 : I2O21APPLICATION FOR CONSENT USE ERF 2740 HERMANUS BUSINESS PARK  
Date: 12 July 2021 at 09:54:52 SAST  
To: [alida@overstrand.gov.za](mailto:alida@overstrand.gov.za)  
Cc: Havenga Makelaars < >

Overstrand Munisipaliteit

VIR AANDAG: Mnr. H. Boshoff

Ek is Marius Kleynhans, die eienaar van Erf 2163, Aragonstraat, Sandbaai en Erf 1764, Aragonstraat, Sandbaai. My versoek is dat daar deurgaans by die "design guidelines" gehou word. My kontakbesonderhede is ( ) of ( )

Vriendelike groete  
Marius Kleynhans

FILE NO:	2740
	Sandbaai
SCAN NO:	2740158-2
COLLABORATOR NO:	1559256

12 JUL 2021

TR. A. Conradie  
(H. Olivia)



**A Conradie**

**From:** Susan Mercer <.....>  
**Sent:** Wednesday, 14 July 2021 10:24  
**To:** A Conradie  
**Cc:** Susan Mercer  
**Subject:** Objection to application on ERF 2740 19 Argon Street, Sandbaai

Good Morning

I am an owner and resident of ERF 2320 – 9 Mooizicht Gardens. I have an interest in this application due to the close proximity of the proposed application to my property

I have two main concerns:

1. Much reference is given to petrol stations, but petrol stations do not normally abut a residential area/complex. Although there is reference to a risk plan being done it was not attached as noted in the document so we are unable to view the results, which remains a concern. Although it talks about fire protection and a wall if the gas tank catches fire or explodes it will have a serious impact on homes nearby. We all know that in this country things are not maintained properly even with the best processes in place. People always remain the problem. It is noted on page 5 of the document about the description of noxious trade and that it is a potential source of danger or health risk to the general public or persons in surrounding areas so how can this be acceptable. On page 6 it clearly notes that LPG is a hazardous substance, just because it is not noxious does not take away the danger to surrounding people and properties. People who are in constant close proximity of LPG have been known to have significantly higher values of red blood cell counts, haemoglobin, haematocrit mean corpuscular haemoglobin and platelet counts, therefore this is a potential health risk if gas leaks and is not detected through poor management. Also if gas is leaking it could affect people with health conditions or the elderly which live in direct proximity as it is an asphyxiant
2. Noise levels from gas cylinders being moved around constantly, as per page 5 under noxious trade noise is also mentioned

I understand the need for such a facility, but it should not be directly bordering a residential area

regards

Susan Mercer  
Group Business Resilience Manager | Alexander Forbes Group Services

FILE NO:	2740
	Sandbaai
REF ID NO:	Mercer
COLLABORATOR NO:	EG9802



Winner of the Africa BCI awards 2020 – Business Continuity and Resilience Professional  
Winner of the Africa BCI awards 2018 – Most Effective Recovery

Tel +27 11 269 0531 | Fax +27 11 263 1699 | [mercers@forbes.com](mailto:mercers@forbes.com)

Alexander Forbes Group Services (Pty) Ltd | +27 11 269 0000 | PO Box 787240, Sandton, 2146, South Africa | Alexander Forbes Place, 115 West Street, Sandown  
Co. Reg. No. 2014/043524/07 | [www.alexanderforbes.co.za](http://www.alexanderforbes.co.za)

14 JUL 2021

TP N. Meent  
(H. Olivier)



Rigtech & Services cc

Reg. 2006/057063/23 Vat. 4160227593  
18 Argon Street Hermanus Business Park

14 July 2021

Overstrand Municipality  
Magnolia street  
Hermanus  
7200

Attention: [alida@overstrand.gov.za](mailto:alida@overstrand.gov.za)

FILE NO:	21 2740
	Sandbaai
SCAN NO:	Kiglean
COLLABORATOR NO:	1509879

Dear Sir/Madam

Re; ERF 2740, 19 ARGON AVENUE, SANDBAAI; APPLICATION FOR CONCENT USE; PLAN ACTIVE (obo BLUE HORIZONZ PROPERTIES CC)

I am the owner of ERF 1780 which is opposite ERF 2740 and wish to condone approval of this proposal.

The application does not comply with the existing Building Guide Lines of the Hermanus Business Park and requires the approval of the appointed architect. The concept for the Hermanus Business Park was attractive hence my investment in the Park. In my opinion not suited for a gas supplier or service station.

LPG gas in its raw form is not toxic but with the processed product with additives added it will most certainly be dangerous to the environment and the adjacent buildings.

The road towards the end turns into a cul de sac and parking space will be a problem as the larger trucks need two lanes to turn.

The ERF2740 is too small for such a plant and too close to residential area.

I would appreciate feedback on the outcome of this application.

Regards  
E C Pool

14 JUL 2021

TP

TP- n. (head  
(I. Oliver)



**A Conradie**

**From:** Ignatus Van Der Westhuizen  
**Sent:** Friday, 16 July 2021 12:24  
**To:** A Conradie  
**Subject:** FW: FW: Objection to application for consent use on ERF 2740 19 Argon Street, Sandbaai

I am a house owner in Mooizicht Gardens Erf 2319. I would like to be registered as a interested and effected party to this proposal for land use.

Notice is taken that this installation compares well with the storage of fuel (petrol) defined as a service station. When it is within meters of a residential area, this perspective changes. Throughout this application it keeps referring to storage of petrol.(fuel) It should be kept in mind that the storage of fuel for a petrol station is underground and not situated right next to a residential houses, within meters, above ground.

It also keeps referring to a risk assessment that was done but was not attached to the documentation supplied by the municipality. It states as a low risk assessment instillation for an industrial area. But definitely not no risk when it is within meters of a residential area. This risk assessment also recognizes LPC retail the same as petrol or diesel and certainly a flammable and hazardous substance.

The proposal also states that this will not have a negative impact on surrounding properties. That I have to object to. Who would want to buy a property that is in close proximity to a gas refilling station, constant noise of gas containers being moved around and the potential danger of an explosion.

Has the impact of inhalation of this odorless "non noxious" LPC on the human body been taken into account?

If taken into account that this proposal is situated next to a property that wants to develop a shooting range with ammunition on this premises I think it is not a desirable idea.

Dr IP van der Westhuizen.

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FILE NO:	ERF 2740
	Sandbaai
PLAN NO:	Ignatus
LABORATOR NO:	1561404

16 JUL 2021

1

TP



TOWN & REGIONAL PLANNERS  
STADS-EN STREEKSBEPLANNERS



ANNEXURE E 1/21

6 Magnolia St / Str  
PO Box / Posbus 296  
HERMANUS  
7200  
Tel: (028) 313 1673  
Fax / Faks: (028) 312 1351  
Email:  
[planactive@hermanus.co.za](mailto:planactive@hermanus.co.za)  
Website: [www.planactive.co.za](http://www.planactive.co.za)

TP. A. Aheal  
(H. Boshoff)

Our reference: PA21021  
Your reference: 2740HSB

27 October 2021

The Municipal Manager  
Overstrand Municipality  
PO BOX 20  
Hermanus  
7200

FOR ATTENTION: MR H. Boshoff

Sir

FILE NO:	CF 2740 ✓
	Sandbaai
SCAN NO:	HSB 2740
COLLABORATOR NO:	1596827

**COMMENTS ON OBJECTIONS**

**ERF 2740 SANDBAAI: APPLICATION FOR CONSENT USE**

Reference is made to our application dated 12 May 2021 as well as your covering letter dated 27 July 2021 accompanying the 8 letters of comments / objections received.

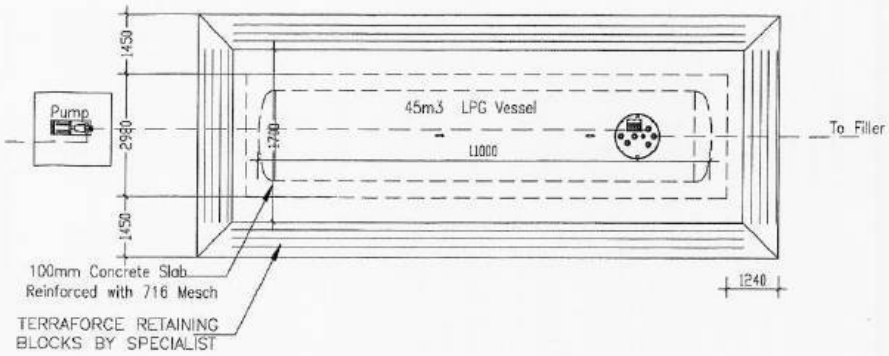
Taking into consideration the objections that were received, Mr. Steve Rundle from Gas Hub decided to introduce proposals for even further safety measures even though the Overstrand Municipal Fire Department supports the application proposals in its current format, based on the supporting information submitted with the application in May 2021.

The site development plan that accompanied our application will remain the same with reference to the layout of the various associated land uses. The proposed change is to change from an above ground bulk LPG tank to a mounded installation. A mounded installation means that the tank will be placed above ground on top of a 100mm concrete slab, enclosed with terraforce retaining blocks of which the void surrounding the tank and the terraforce blocks will be filled with sand. A mound installation will have the same effect as a tank being installed underground. Please refer to the drawings that are contained in the risk assessment, enlarged plans attached to our comments and the abstracts below from the drawings:

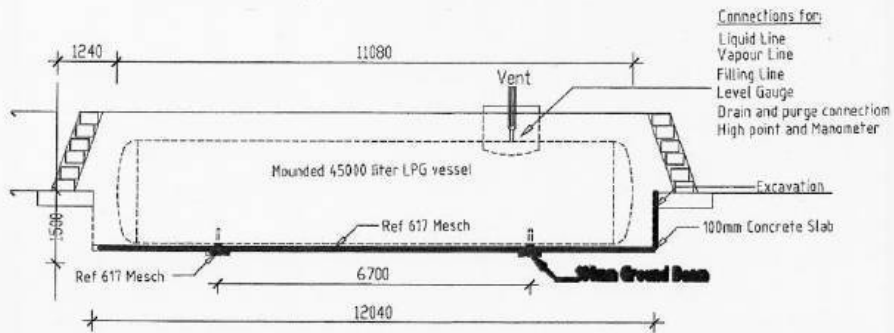
Divine Inspiration Trading 329 (Pty) Ltd. trading as Plan Active  
Reg. No. 2006/030921/07  
Vat. No. 4770250340

John Mc Lachlan: Ndip (Town Planning) Tech Witwatersrand; MSAPI Nr.10908; SACPLAN Tech.Pln B/8250/2014  
Pauline Spronk: B (Soc Sc) US, BA Hon (UNISA)  
Meriké Lerm: B. Art et Scien Cum Laude (Town Planning) UNW; SACPLAN Pr.Pln A/158/2009

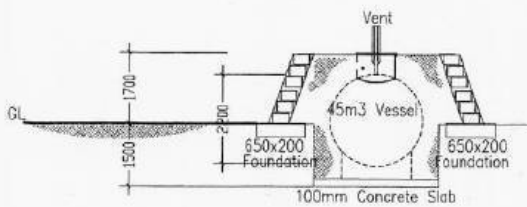
TP  
27 OCT 2021



**LPG Vessel Layout Plan**  
1:100



**LPG Vessel Sectional View**  
1:100



**LPG Vessel Sectional View**  
1:100

Below is a photograph of a typical mounded tank installation:



Amending the plan from an above ground tank to a mound installation significantly reduces the risk even though the submitted proposal was found to be an acceptable low risk installation in terms of the risk assessment that accompanied our application. The risk assessment documentation has been amended to make provision for a mound installation and a copy is enclosed for your attention.

We would also like to bring the following information, received from MHR Consultants, who has prepared the risk assessment, under your attention and it will also have to be taken into consideration:

- **LPG is not a noxious gas;**
- **It is not poisonous;**
- **It is odourless and must be stench for detection purposes;**
- **It is clean burning and not a greenhouse gas;**
- **The retailing of LPG is considered the same as the retailing of petrol and diesel;**
- **LPG is classified a Class 1 flammable substance, the same as petrol;**
- **LPG is a hazardous substance similar to diesel and petrol, but not a noxious substance;**
- **Bulk LPG vessels of 45m<sup>3</sup> and more are a common occurrence at hospitals and shopping centres all over the country;**
- **The retail of fuel as per the definition above of a service station is a primary right in terms of the zoning of Erf 2740 Sandbaai.**
- **A mounded tank cannot BLEVE. (Boiling Liquid Expanding Vapor Explosion (BLEVE))**  
The failure of a closed container as a result of overpressurization caused by an external heat

source. A major failure of a closed liquid container into two or more pieces when the temperature of the liquid is well above its boiling point at normal atmospheric pressure.

*With reference to the above information and the classification of LPG is it clear that it compares well with the storage of fuel (petrol) that falls within the ambit of the primary right under an Industrial Zone 1 zoning defined as a service station.*

The objections and our **comments** can be summarised as follow:

1. Safety- 45m<sup>3</sup> meter tank above ground next to residential property for purposes of refilling and storage of other gas cylinders. No limitation on quantity of storage.

**There is a limitation on the storage capacity of which the figures were disclosed in our motivation report as well as the Risk Assessment that accompanied our application. In our motivation the following statement was made: "A bulk storage tank of 45m<sup>3</sup> LPG is proposed and the storage of 20m<sup>3</sup> LPG cylinders varying in size from 9kg to 48kg."**

**Please also refer to Paragraphs 2.5, 2.7 & 2.8 on pages 18 and 19 of the Risk Assessment that read as follow:**

#### **2.5. LPG Installation**

The bulk LPG installation will consist of a 45m<sup>3</sup> vessel. The truck offloading point will be located on a driveway east of the installation.

The bulk vessel will have a liquid take-off that feeds the pump to fill the cylinders.

LPG is kept under pressure of typically about 6.25 bar in order to keep the gas in a liquid state at a temperature of 24°C.

The bulk vessel will be filled a maximum of once per week.

#### **2.7. LPG Cylinder Storage**

Two 10 000kg storage areas will be located on the site. The cylinders will be stored in accordance with the requirements of SANS 10087. There will be gangways between cylinders for easy access to all cylinders in the storage area. Full and empty cylinders will be clearly demarcated.

#### **2.8. LPG Cylinder Storage**

The filling area will be located next to the LPG bulk vessel and will be fitted with two electronic scales. The filling area will be fitted with a roof and suitable for the storage of 500kg of cylinders.

2. Safety-Explosion and Fire Prevention Plan- is there one available?

Fire Protection Plans / Emergency plans were compiled by Mr. Joe Schoeman of Profire Consulting (Pty)Ltd. The plan accompanied the Risk Assessment. (Section 15.3: Drawings) The Overstrand Municipal Fire Department has no objection against the proposed LPG storage, filling and distribution facility, subject to the compliance of SANS 10400 A:2016, 10400-T:2020, 10400-W and the By-Law Relating to community fire safety.

3. Safety – Gas leakage prevention plan – is there one available?

There is no gas leakage detector as the liquid gas is transferred in an enclosed environment. The Bulk tank does however have safety features for emergency shut off on all the connecting valves from the tanker to the Bulk tank.

4. Risk Assessment undertaken? Especially in lieu of residential area backing onto gas supplier.

A Risk Assessment was conducted by MHR Consultants in accordance with International Standards ISO//IFC 17020:2012 & Major Hazard Installations and SANS 1461:2018 that accompanied our application.

The risk assessment concludes that the proposed LPG installation is a low risk installation and acceptable for this industrial area. The owner has confirmed that the LPG depot will conform to all the prescribed regulations and mitigating measures proposed by MHR Consultants, as stipulated in their risk assessment, in order to guarantee the safety of the personnel, surrounding landowners and the general public. Please also refer to the revised risk assessment that was conducted after our client decided to put further safety measurements in place by changing the bulk tank to a mound installation as previously mentioned.

5. Safety – Previous application for a shooting range indoor- potential misfire, firearm misuse?

An indoor shooting range has strict rules and regulations in so far that all members and visitors will have to comply with. Furthermore, all firearm owners must obtain a competency certificate to be able to own a firearm. An indoor shooting range must guarantee that all bullets be contained within the indoor shooting range and includes stray bullets as a safety measure. Subsequently an indoor shooting range will not pose a threat to the proposed LPG storage, filling and distribution facility. As mentioned above, the risk has been greatly reduced by changing the above ground bulk storage tank to a mound installation. It should

also be emphasised that the shooting range is an indoor shooting range, the discharge of a firearm will therefore only take place indoors.

6. Health and Safety- Where is the guarantee no noxious fumes will be released into the outside air and that adjoining residents will not be exposed to inhalation of lead or other noxious fumes from propellant gases? Risk Assessment?

As mentioned earlier in this report LPG is non-toxic. When the tanker fills the holding tank the process takes place in a closed environment. A filling hose from the LPG tanker is connected to the holding tank. Once the filling hose is secured to the holding tank valves are opened and the LPG is pumped into the holding tank. Once the filling process is completed the valves are closed and the filling hose is disconnected. The same process applies when the individual LPG cylinders are filled from the bulk tank. Subsequently always being in a closed environment LPG does not escape. When LPG is inhaled in excessive amounts it can induce headaches and dizziness. These excessive amounts of fumes to induce the mentioned headaches and dizziness are not being released during the filling of the bulk tank or the filling and storage of the LPG cylinders.

7. Environmental impact study – Has it been conducted, bearing in mind the residential property nearby.

An Environmental Impact Study has not been conducted. In terms of the National Environmental Management Act impact studies are only required for LPG storage facilities for sites that hold more than 80m<sup>3</sup>.

8. Devaluation of property- potential devaluation of properties of Mooizicht Gardens due to high danger of gas storage and filling facility, leak, fire and explosive potential.

The Hermanus Business Park Development, that is in fact an industrial park, was established well before Mooizicht Gardens. At the time of the development of Mooizicht Gardens the developer and subsequent buyers of properties within the townhouse complex knew that they were buying property next to an established industrial area. Due to the location these townhouse erven were sold at competitive prices that were lower than similar townhouse erven that were established in the Sandbaai West area.

Cognisance must be taken of the fact that the erven situated within the Hermanus Business Park have a zoning of Industrial Zone 1: General Industry.

The following land uses can be established on any of these erven without having to go through an application process for a consent use:

*““industry, agricultural industry, builder’s yard, caretaker’s accommodation, factory shop, funeral parlour, heavy vehicle service station, industrial café (subject to the provisions of Chapter 16.10), motor repair garage, service trade, service station, transmission apparatus (subject to the provisions of Chapter 16.10), transport use, utility services, warehouse and workshop. “*

The following definitions of the above mentioned primary land uses are of interest:

*““agricultural industry” means an enterprise for the processing of agricultural related products on or close to the land unit where these agricultural products, whether land- or marine-based (such as aquaculture), are grown, harvested and raised where processing in such proximity is necessary due to the nature, perishability and fragility of such agricultural products or promotion of tourism related activities, and includes, inter alia, dairies, wineries, distilleries, olive processing facilities, breweries and other facilities required for the processing of agricultural products where produce packed is not produced on the land unit but does not include service trades;”*

*““industry” means a property which, in the Municipality’s opinion, is used as a factory or workshop and in which an article or part of such article is made, manufactured, produced, built, assembled, compiled, printed, ornamented, processed, treated, adapted, repaired, renovated, rebuilt, altered, painted (including spray painting), polished, finished, cleaned, dyed, washed, broken up, disassembled, sorted, packed, chilled, frozen or stored in cold storage; and includes self-storage, offices, caretaker’s quarters, warehouses and breweries, distilleries and mechanical workshops or other uses which are subservient and ancillary to the use of the property as a factory but does not include noxious trade or risk activities;”*

*““heavy vehicle service station” means a facility for vehicles above 3500 kg and associated uses that includes the retail supply of fuel, oil, tyres or spares, general repairs, exhaust fitment, washing of vehicles and a shop of which the floor area does not exceed 50% of the total floor space of all buildings on the land unit but does not include spray painting, panel beating, blacksmithing or body work;”*

**“motor repair garage” means a commercial enterprise where motor vehicles are provided with fuel and/or motor services such as engine overhauling, spray painting, panel beating, exhaust fitment, shock absorber fitment or body work and includes a service station.”**

**“service station” means a property for the retail supply of fuel and includes trading in motor vehicles, oil, tyres or motor spares, general motor repairs to motor vehicles, exhaust fitment, washing of vehicles, and a shop of which the floor area does not exceed 50% of the total floor space of all buildings on the land unit but does not include spray painting, panel beating, black smithery or body work;“**

**“workshop” means a building or a part of a building where articles are produced, repaired, restored and assembled but does not include a noxious trade, abattoir, brickyard, sewerage works, service station, motor repair garage, industry or agricultural industry but may include a service trade; “**

Taking the primary and consent uses into consideration versus this application to accommodate the LPG bulk storage, filling and cylinder storage facility on the site is it very clear that there are other land uses that will have a greater impact on land values than the land use we are proposing.

It is also worth mentioning that Erf 2740 Sandbaai was formerly utilised as a recycling plant where noisy industrial equipment was used to move, sort and compress recyclable material. This operation made use of old shipping containers stacked on top of each other as office space etc. from where the recycling plant was managed. Please refer to the aerial photograph below depicting the recycling plant.



An operation such as this has a greater impact on the property values than what is proposed. It was mentioned in our motivation report that our client will make use of the shipping containers to be used as part of the infrastructure for the proposed LPG bulk storage, filling and cylinder storage facility but he has agreed that these shipping containers to be removed and that the site will be developed in accordance with the architectural guidelines of the Hermanus Business Park.

Furthermore, a risk assessment was compiled that concluded that the proposed LPG bulk storage, filling and cylinder storage facility is of low-risk and that it is acceptable for the placement in the area taking into consideration the existing surrounding land uses. Our client continued to investigate other even safer alternatives and decided to change the above ground bulk tank to a mounded installation as previously explained. Subsequently the risk has been significantly reduced and it is still classified as a low-risk installation. The risk details of the installation are covered in the risk assessment.

All precautionary measures will be put in place as per the risk assessment, fire and emergency plans, and all other rules and regulations that govern the proposed LPG bulk storage, filling and cylinder storage facility will be adhered to. The public will not have access to the site to purchase LPG cylinders or to have them refilled. Only staff will be allowed onsite, the tanker that refills the bulk LPG tank and the delivery vehicles that will dispatch the refilled LPG cylinders. All the activities will take place on a secured site. With reference to the photograph on page 3 of this document, depicting the mound installation of a mound tank it is clear that the site will be kept neat and as mentioned, any new structures will conform to the applicable architectural guidelines. The bulk tank will not be visible from the road.

The proposed LPG bulk storage, filling and cylinder storage facility will not have a negative impact on the adjoining erven and its land uses and will be a low-risk installation. The LPG bulk storage, filling and cylinder storage facility will furthermore be an asset to the Overstrand area as it will now be able to dispatch LPG cylinders locally.

9. Die stoor van 60m<sup>3</sup> vloeibare gas kan uiters gevaarlik wees vir die eienaars van die omliggende erwe, om nie eers te praat van die woonbuurt teenaan Erf 2740 nie.

The risk involved of the proposed LPG bulk storage, filling and cylinder storage facility has been dealt with in detail in the risk assessment report and we have also enclosed a revised risk assessment for a mound installation. The proposed use is classified as a low risk installation. For example, there is a 1:30 000 000 chance for the event of an explosion taking

place and if it should happen it will be contained within a space of 10-15m of the site. Surrounding areas will not be affected. No unauthorised people or general public will be allowed onsite, and no sales will take place from the site in order to guarantee the safety of the employees and the surrounding land owners.

10. I find this to be yet another deviation from the original intent of the Hermanus Business Park, and it's Design Guide. From my documentation this Erf 2740 was previously 1770 and no application was ever made for my pre submission design approval or comment on that erf number. When it was changed to 2740 I have no knowledge, equally I have never been involved in pre submission approval for it as erf 2740. I can say with certainty that had existing the recycling property container structures been put forward to me for comment I would most certainly not have approved it. The concept for the development was an attractive Business Park, not an Industrial hub. From the photos within the Motivation it gives the impression of an eyesore that does not belong to the Hermanus Business Park.

Somewhere in the management structure it seems that over the years many changes and approvals have been made within reference to me, equally there appears to be no onsite inspection process to ensure that approved plans are/were being constructed in compliance thereof, and that approved structures and their environments are well maintained. This consent use application contains design drawings for layout and structures that most certainly do not comply to the requirements of the Design Guide, for that reason alone I would most definitely not condone approval of this proposal.

**We take cognisance of the contents of the above objection. The proposed layout of the site remains the same with the exception of the above ground tank being changed to a mound tank installation as depicted on page 3 of this document and as indicated on the revised plans that accompany the risk assessment report. Our client has furthermore agreed that new structures will be designed to comply with the Architectural Guidelines of the Business Park.**

**Hermanus Business Park consists of Industrial Zone 1 erven of which there are a limited supply of in the Overstrand Municipal area. Subsequently The Hermanus Business Park can be classified as an industrial hub because of the zoning of the erven within the development and its primary land uses.**

11. This is not a standard LPG outlet as we know it e.g. Hermanus Gas or Gas Hub. This is a LPG depot with a filling plant or as I refer to it " a LPG processing operation".

The first issue is the volume of LP gas contained in a single container or storage tank on this specific premises. The proposed 45 cub meter bulk storage tank equates to around 500 individual 48 kg LPG cylinders. A 48 kg cylinder's height is about shoulder height. In the event of a catastrophic explosion in an area with multiple 48 kg cylinders, numerous of these cylinders might be distributed all over the area by the force of the explosion rendering the bulk of them harmless. If there is a catastrophic event with a 45 cub, meter bulk storage tank, there will not be much left of the surrounding environment.

Thirdly, LP Gas is a heavy gas which requires ventilation. This specific premise is basically contained in 4 boundary walls. The proposal provides for 2 x 6 meter gates on Argon street. This may result in gas build up on the premises with only area ventilate onto Argon street. There is no provision for cross ventilation making this a super risky premise.

Lastly, we have noted that the LPG delivery truck has to reverse into the premises. This was exactly the cause of the gas explosion in Worcester some time ago. I am not sure what the regulations state about reversing of dangerous cargo onto sites. My logic just tells me, and following on from the Worcester event, that reversing into a site should not be allowed.

**The proposal does not constitute a processing plant. LPG is delivered with a specialised tanker that fills the bulk LPG tank onsite. The bulk LPG tank is then used to refill LPG cylinders that will be dispatched to LPG retailers in the Overstrand Region. The site is suitable to make provision for the proposed LPG bulk storage, filling and cylinder storage facility. Being outside, the open air site has sufficient ventilation, is well within the storage regulations and pose no threat. The risk involved with such an installation is covered in detail in the attached revised Risk Assessment report.**

There are no regulations as to the reversing of a tanker into the site. It is also much safer for the tanker to leave the site moving forward. Both Oryx and Unitrans, the two bulk LPG transporters have inspected the site and the reversing of the truck has been approved by them. Letters of approval accompanied the risk assessment.

Oryx provided the following reasons why they are comfortable having the tanker reverse into the site:

- The site provides more than adequate space for the bulk tanker to reverse.

- The bulk tankers are compliant in all legal aspects of transporting dangerous goods to customer sites.
- The personnel on the bulk tanker are well trained and have all required licencing around the operation of the bulk tankers as well as handling of goods.
- They follow and are trained in all aspects of safety and have full understanding of all the safety precautions to be followed.
- A fellow driver assistant will be available to guide the bulk tanker driver when reversing is taking place.
- Our 3<sup>rd</sup> Party Transporter will need to do their own Journey Risk Assessment when the site is ready to receive a bulk tanker. A full report on the Journey Risk Assessment will be generated by the transport company and the report will be available to all.

- Cognisance must be taken of the fact that the access road is a cul-de-sac that does not carry much traffic. Furthermore the filling of the LPG bulk tank will only take place after general working hours and most probably once a week.

With reference to the Worcester gas explosion, this has no similarities with the proposed site operation. The privately owned tanker carrying low grade butane gas was non-compliant for the transportation of LPG. The exposed valve behind the tanker was broken whilst reversing. The valve in question should not have been exposed. All legal and compliant tankers such as the ones used by Oryx and Unitrans do not have exposed valves or pipes. Litigation of the Worcester gas explosion is pending.

- 12. Mooizicht – Refer Erven 2322, 2323 and 2324 Sandbaai are vacant. Note this is residential use which is going to increase the residential population immediately adjacent to the proposed development. This if adequately factored into the risk assessment will demonstrate that the proposed operation will now place a higher amount of residents lives at risks due to the close proximity. As the residential area is adjacent to the proposed development, it must be noted that residents cannot and will not limit the activities like recreational activities of Braais, smoking and outdoor fireplace etc. We cannot infringe the rights of existing residents as a result of the proposed development. There needs to be adequate planning from the Municipality to allow such proposed activities to take place in areas where there is no risk to the immediate population of Hermanus.

The locality of Erf 2740 Sandbaai, that is within a mixed land use area consisting of industrial erven and townhouse erven, has been taken into consideration with the risk assessment.

The risk assessment makes it clear that the proposed LPG bulk storage, filling and cylinder storage facility is a low-risk installation and can be accommodated at its proposed location. Furthermore the filling of the bulk tank and cylinders take place within a closed environment making use of specialised valves and pipes.

The subject property is walled off with a boundary between the subject erf and Mooizicht Gardens. LPG is heavier than air, subsequently there is no possibility that in the event of a gas leak that the gas will leak into the residential area. Recreational activities will not be affected.

13. Hermanus has historically experienced protest action during which tyres, wood, shops etc were set alight. The recent protest action experienced in both Gauteng and KZN also provides guidance as the risks associated with these with commodity stocked business being targeted and subsequently set alight. This proposed activity thus increases the risk for the surrounding residential and small business community.

No LPG depots were targeted during the latest protests and looting sprees. The majority of lower income residents depend on LPG as a primary source of heat for cooking purposes, warm water and heat in general during the winter season. The proposed mound installation is also a much safer installation than a standard above ground installation.

14. LPG – By virtue of the product specification is stored in liquid form in tank and cylinders. However once exposed to atmospheric pressures changes phase to a "gas" phase. The product falls into a dangerous goods category. It is recorded as the UN-1075 classification with a Hazchem warning of -2A (Flammable Gas). The risk as a result of this operation and the large Bulk and cylinder storage is unacceptably high for the local community. We attach real examples of the catastrophe's experienced here in the Western Cape resulting in significant damage to the surrounding areas.

LPG will be contained in a pressurised bulk tank and cylinders. The examples that accompanied the objection are not relevant to this site operation. Professionals were appointed to deal with all the risks involved for the proposed LPG bulk storage, filling and cylinder storage facility. The outcome of the risk assessment concur that the proposed LPG bulk storage, filling and cylinder storage facility is a low-risk installation that can be accommodated on Erf 2740 Sandbaal.

15. The development would also by virtue of the nature of the product stored and handled, also result in a financial impact being passed onto the surrounding residential and industrial community in the form of having to now inform insurance companies of the nearby increased risk operation. This would lead to the premiums of the community being increased as a result of the high-risk activity proximity.

**Taking into consideration that Mooizicht Gardens is located west of the site and was developed after the Hermanus Business Park, which consists of industrial erven only. With reference to the primary land uses under the zoning of Industrial Zone I fuel tanks can be constructed on site with reference to the following land uses – service station, heavy vehicle service station and motor repair garage. Insurance companies would have taken the risk into consideration when they calculated their premiums. From the primary land uses mentioned in Paragraph 8 and above, some of these uses pose a similar risk to what is being applied for such as the supply of fuel. The risk assessment makes it very clear that the proposed land use is of low-risk and can be accommodated on Erf 2740 Sandbaai taking the current surrounding land uses into consideration.**

16. Valuation of surrounding properties – Residential developments would now be negatively impacted as a result of the proposed development being next to a Flammable substance facility (With substantial volumes). New development will be impaired and the existing property values negatively affected as a result of allowing such an operation within the close proximity on residential developments.

**Please refer to our comments under paragraph 8 above.**

17. The current proposed location indicates a single driveway for the entrance/exit. The current expected design for such dangerous goods operation requires that the premises have a dedicated entry point and a dedicated exit point. The industry practice in place is to ensure no bulk LPG tanker reverses into a loading/offloading area due to the dangers associated with the equipment in close proximity to the road tanker. This is a basic layout requirement for a bulk LPG operation and major wholesalers ensure conformity to these requirements nationally together with local municipalities/Fire Departments. This is certainly a high-risk item which further indicates the site is not suitable for such an operation.

**Two (2) Entrance /Exit points are provided onsite. The southern entrance will be used solely for the delivery of LPG by a specialised tanker and the northern access will be used solely for the distribution of LPG cylinders. The above statement from the objector is incorrect.**

The layout and specifically the entrances and exits of the proposed LPG bulk storage, filling and cylinder storage facility have been endorsed by Oryx and Unitrans after they conducted a site inspection. The application was also circulated to the Municipal Fire Department, the aforementioned department supports the application in its current layout and format. The layout of the proposed LPG bulk storage, filling and cylinder storage facility conforms to all the rules and regulations applicable to such an installation.

18. Storage risk is in the region of – 22 Tons (Road Tanker), 22 Tons (Bulk Tank) and 10 Ton (Full Cylinders. This has never been stored in Hermanus in such large quantities before. Has the local Fire department been adequately prepped to handle an emergency which might arise from this?

● All the necessary precautionary measures will be imposed as per the Fire Protection Plans / Emergency plans that were compiled by Mr. Joe Schoeman of Profire Consulting (Pty)Ltd. The application was also circulated to the Municipal Fire Departement, and they have no objections, conditions are imposed, that will be adhered to. With the proposed changes to the site plan to change the above-ground tank to a mound installation further reduces the risk.

19. The proposed plan shows the Bulk tank to be located close to the residential boundary. This is a certain flaw as the bulk tank poses the greatest risk of the operation as this is the largest pressurized vessel on site. The damage to both health and property is therefore extremely high.

● The tank has to be positioned in such a way that it is accessible to a bulk tanker that refills the bulk tank. As mentioned, the above-ground tank, that is already classified as a low-risk installation as determined by the risk assessment, will be changed to a mound installation. Subsequently the proposed LPG bulk storage, filling and cylinder storage facility does not pose a risk to the neighbouring properties. In fact, the risk is extremely low with reference to the damage of property or one's health. The risk assessment makes it very clear that the proposed LPG bulk storage, filling and cylinder storage facility is of low-risk and can be supported. SANS 10087, Part 3 B2.3.3.1 requires that a mounded tank to be a minimum of 1 meter from a building, boundary or equipment. The site plan indicates the placement of the tank to be 5m from the boundary wall.

20. Impact on services – An operation which stores over 50 Tons of flammable product would require a substantial amount of water supply to be compliant. These would be used regularly

as part of fire system tests as required by the OHSA for supply to on-site hose reel hydrants and the road tanker and bulk tank sprinkler systems. Planned residential development water supply would be impacted and with the current water shortages experienced the municipality would have to prioritize the LPG operation by sacrificing supply to residential areas during periods of shortages.

**A fire protection plan has already been designed and approved. The Municipal Fire Department also has no objection against the proposed LPG bulk storage, filling and cylinder storage facility, enough water can be supplied to the site in case of a fire.**

21. The major LPG filling plants are situated in the Western Cape in suitable industrial areas. To address the shortages, one should consider the additional storage location in the Hermanus area of filled cylinders which can be supplied from Cape Town at lower risk to the surrounding area.

Due to the high demand for the provision of LPG to households all over the Overstrand Municipal area as a result of unpredictable power outages and high electricity prices, suppliers are experiencing a LPG supply shortage. The Department of Energy has notified all the Gas supplying companies that it needs to 'double' the usage of LPG in South Africa over the next 5 years due to Eskom's inability to provide sufficient electricity. Normally refilled gas cylinders are obtained from a depot in Cape Town. LPG cylinders that come in various sizes such as 9kg, 19kg and 48kg gas cylinders may only be filled at approved LPG depots. Another factor that also needs to be taken into consideration is the increase of traveling costs to deliver refilled cylinders due to the rising petrol and diesel prices. It has now become an urgency to accommodate a bulk LPG vessel within the area where the refilling and distribution of the various gas cylinder sizes mentioned above can take place in order to fulfil the demand in the Overstrand area at reasonable prices.

22. The current supply constraints are experienced as a result of bulk supply limitations as the local refineries are not currently supplying LPG to wholesalers. This has been well documented in the media. A bulk filling facility would only add to the supply chain constraints experienced.

**We disagree with the above statement and maintain our stance as per the contents of our comments under paragraph 21 above.**

23. The term "Noxious Trade" has been regularly used in the application to have LPG likened to Petrol and Diesel. It must be highlighted that the properties of LPG differ from liquid fuels (Petrol and Diesel). LPG is a flammable gas and has its own UN number (1075) for a reason. LPG ignites faster than both Diesel and Petrol and as per the attached articles, and LPG incident results in a rupture of pressurized vessels resulting in a catastrophic "Blev" which results in serious damage to people and properties. The main reason for this is that LPG is stored under pressure in specialized pressure vessels unlike Petrol and Diesel. Once released to atmospheric pressure LPG expands rapidly and significantly, which give LPG the highly flammable risk. We have attached an example of an MSDS sheet for your attention.

**We take cognisance of the contents of the comment above. The fact is that LPG, petrol and diesel are all flammable. LPG gas is handled within a closed environment when the bulk tank is filled and when the various size cylinders are filled, unlike diesel or petrol that is exposed to the atmosphere once a vehicle is being filled with fuel. Being within a constant closed pressurised state the ignition of LPG is highly unlikely. The proposed LPG bulk storage, filling and cylinder storage facility is also not accessible to the general public, only authorised personnel may enter the site. Diesel and petrol filling station are accessible to the general public and it is therefore our opinion that a filling station has a greater risk of diesel or fuel to be accidentally ignited in comparison to the proposed LPG bulk storage, filling and cylinder storage facility.**

**All the relevant risks that the proposed LPG bulk storage, filling and cylinder storage facility may pose have been dealt with in detail in the risk assessment that concludes that the proposed LPG bulk storage, filling and cylinder storage facility is of low- risk and can be supported.**

24. It must be further noted that the equipment used for the handling of LPG varies significantly from the equipment used to handle both Petrol and Diesel. LPG is stored in pressurized tanks as it is required to be stored under pressure at all times. This includes the road tanker, Bulk tank and the LPG cylinders themselves.

**Please refer to our comments under paragraph 23 above.**

25. Ek is Marius Kleynhans, die eienaar van Erf 2163, Aragon straat, Sandbaai en Erf 1764, Aragon straat, Sandbaai. My versoek is dat daar deurgaans by die "design guidelines" gehou word.

**As previously mentioned, our client has agreed that new structures will be designed to comply with the Architectural Guidelines of the Hermanus Business Park**

26. Notice is taken that this installation compares well with the storage of fuel (petrol) defined as a service station. When it is within meters of a residential area, this perspective changes. Throughout this application it keeps referring to storage of petrol (fuel). It should be kept in mind that the storage of fuel for a petrol station is underground and not situated right next to a residential houses, within meters, above ground.

It also keeps referring to a risk assessment that was done but was not attached to the documentation supplied by the municipality. It states as a low risk assessment installation for an industrial area. But definitely not no risk when it is within meters of a residential area. This risk assessment also recognizes LPG retail the same as petrol or diesel and certainly a flammable and hazardous substance.

The proposal also states that this will not have a negative impact on surrounding properties. That I have object to. Who would want to buy a property that is in close proximity to a gas refilling station, constant noise of gas containers being moved around and the potential danger of an explosion.

Has the impact of inhalation of this odourless "non noxious" LPC on the human body been taken into account?

**As mentioned earlier in our comments on the objections, our client has decided to implement a mound installation that is similar to an underground installation, having a great impact on further lowering the risk. Please refer to our comments under paragraphs 4, 6 and 8 above.**

27. The application does not comply with the existing Building Guide Lines of the Hermanus Business Park, and requires the approval of the appointed architect. The concept for the Hermanus Business Park was attractive hence my investment in the Park. My opinion not suited for a gas supplier or service station.

**As mentioned earlier in our comments on the objections, our client has agreed that the containers will not be incorporated with the proposed LPG bulk storage, filling and cylinder storage facility. The proposed layout of the site remains the same with the exception of the above ground tank being changed to a mound tank installation as depicted on page 3 and as indicated on the revised plans that accompany the risk assessment report.**

**Our client has furthermore agreed that new structures will be designed to comply with the Architectural guidelines of the business park.**

28. LPG gas in its raw form is not toxic but with the processes product with additives added it will most certainly be dangerous to the environment and the adjacent buildings.

**Please refer to our comments under paragraph 6 above.**

29. The road towards the end turns into a cul-de-sac and parking space will be a problem as the larger trucks need two lanes to turn.

**Please refer to our comments under paragraph 17 above.**

30. The Erf 2740 is too small for such a plant and to close to residential area.

**The site was inspected by ORYX and a risk assessment was done prior to submitting the application in order to ascertain if the site is suitable. It was concluded that after the site inspection and risk assessment were finalised that the site is suitable for the proposed LPG bulk storage, filling and cylinder storage facility. As mentioned in our response, the proposed LPG bulk storage, filling and cylinder storage facility is a low-risk installation.**

31. If taken into account that this proposal is situated next to a property that wants to develop a shooting range with ammunition on this premises I think it is not a desirable idea.

**Please refer to our comments under paragraph 5 above.**

32. Much reference is given to petrol stations, but petrol stations do not normally abut a residential area/complex. Although there is reference to a risk plan being done it was not attached as noted in the document so we are unable to view the results, which remains a concern. Although it talks about fire protection and a wall if the gas tank catches fire or explodes it will have a serious impact on homes nearby. We all know that in this country things are not maintained properly even with the best processes in place. People always remain the problem. It is noted on page 5 of the document about the description of noxious trade and that it is a potential source of danger or health risk to the general public or persons in surrounding areas so how can this be acceptable. On page 6 it clearly notes that LPG is a hazardous substance, just because it is not noxious does not take away the danger to surrounding people and properties. People who are in constant close proximity of LPG have

been known to have significantly higher values of red blood cell counts, haemoglobin, haematocrit mean corpuscular haemoglobin and platelet counts, therefore this a potential health risk if gas leaks and is not detected through poor management. Also if gas is leaking it could affect people with health conditions or the elderly which live in direct proximity as it is an asphyxiant.

**A full copy of the risk assessment and fire plan accompanied our application to the Overstrand Municipality. A mound tank is now proposed that brings down the risk on an already low-risk installation even furthermore. The risk assessment clearly indicates that the proposed installation is of a low-risk as previously mentioned in our comments on the objections and that it is a suitable use for the subject erf. The company that will be managing the installation is privately owned and they will ensure that maintenance will be carried out on a regular basis as determined by the rules and regulation applicable to such an installation. The company will not put themselves at risk for the injury of people, damage to property in the vicinity etc. due to negligence or the lack of maintenance. They will ensure that the installation will be safe at all times.**

LPG is a hazardous flammable substance and therefore the necessary precautionary measures will be put in place to ensure the safety of the employees and the surrounding landowners. Due to the hazardous classification of LPG a risk assessment was compiled in order to ensure that the proposed installation is safe. Our client has proposed a mound installation that decreases the risk of the low-risk installation even further.

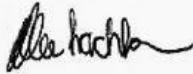
As mentioned earlier in our response on the objections, LPG is non-toxic. There is no evidence that people residing in close proximity to these types of installations experience higher red blood counts. Also refer to our comments under paragraphs 6, 11, 12, 14, 19 and 23.

33. Noise levels from gas cylinders being moved around constantly, as per page 5 under noxious trade noise is also mentioned.

**It should be noted that Erf 2740 Sandbaai is an industrial zoned erf. It reasonable that some form of noise will be generated from such a site. Formerly the site was used as 'n recycling plant that made use of rather large equipment to move and compact recyclable materials. The LPG cylinders on this site will be moved onsite by making use of trolleys. Noise generated from the site will be minimal.**

We trust that you will find our comments on the objections received in order and that the application will be dealt with favourably.

Yours faithfully



John Mc Lachlan



**Western Cape  
Government**  
Environmental Affairs and  
Development Planning

**DIRECTORATE: DEVELOPMENT MANAGEMENT  
(REGION 2)**

Helene.Janser@westerncape.gov.za  
Tel: +27 21 483 3544 Fax: +27 21 483 3633  
1 Dorp Street, Cape Town, 8000  
www.westerncape.gov.za/eadp

**REFERENCE:** 15/3/2/12/BO3

Overstrand Municipality  
PO Box 20  
HERMANUS  
7200

**FOR ATTENTION: DIRECTOR INFRASTRUCTURE & PLANNING**

**REQUEST FOR COMMENT – APPLICATION FOR CONSENT USE: ERF 2740, SANDBAAI**

1. Your request for comment, dated 9 June 2021, has reference.
2. The application under consideration is for a consent use for noxious trade to accommodate a bulk storage tank for 45m<sup>2</sup> for the storage of LPG on Erf 2740, Sandbaai. No on site sales to the general public will take place and, according to the Risk Assessment, the proposal is a low risk installation acceptable for this industrial area.
3. In consideration of the above, this Directorate has no objection from a provincial planning perspective to the proposed consent use application.

**Kobus Munro**

Digitally signed by Kobus Munro  
Date: 2021.07.08 09:23:01 +02'00'

**DIRECTOR: DEVELOPMENT MANAGEMENT - REGION 2**



**Western Cape  
Government**

Department of Environmental Affairs and Development Planning  
**Ntanganedzeni Mabasa**  
 Development Management: Region I  
[Ntanganedzeni.Mabasa@westerncape.gov.za](mailto:Ntanganedzeni.Mabasa@westerncape.gov.za) | Tel: 021 483 2803

**REFERENCE:** 16/3/3/6/E2/35/1183/21  
**INQUIRIES:** Ntanganedzeni Mabasa  
**DATE:** 9/7/2021

TP-A Theart  
(H Olivier)



The Municipal Manager  
 Overstrand Municipality  
 P. O. Box 20  
**HERMANUS**  
 7200

**Attention: Ms A Conradie**

Tel.: (028) 313 8000  
 Email: [alida@overstrand.gov.za](mailto:alida@overstrand.gov.za)

Dear Madam

**THE APPLICABILITY OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) ("NEMA") ENVIRONMENTAL IMPACT ASSESSMENT ("EIA") REGULATIONS, 2014 (AS AMENDED) WITH RESPECT TO THE APPLICATION FOR CONSENT USE ON ERF NO. 2740, SANDBAAI.**

1. The electronic copy of the abovementioned document dated 9 June 2021, as received by this Department on the same day, refers.
2. This letter serves as an acknowledgement of receipt of the correspondence by this Department.
3. According to the information contained in the correspondence, this Department notes the proposal entails the following:
  - 3.1 The proposed consent use on Erf No. 2740, Sandbaai in terms of the Overstrand Municipality Amendment By-Law on Municipal Land Use Planning for a noxious trade to accommodate a 45m<sup>3</sup> LPG storage tank that will be used to fill 9kg to 48kg gas cylinders.
  - 3.2 The filled gas cylinders will be stored on a portion of the property with a storage capacity of 20m<sup>3</sup>, resulting in a potential combined capacity of 65m<sup>3</sup>.
  - 3.3 The site will be used as a filling and distribution depot that will distribute the LPG cylinders to gas agencies from where it will be sold to the general public.
  - 3.4 No sensitive environmental features are present on the site.
  - 3.5 The site is zoned Industrial Zone 1: General Industrial and is located inside the urban area of Sandbaai.

FILE NO:	EL 2740-H5B
SCAN NO:	02
COLLABORATOR NO:	1558508
	Planning

08 JUL 2021  
TP

4. Your attention is therefore drawn to the listed activities in terms of the NEMA EIA Regulations, 2014 (as amended) as defined in Listing Notices ("LN") 1, 2 & 3 of 7 April 2017. Be advised that the proposed LPG depot with a maximum storage capacity of 65m<sup>3</sup> on an industrial zoned erf that is located inside the urban area of Sandbaai will not trigger any listed activity(ies) as defined in terms of the EIA Regulations, 2014 (as amended). Environmental Authorisation is therefore not required prior to the development of the LPG depot on Erf No. 2740, Sandbaai.
5. The above is based on the following:
  - 5.1. The proposed LPG depot with a maximum capacity of 65m<sup>3</sup> is less than the 80m<sup>3</sup> threshold.
6. Should any revision of the proposal on the said erf trigger any listed activity(ies) as defined terms of Listing Notice 1, 2 & 3, an application must be submitted and environmental authorisation obtained before such activity(ies) may commence
7. The applicant is reminded of his/her general duty of care and the remediation of environmental damage, Section 28(1) of NEMA specifically states that – "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."
8. The Department reserves the right to revise its comments and request further information from you based on any new or revised information received.

Yours faithfully

**Andrea** Digitally signed by  
Andrea Thomas  
**Thomas** Date: 2021.07.09  
08:06:45 +02'00'

**pp HEAD OF COMPONENT**  
**ENVIRONMENTAL IMPACT MANAGEMENT SERVICES: REGION 1**  
**DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING**

<b>OFFICE of THE CHIEF FIRE OFFICER</b> PO BOX 20 HERMANUS 7200 Tel: 028 313 5041/2 Fax: 028 313 1493 Email: <a href="mailto:lestersmith@overstrand.gov.za">lestersmith@overstrand.gov.za</a>	 MUNICIPALITEIT V. MARIKATZEP <b>OVERSTRAND</b>
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To : Riaan Kuchar  
 CC :

Reference : Additional comments – Erf 2740 HSB

Date : 20 December 2021

Dear Mr Kuchar

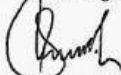
Reference is made to the Town Planning Application on Erf 2740 HSB, dated 8 June 2021.

The application was scrutinized by our Fire Safety Department for comments. The application was approved from a Fire Safety perspective, provided that the applicant complies to the SANS 10400 A: 2016, SANS 10400 T: 2020, SANS 10400 W: and the By-Law relating to Community Fire Safety By-Law P.N. 6454 of 2007.

The application, however, was not considered for comments from a Disaster Management point of view. As the head of the department, I would like to bring the following concerns under your attention with regards to the MHI (Major Hazard Installation).

1. The application makes mention of the fact that the vehicle(s) will be reversing into the premises. This is a concern from a Disaster Management Risk Assessment point of view as the access road from which the vehicles will reverse is quite busy. During season time or festivals especially the influx of visitors to Hermanus increases the population with up to 50%. As you are aware, Hermanus is a Tourist destination, attracting many weekend visitors.
2. The current resources of our own Fire Brigade are of a concern as we do not yet comply to the minimum requirements as prescribed by the SANS 10090: Community Protection Against Fires. The Fire Brigade does not have the minimum staff nor the specialized vehicles required to cope with an MHI in the event of an incident occurring.

Kind regards



Lester Smith

Senior Manager: Fire and Emergency Services, Disaster Management & Security Services



**H Boshoff**

**From:** Lester Smith  
**Sent:** Monday, 20 December 2021 11:08  
**To:** Patrick Robinson; H Boshoff; R Kuchar  
**Cc:** Hanre Blignaut; H van der Stoep; Fire Sec; Neville Michaels  
**Subject:** RE: Erf 2740, Sandbaai: Bulk Gas Depot: Request for comment (application for consent use).  
**Attachments:** MHI - SANDBAAI.pdf

Dear Riaan

Find attached memo with concerns for the MHI from a Disaster Risk Assessment point of view. Below are the comments related to the water pressure.

Kind regards

**Lester Smith**

Senior Manager: Fire and Emergency Services, Disaster Management and Security Services  
 Overstrand Municipality

**M:** +27 (0) 82 978 9493 | **T:** +27 (0) 28 313 5041 | **F:** +27 (0) 28 313 1493 | **E:** [lestersmith@overstrand.gov.za](mailto:lestersmith@overstrand.gov.za)

**Overstrand Municipality**

**A:** 1 Magnolia Street, Hermanus, 7200 | **P:** P.O. Box 20, Hermanus, 7200

**T:** +27 (0) 28 313 8000 | **F:** +27 (0) 28 312 1894

**E:** [enquiries@overstrand.gov.za](mailto:enquiries@overstrand.gov.za) | **W:** [www.overstrand.gov.za](http://www.overstrand.gov.za)

Vision Statement: "To be a centre of excellence for the community"

**From:** Patrick Robinson <[probinson@overstrand.gov.za](mailto:probinson@overstrand.gov.za)>  
**Sent:** Monday, December 20, 2021 10:21 AM  
**To:** H Boshoff <[hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)>  
**Cc:** Lester Smith <[lestersmith@overstrand.gov.za](mailto:lestersmith@overstrand.gov.za)>; Hanre Blignaut <[hblignaut@overstrand.gov.za](mailto:hblignaut@overstrand.gov.za)>; R Kuchar <[rkuchar@overstrand.gov.za](mailto:rkuchar@overstrand.gov.za)>; H van der Stoep <[hvdstoep@overstrand.gov.za](mailto:hvdstoep@overstrand.gov.za)>  
**Subject:** RE: Erf 2740, Sandbaai: Bulk Gas Depot: Request for comment (application for consent use).

Good day Helgaardt

I had a look on our GLS reports for the necessary information. It is not to say it's totally correct. Maybe the operational department or the fire department can go out to measure the pressure and flow or maybe you must put it in your report that the applicant must get someone to do the tests for them.

Pipe diameter: between >50 - 110 mm

Static Head: between 40 - 60 meters

Peak flow rate: 0 to 2 L/S

Regards

Patrick

**From:** H Boshoff <[hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)>  
**Sent:** Wednesday, 15 December 2021 14:06  
**To:** Lester Smith <[lestersmith@overstrand.gov.za](mailto:lestersmith@overstrand.gov.za)>  
**Cc:** H van der Stoep <[hvdstoep@overstrand.gov.za](mailto:hvdstoep@overstrand.gov.za)>; R Kuchar <[rkuchar@overstrand.gov.za](mailto:rkuchar@overstrand.gov.za)>  
**Subject:** FW: Erf 2740, Sandbaai: Bulk Gas Depot: Request for comment (application for consent use).

**COMMENTS FROM THE ENGINEERING SERVICES DEPARTMENT FOR:  
APPLICATION FOR CONSENT USE: ERF 2740, SANDBAAI**

Stormwater (SW) : In Order  
Electricity : In Order  
Water : In Order  
Sewer : In Order  
Roads and traffic : In Order

**Conditions:**

1. that only the existing water and sewerage connections will be available to the development, should larger capacity in any of these services be required, the upgrading will be at the owner's cost;
2. that only the existing electricity connection will be available for the development and that, should additional capacity be required, an investigation be conducted, with regard to the capacity required and that available, at the owner's cost;
3. that the developer investigate and determine the limitations of the site in terms of sewer drainage, subject to the minimum requirements of *SANS 10400 – P: 2010: Drainage*;
4. that, should any upgrading and/or development of the relevant sidewalks adjacent to the property be required as part of the development, application for such development be made to the office of the Senior Operational Manager: Hermanus for written approval;
5. that stormwater be allowed to discharge through Erf 2740, Sandbaai, unobstructed;
6. that any additional and / or extended vehicle entrances will be for the owner's account;
7. that no on-street parking be allowed.

  
**DENNIS HENDRIKS**  
**SENIOR MANAGER:**  
**ENGINEERING SERVICES**

29.06.2021  
**DATE**

**RISK ASSESSMENT**

In terms of

**THE MAJOR HAZARD INSTALLATION REGULATIONS**

and

**SANS 1461:2018**

for

**GAS HUB**

For the proposed LPG installation at

**Sandbaai, Hermanus**

by

**MHR**  
Consultants

Major Hazard Risk Consultants

Nominated Representative:  
Technical Signatory:C C Thackwray  
C C Thackwray**12 September 2021**GOVERNMENT  
APPROVED  
INSPECTION  
AUTHORITY  
No MHI 0007

MHI 0017

GHH001

12 September 2021

## DETAILS AND CONTROL PAGE

TYPE OF ASSESSMENT				
New Installation	X	Changes to Existing Installation	5 Year Renewal	Other

<b>Name</b>	Gas Hub Hermanus		
<b>Address</b>	Argon Avenue Sandbaai Hermanus		
<b>Contact Person</b>	Steve Rundle Tel: 028 312 2020		
<b>Date of Assessment</b>	12 October 2020		
<b>Date of Report</b>	12 September 2021		
<b>Dates of Previous Assessments</b>	<b>Date</b>	<b>Reference</b>	<b>AIA</b>
	N/A		
<b>Technical Signatory</b>	C C Thackwray 13 Slade Street Parklands North Tel: 083 746 8933		
<b>Reference Number</b>	GHH001		
<b>Revision</b>	002		

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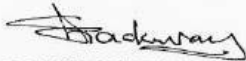
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This is to verify that an MHI Risk Assessment has been completed in accordance with the Major Hazard Installation Regulations. The risks associated with the MHI were found to be acceptable.

This Risk Assessment is valid for the duration of 5 years from the above date, unless:

- Changes have been made to the plant that can alter the risks on the facility;
- The Emergency Plan was invoked or there was a near miss;
- The changing neighbourhood resulted in offsite risks;
- There is reason to suspect that the current Assessment is no longer valid.

Signed



**C C THACKWRAY**  
**TECNICAL MANAGER**

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**DISCLAIMER**

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**A QUANTITATIVE RISK ASSESSMENT OF THE  
PROPOSED LPG INSTALLATION ON THE PREMISES OF  
GAS HUB, HERMANUS**

**EXECUTIVE SUMMARY**

**1. INTRODUCTION**

Gas Hub (Pty) Ltd is an agency for Oryx and will be selling and distributing LPG to clients in Hermanus.

Gas Hub will be storing liquid petroleum gas (LPG) in a bulk vessel and cylinders for sale and distribution to the public.

As LPG has the potential to cause onsite and offsite incidents, Major Hazard Risk Consultants cc was commissioned to conduct a Risk Assessment in accordance with the Major Hazard Installation Regulations to determine the impact of the facility on the surrounding area.

This investigation would serve as a basis for the notification of the facility in accordance with the Major Hazard Installation Regulations. The purpose of this report is to convey the essential details, including a short description of the hazards, the receiving environment, the design, the risks and consequences of an accident.

The main aim of the investigation was to quantify the risks to employees and neighbours regarding the facility in Hermanus.

Risk is the severity of the consequence of a hazardous event and the probability of the event occurring.

This Risk Assessment was conducted in accordance with the Major Hazard Installation Regulations and SANS 1461:2018 and could be used as notification of the facility. The Risk Assessment includes the following:

- Identifying likely hazards associated with the processes of the installations including the causes, consequences and their effects;
- Quantifying the likely hazards in terms of their magnitude;
- Quantifying the consequences for each hazard (thermal radiation, domino effect, toxic cloud formation, etc.);
- Determining the lethality of the effects of the consequences;
- Determining the frequency of all the hazardous events;
- Calculating the individual risk values considering all accidents, meteorological conditions and lethality;
- Using the population density around the facility to determine the societal risk posed by the facility;
- Reporting on the risks in terms of internationally acceptable criteria;
- Providing an assessment of the adequacy of emergency response programmes, fire prevention and fire-fighting measures;
- Proposing measures to reduce or eliminate the risks.

The Risk Assessment may not meet the requirements of environmental legislation as it is not intended as an Environmental Risk Assessment.

## 2. CONCLUSIONS

This Risk Assessment has modelled the effects of the proposed LPG installation.

The results are low, with the one-in-a-million contour confined to the property and only extending over the western boundary by 7m.

The one-in-thirty million contour, extends for a maximum of 13m over the southern boundary and 30m over the western boundary of the site.

The contours do not reach any sensitive populations or installations.

As can be seen from the above results, the risks are relatively low and acceptable for this industrial, commercial and residential area.

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*Individual Risk for the Proposed Installation*

### 3. RECOMMENDATIONS

The scenario contributing the most towards the total risk at the facility is a BLEVE at the cylinder storage area.

The risks posed by the installation were found to be low for the commercial and industrial area in which it is located.

The recommendations are as follows:

- Good housekeeping must always be observed on site;
- Emergency Plan must be drafted for the site and must include all the risks identified in this report;
- Emergency Plan must comply with SANS 1514 Codes;
- All work must be done by qualified companies;
- Installation must comply with Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- Fire Department must witness a pressure test prior to issuing flammable substance certificate.

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**DEFINITIONS****As Low as Reasonably Practicable (ALARP)**

Risks in this range are risks that the public are generally prepared to tolerate in order to secure certain benefits. A risk in the ALARP range risk means that for new installations or modifications/ expansions to existing installations, the risk assessment shall not advise against the development. For existing installations (without modifications/ expansions) a broadly acceptable risk means that risk should continue to be monitored and all reasonably practicable risk reduction measures shall be implemented. A level of risk that is tolerable and cannot be reduced further without expenditure at costs that are disproportionate to the benefit gained, or where the solution is impractical to implement.

**Broadly Acceptable**

Risks which are broadly acceptable are generally regarded as insignificant and adequately controlled. Risk in the region would usually not require further action to reduce risks unless reasonably practicable measures are available. A broadly acceptable risk means that for new installations or modifications/ expansions to existing installations the risk assessment shall not advise against the development. For existing installations (without modifications/ expansions) a broadly acceptable risk means that risk should continue to be monitored and reduction implemented if necessary. For either new or existing installations, if reasonably practicable risk reduction measures are available, then these should be implemented.

**BLEVE**

Boiling liquid expanding vapour explosion.

**Containment System**

One or several devices, any parts of which are continuously in open contact with one another and are intended to contain one or several substances.

**Critical Scenarios**

Intended to mean:

- The scenarios that when added together define at least 90% of the location-specific risk for the  $1.0e-6$  contour (i.e. the 'remainder' that has not been defined in detail is added together as < 10%);
- The scenarios that are added together define at least 90% of the societal risk in the intervals 10 – 100 and 100 – 1000.

**Informal Residential Area**

A residential area where the structures are not formally approved.

**Inspection**

An examination or measurement to verify whether an item or activity conforms to specified requirements.

**Intolerable**

Risks in this range are generally regarded as unacceptable whatever the level of benefits associated with the activity. An intolerable risk means that for new installations or modifications/ expansions to existing installations the risk assessment shall advise against the development. For existing installations (without modifications/ expansions) an intolerable risk means that risk reduction shall be implemented until the risks fall within the ALARP range or the broadly acceptable range.

**Location Specific Individual Risk**

The probability that during a period of one year a person will become the victim of an accident, in which case this person is in a particular location permanently and without protection and without means of escape.

**Major Hazard Installation**

The Operational Health and Safety Act defines a Major Hazard Installation as the following:

- where more than the prescribed quantity of any substance is or may be kept, whether permanently or temporarily; or
- where any substance is produced, used, handled or stored in such a form and quantity that it has the potential to cause a major incident.

**Maximum Capacity**

For equipment this is the total amount of material that can be accommodated in that equipment in the absence of equipment inventory control. For example, the volume of a cube vessel would be the product of the width, length and height of the vessel.

**Occupied Building**

Permanent or temporary structures/ buildings within a major hazard installation that are occupied by employees and/or contractors or that contain critical process control equipment (e.g. control rooms).

**Procedure**

Description of how to perform an activity, usually in the form of a document.

**Recommendations**

Suggestions put forward by the AIA, within the scope of the accreditation of the AIA, for consideration by the owner/ user of an MHE/ MHI.

**Regulations**

Regulations promulgated under the relevant Act.

**Regulatory Authority**

Body authorised to make Regulations or to control the application of such Regulations, in the field of Major Hazard Installations (see 3.1.22) which includes the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the South African National Accreditation System.

**Restricted Development Distance**

The maximum distance from an MHI/ MHE where land use planning restrictions should be considered. This is defined as the 3.0e-7 fatalities / person / year location specific individual risk contour.

**Safety Report**

A report which addresses major incident prevention and safety management systems at the installation/ establishments.

**Sensitivity Level**

The sensitivity levels of a proposed development take into consideration the structure of the development and the characteristics of the population occupying the development. The larger the development and the more vulnerable the occupying population, the higher the level of sensitivity.

**Societal Risk (F-N Curve)**

Societal risk is a measure of the risk posed on a society and an F-N Curve is a tool to indicate societal risk. They are plots of the cumulative frequency (F) of various accident scenarios against the number (N) of fatalities associated with the modelled incidents. The plot is cumulative in the sense that, for each frequency, N is the number of fatalities that could be equalled or exceeded.

**Verification**

The act of reviewing, inspecting, testing, checking, auditing or otherwise determining and documenting whether items, processes, services or documents conform to specified requirements.

**Vulnerable Groups/ Populations**

The elderly, children, persons in hospitals/ clinics and people with certain disabilities are considered particularly vulnerable and may need special attention. In the South African context, concentrations of homeless persons and persons occupying informal settlements should also be considered vulnerable.

**ABBREVIATIONS**

The following are key abbreviations used in this document:

<b>ACDS</b>	Advisory Committee on Dangerous Substances
<b>AIA</b>	Approved Inspection Authority
<b>ALARP</b>	As Low as Reasonably Practicable
<b>API</b>	American Petroleum Institute
<b>BEVI</b>	Besluit Externe Veiligheid Inrichtingen (Dutch safety legislation)
<b>BLEVE</b>	Boiling Liquid Expanding Vapour Explosion
<b>BP</b>	Boiling Point (usually at 101.325 kPa)
<b>CAS</b>	Chemical Abstracts Service
<b>CASRN</b>	Chemical Abstracts Service Registry Number
<b>RDD</b>	Restricted Development Distance
<b>CFD</b>	Computational Fluid Dynamics
<b>CIA</b>	Chemical Industries Association
<b>DTL</b>	Dangerous Toxic Load
<b>ERPG</b>	Emergency Response Planning Guideline
<b>F – N (cumulative)</b>	Frequency - Number
<b>FMECA</b>	Failure Mode Effect and Criticality Analysis
<b>FP</b>	Flash Point
<b>HAZID</b>	HAZard IDentification
<b>HAZAN</b>	HAZard ANalysis
<b>HEL</b>	Higher Explosive Limits
<b>IBC</b>	Intermediate Bulk Container (typically 1m <sup>3</sup> capacity)
<b>IDLH</b>	Immediately Dangerous to Life and Health
<b>IEC</b>	International Electro-technical Commission
<b>ISO</b>	International Standards Organisation
<b>IZ</b>	Inner Zone
<b>kPa</b>	Kilopascal
<b>kW/m<sup>2</sup></b>	Kilowatts Per Square Meter
<b>L/D</b>	Length/ Diameter
<b>LEL</b>	Lower Explosive Limits
<b>LFL</b>	Lower Flammable Limit
<b>LOC</b>	Loss of Containment
<b>LOPA</b>	Layer of Protection Analysis
<b>LPG</b>	Liquefied Petroleum Gas
<b>MAHPs</b>	Major Accident Hazard Pipelines

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<b>MAPP</b>	Major Accident Prevention Policy
<b>mg/m<sup>3</sup></b>	Milligram Per Cubic Meter
<b>MHI</b>	Major Hazard Installation
<b>MZ</b>	Middle Zone
<b>OHS</b>	Occupational Health and Safety
<b>OZ</b>	Outer Zone
<b>PAC</b>	Protective Action Criteria
<b>PAHDI</b>	Planning Advice for Developments near Hazardous Installations
<b>PFD</b>	Process Flow Diagram
<b>P&amp;ID</b>	Piping and Instrumentation Diagram
<b>ppm</b>	Parts-per-million (volume basis)
<b>PSM</b>	Process Safety Management
<b>QRA</b>	Quantitative Risk Assessment
<b>UFL</b>	Upper Flammable Limit

**A QUANTITATIVE RISK ASSESSMENT OF THE  
PROPOSED LPG INSTALLATION ON THE PREMISES OF  
GAS HUB, HERMANUS**

**1. INTRODUCTION**

Gas Hub (Pty) Ltd is an agency for Oryx and will be selling and distributing LPG to clients in Hermanus.

Gas Hub will be storing liquid petroleum gas (LPG) in a bulk vessel and cylinders for sale and distribution to the public.

As LPG has the potential to cause onsite and offsite incidents, Major Hazard Risk Consultants cc was commissioned to conduct a Risk Assessment in accordance with the Major Hazard Installation Regulations to determine the impact of the facility on the surrounding area.

This investigation would serve as a basis for the notification of the facility in accordance with the Major Hazard Installation Regulations. The purpose of this report is to convey the essential details, including a short description of the hazards, the receiving environment, the design, the risks and consequences of an accident.

The main aim of the investigation was to quantify the risks to employees and neighbours regarding the facility in Hermanus.

Risk is the severity of the consequence of a hazardous event and the probability of the event occurring.

This report summarises the results of the Risk Assessment conducted by MHR Consultants.

This Assessment is based on the best possible information and expertise and MHR Consultants cannot be held liable for any incident which may occur at this facility which directly or indirectly relates to the work in this report.

**1.1. Legal Framework**

The Occupational Health and Safety Act (OHS Act) defines an Approved Inspection Authority (AIA) in Section 1(1)(i) as *"An inspection authority approved by the Chief Inspector. Provided that an inspection authority approved by the Chief Inspector with respect to any particular service shall be an approved inspection authority with respect to that service only."*

The Major Hazard Installation Regulations (MHI Regulations), which were promulgated under the OHS Act provides more specifically for an AIA in terms of MHI Regulation 5 (5)(a) as *"An employer, self-employed person and a user shall ensure that the assessment contemplated in Sub-regulation (1), shall be carried out by an Approved Inspection Authority which is competent to express an opinion as to the risks associated with the major hazard installation."*

This Risk Assessment was conducted as per SANS 1461:2018 Codes of Practice.

## 1.2. Purpose and Scope of Investigation

The purpose of this investigation was to quantify the risks to employees and neighbours with regard to the facility in Hermanus.

This Risk Assessment was conducted in accordance with the Major Hazard Installation Regulations and could be used as notification of the facility. The Risk Assessment includes the following:

- Identifying likely hazards associated with the processes of the installations including the causes, consequences and their effects;
- Quantifying the likely hazards in terms of their magnitude;
- Quantifying the consequences for each hazard (thermal radiation, domino effect, toxic cloud formation, etc.);
- Determining the lethality of the effects of the consequences;
- Determining the frequency of all the hazardous events;
- Calculating the individual risk values considering all accidents, meteorological conditions and lethality;
- Using the population density around the facility to determine the societal risk posed by the facility;
- Reporting on the risks in terms of internationally acceptable criteria;
- Providing an assessment of the adequacy of emergency response programmes, fire prevention and fire-fighting measures;
- Proposing measures to reduce or eliminate the risks.

## 1.3. Methodologies

Methodologies and techniques used for this Assessment are as follows.

- Site visits and meetings were conducted to collect as much technical information to accurately determine all the processes, materials, etc.;
- It was accepted that the process and storage installations were designed using the correct Codes of Practice and design specifications, and that the installations were built by qualified professionals;
- For this report the public refers to all people outside the boundaries of the facility, including neighbouring facilities and everyone inside the facility is regarded as employees, including visitors;
- The hazards were identified at the site visits and meetings and analysed using international reference publications;
- The consequences were calculated using the computer software 'Effects' by TNO in the Netherlands;
- The risk calculations were made using the computer software 'Risk Curves' by TNO in the Netherlands.

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## 2. COMPANY, SITE AND INSTALLATION DESCRIPTION

### 2.1. Main Activity

The main activity of Gas Hub is the filling and distribution of LPG cylinders to customers. The site will consist of the following:

- Shop;
- LPG bulk vessel;
- Two LPG storage areas;
- LPG filling area;
- Road tanker filler point.

The site is a new installation in an existing commercial and industrial area. (See site plan in the Appendices).

### 2.2. Site Address

Argon Avenue, Sandbaai, Hermanus.

### 2.3. Site Installations

The LPG installation will consist of the following:

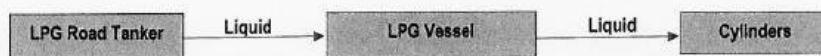
- A 45 m<sup>3</sup> bulk LPG vessel that will be Mounded;
- An LPG cylinder filling area with two scales, a pump and 500kg cylinder storage;
- Two 10 000kg cylinder storage areas.

(See the site layout in Appendices.)

### 2.4. Process Flow and Flow Diagrams

#### LPG Bulk Vessel

A road tanker will offload LPG into the bulk vessel. Liquid will be pumped to the scales for the filling of the cylinders.



### 2.5. LPG Installation

The bulk LPG installation will consist of a mounded 45m<sup>3</sup> vessel. The truck offloading point will be located on a driveway east of the installation.

The bulk vessel will have a liquid take-off that feeds the pump to fill the cylinders.

LPG is kept under pressure of typically about 6.25 bar in order to keep the gas in a liquid state at a temperature of 24°C.

The bulk vessel will be filled a maximum of once per week.

### 2.6. LPG Tanker Offloading Point

The installation will have the LPG tanker park alongside the proposed LPG filler point on a dedicated road tanker driveway. Off-loading will be done in off-peak times.

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**2.7. LPG Cylinder Storage**

Two 10 000kg storage areas will be located on the site. The cylinders will be stored in accordance with the requirements of SANS 10087. There will be gangways between cylinders for easy access to all cylinders in the storage area. Full and empty cylinders will be clearly demarcated.

**2.8. LPG Cylinder Filling**

The filling area will be located next to the LPG bulk vessel and will be fitted with two electronic scales. The filling area will be fitted with a roof and suitable for the storage of 500kg of cylinders.

The storage and filling area will be protected by fire extinguishers.

**2.9. Receiving Environment**

The site is in the commercial and industrial area of Hermanus, indicated below.

**2.9.1. Topography of the Surrounding Area**

The area surrounding the facility is flat commercial, light industrial and residential land. There are no large waterbodies close to the site.

**2.9.2. Population Information**

Area	Daytime Persons/Hectare	Night-time Persons/Hectare
High density commercial and Industrial	500	16

**2.9.3. Surrounding Facilities and Other MHIs**

The area surrounding the facility is all commercial, light industrial and residential land. There is a residential area 180m east of the site.

There are no MHIs close to the site. (See satellite image below)

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Location of Gas Hub Hermanus

## 2.10. Meteorological Information

### 2.10.1. Climate

The warm season lasts from January to March with an average daily high temperature above 25°C. The hottest day of the year is in January/ February, with an average high above 26°C.

The cold season lasts from June to August with an average daily high temperature below 18°C. The coldest day of the year is in July, with an average low of 8°C.

## HERMANUS WEATHER BY MONTH // WEATHER AVERAGES

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	19.8	19.7	18.3	16.7	15	13.5	12.6	13.1	14	15.8	17.8	16.9
Min. Temperature (°C)	15.2	15.5	14.1	12.7	10.8	9.3	8.3	9	10.1	11.9	13.4	14.6
Max. Temperature (°C)	24.1	23.9	22.6	20.8	19.2	17.7	16.9	17.2	17.9	16.8	21.0	23.3
Avg. Temperature (°F)	67.3	67.5	64.9	62.1	59.0	56.3	54.7	55.6	57.2	60.4	63.7	66.0
Min. Temperature (°F)	59.4	59.9	57.4	54.9	51.4	48.7	46.9	48.2	50.2	53.4	56.1	58.3
Max. Temperature (°F)	75.4	75.0	72.7	68.4	66.6	63.9	62.4	63.0	64.2	67.6	71.4	73.9
Precipitation / Rainfall (mm)	21	23	29	46	69	83	76	78	51	48	33	20

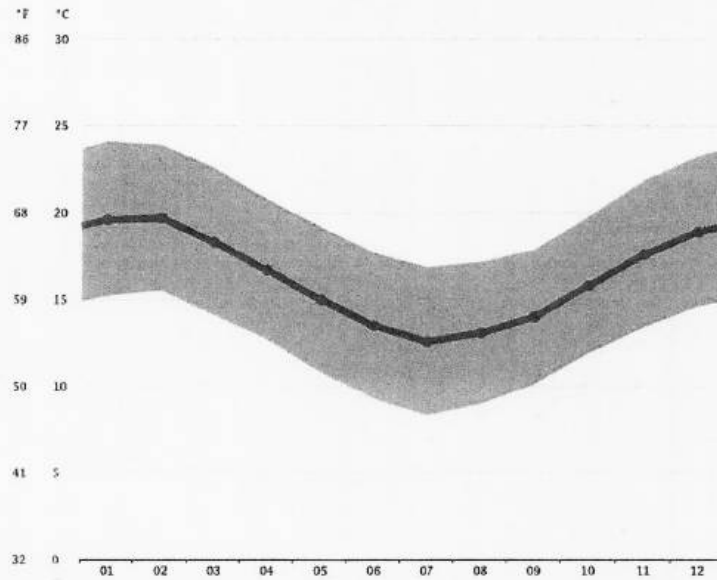
The precipitation varies 63 mm | 2 inch between the driest month and the wettest month. During the year, the average temperatures vary by 7.1 °C | 44.8 °F.

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## HERMANUS AVERAGE TEMPERATURE



With an average of 19.7 °C | 67.5 °F, February is the warmest month. July has the lowest average temperature of the year. It is 12.6 °C | 54.7 °F.

### 2.10.2. Wind Direction

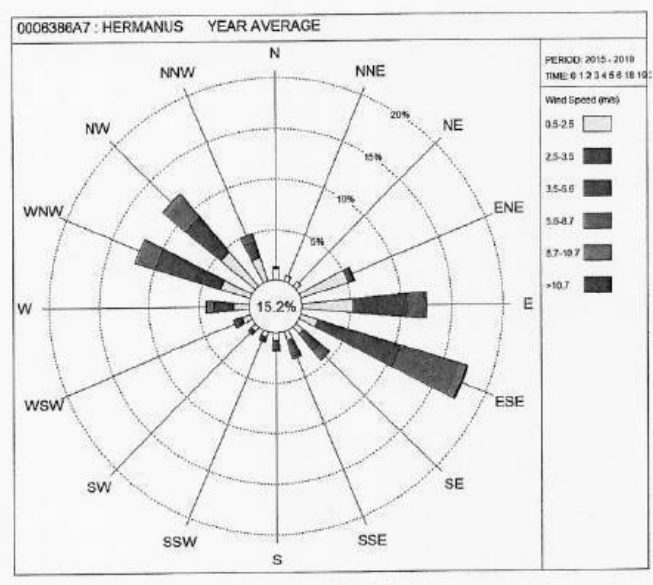
Over the course of the year typical wind speeds vary from 5m/s to 9m/s (light breeze to strong breeze), rarely exceeding 9m/s (strong breeze). The predominant wind direction during the day and night is west-northwest.

### 2.10.3. Wind Rose

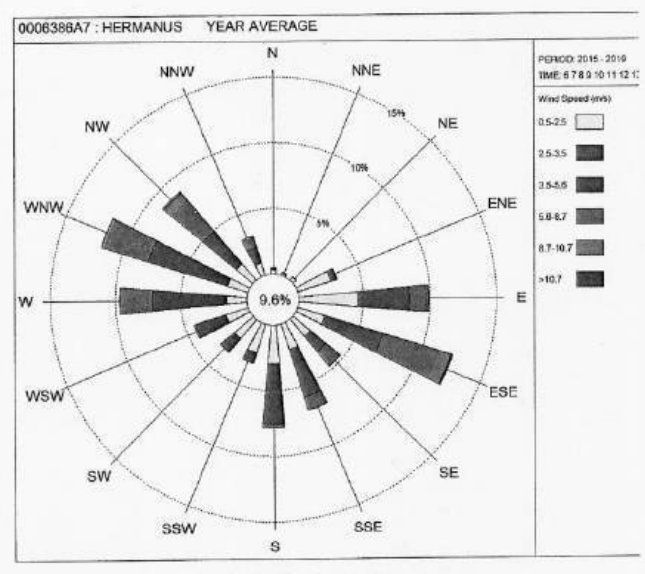
The combined annual wind roses for the area is as follows:

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Day Time Wind Rose



Night-time Wind Rose

Dispersion models also require the atmospheric condition to be categorised into one of six stability classes, namely:

Stability Category	Meteorological Conditions	Occurrence
A	Very Unstable	Hot daytime conditions, clear skies, calm wind
B	Unstable	Daytime conditions, clear skies
C	Slightly Unstable	Daytime conditions, moderate winds, slightly overcast
D	Neutral	Day and night, high winds or cloudy conditions
E	Stable	Night-time, moderate winds, slightly overcast conditions
F	Very Stable	Night-time, low winds, clear skies, cold conditions

#### 2.10.4. Summary

Based on the above information the meteorological information extracted for the modelling of scenarios was as follows:

- Wind, stability and Temperature information:
  - B 4m/s meaning a stability class of B (moderately unstable conditions) where the wind speed is 4m/s with the maximum daytime temperature.
  - D 7m/s meaning stability class of D (neutral conditions) where the wind speed is greater than 7m/s. D 7m/s gives a conservative daytime and night-time weather condition.
  - F 2m/s meaning a stability class of F (moderately stable) where the wind speed is less than or equal to 2m/s with the min daytime temperature.
- The relative humidity was set to be 0.7.
- The solar radiation flux was set to be 0.5KW/m<sup>2</sup> during the day and 0KW/m<sup>2</sup> at night.
- The *Pasquill stability* was selected instead of the mixing layer height.

### 3. HAZARD IDENTIFICATION

This is the process of examining each work area and work task for the purpose of identifying all the hazards which are inherent to the job.

Hazard analysis is used as the first step in a process used to assess risk. The result of a hazard analysis is the identification of different types of hazards. A hazard is a potential condition and exists or not (probability is 1 or 0). It may be in single existence or in combination with other hazards (sometimes called events) and conditions become an actual Functional Failure or Accident (mishap). Once a hazard has been identified, it is necessary to evaluate it in terms of the risk it presents to the employees and the neighbouring community. In principle, both probability and consequence should be considered, but there are occasions where if either the probability or the consequence can be shown to be sufficiently low or sufficiently high, decisions can be made on just one factor.

During the hazard identification process the complete system of assets, materials, human activities and process operations within the boundaries of the site should be clearly defined and understood, taking account of the original design, subsequent changes and current conditions. Typically, the system should be divided into distinct separate components or sections to enable manageable quantities of information to be handled at each stage.

Some key questions and issues could be:

- What is the design intent, what are the broad ranges of activities to be conducted, what is the condition of equipment, and what limitations apply to activities and operations?
- What are the critical operating parameters? What process operations occur, and how could they deviate from the design intent or critical operating parameters? This should consider routine and abnormal operations, start-up, shutdown and process upsets.
- What materials are present? Are they a potential source of major accidents in their own right? Could they cause an accident involving another material? Could two or more materials interact with each other to create additional hazards?
- What operations, construction or maintenance activities occur that could cause or contribute towards hazards or accidents? How could these activities go wrong? Could other hazardous activities be introduced into this section by error or by work in neighbouring sections of the facility?
- Could other materials, not normally or not intended to be present, be introduced into the process?
- What equipment within the section could fail or be impacted by internal or external hazardous events? What are the possible events?
- What could happen in this section to create additional hazards, e.g. temporary storage or road tankers?
- Could a particular section of the facility interact with other sections (e.g. adjacent equipment, an upstream or downstream process, or something sharing a service) in such a way as to cause an accident?

#### 3.1. Site Layout Details

The Site Plan is included in the Appendices.

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**3.2. Significant Incidents at the Site and Related Sites**

This is a proposed installation with no incident history.

The few incidents that have occurred at similar installations were mainly caused by a lack of maintenance and operator negligence.

**3.3. Preventative Measures**

A good Maintenance Plan must be compiled, together with a Maintenance Register.

**3.4. Hazard Details****3.4.1. Hazardous Materials**

The materials on site were categorised as per SANS 10228:2003 classes of dangerous substance as per the table below:

Class	Description
1	Explosives (Not included in MHI Regulations)
2	Gases (Flammable or Toxic gases only)
3	Flammable Liquids
4	Flammable Solids
5	Oxidising Substances and Peroxides
6	Toxic and Infectious Substances
7	Radioactive Materials (Not included in MHI Regulations)
8	Corrosives
9	Combustible Materials

**3.4.2. Hazardous Materials on Site**

Gas Hub uses LPG on site, categorised as per the table below:

Substance	CAS Number	Gases	Flammable Liquids	Flammable Solids	Potential for an MHI
Class		2	3	4	
LPG	68476-85-7	Yes			Yes

This Assessment deals only with LPG; the detailed properties of which are included in the Appendices.

**3.5. Accidents and Incidents**

Gas Hub has had no incidents at any of their LPG facilities.

**3.6. Containment and Safety Systems in Design**

The following containment and safety systems have been incorporated in the design of the proposed installation:

- The LPG bulk vessel will be protected by being mounded;
- The installation will comply with applicable SANS 10087 Codes, part 3;

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- There will be fire extinguishers at each installation;
- There will be three fire hose reels and two fire hydrants at the site.

### 3.7. Environmental Hazards

Environmental Hazards are not included in the MHI Regulations and were not included in this report.

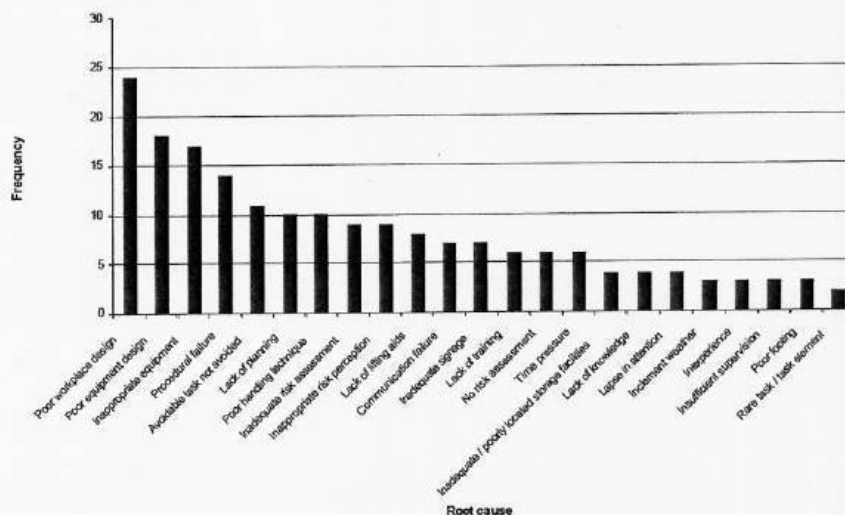
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#### 4. HAZARD ANALYSES

##### 4.1. Incident Root Causes

One hundred and twenty-six incidents were recorded an HSE report database in the UK. A greater number were reviewed but were not taken forward for analysis. The graph below shows the frequency with which each root cause was identified for the 126 incidents analysed.



The most common causes shown above are linked to the workplace and equipment available:

- Poor workplace design (representing 13%);
- Poor equipment design (10%);
- Inappropriate equipment (9%);
- Procedural failure (7%).

The next most commonly found issues are more closely linked with day-to-day organisation and management:

- Avoidable task not avoided (6%);
- Lack of planning (5%);
- Poor handling technique (5%);
- Inadequate risk assessment (5%);
- Inappropriate risk perception (5%).

The report mentions more than one root cause could be present in the same incident. In the sample analysed, 78 incidents were attributed to a single root cause; the remaining 48 had two or more root causes.

Most incidents are due to a mismatch between the operators' requirements or expectations and workplace or equipment design. If the root causes were principally to do with training or risk assessment (i.e. linked to risk perception and avoidance), it would imply that personnel were failing to use their experience and prior training to predict and avoid manual handling risks. Where an individual has unintentionally harmed themselves or others, it follows that the task carried risks which the operator(s) had to avoid by using safe working procedures and their skill and knowledge. The root cause in fact lies with one or more risky elements of the task that the operator then has to deal with. Training and experience help only to avoid the background risks.

The findings suggest that operators are mostly being injured because of poor equipment, task or workplace design, and to a lesser extent misunderstanding the level of risk. Failure to avoid an avoidable task is similar to a lack of planning as both indicate that an overview of the work was not held that could have highlighted alternatives to risky manual handling. 'Procedural failure' is linked to planning and overview too as this root cause indicates that agreed procedures inadvertently placed operators at risk of injury.

#### **4.2. Events Following a Loss of Containment**

##### **4.2.1. Flammable Gas/ Liquid**

Where no Boiling Liquid Expanding Vapour Explosion (BLEVE) and fireball occur following an instantaneous release with direct ignition, a liquid pool is formed, and a vapour cloud will expand to atmospheric pressure. The direct ignition of the vapour cloud is modelled as a flash fire (probability 0.6) and explosion (probability 0.4).

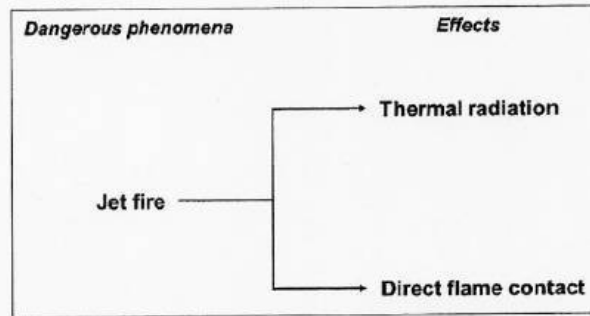
For an above-ground storage tank (or road tanker), a BLEVE or fireball may occur. A BLEVE can occur when a flame impinges on a tank containing a material that is a gas at atmospheric pressure and temperature but is a liquid at storage temperature and pressure. Again, it is assumed that a BLEVE occurs when the vessel or road/ rail tanker is full. While BLEVEs are possible as a result of catastrophic vessel failure and localised vessel failure, they typically occur outside of these two events. Should this not occur, a vapour cloud may form. The ignition of the vapour cloud is modelled as a flash fire and explosion.

The flash fire is modelled through simulating the expansion of the initial cloud to the lower flammability limit (LFL) with air entrainment. The damage area then corresponds to the LFL cloud footprint. The explosion is modelled using the total mass subject to the lower flammability limit (LFL).

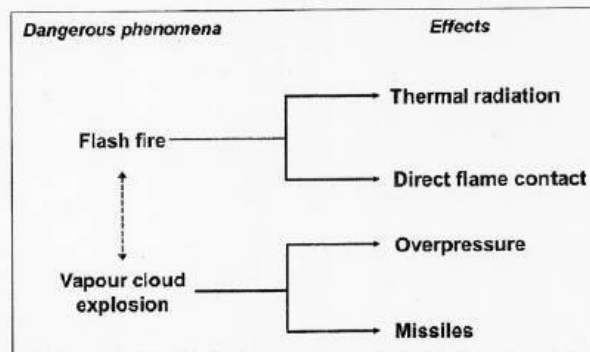
Accidental high velocity releases of ignited flashing liquids of pressurised flammable material at ambient temperature are classed as liquid jet fires. Jet fires occur when the jet of hydrocarbon can entrain air and burn at its edge. The jet remains ignited because the burning of the flame is greater than the velocity of the hydrocarbon jet, i.e. the flame is able to burn back towards the source of the jet. As a worst-case scenario, it is assumed that all failures occur in a horizontal position, i.e. the flame is orientated horizontally.

#### **4.3. Event Trees**

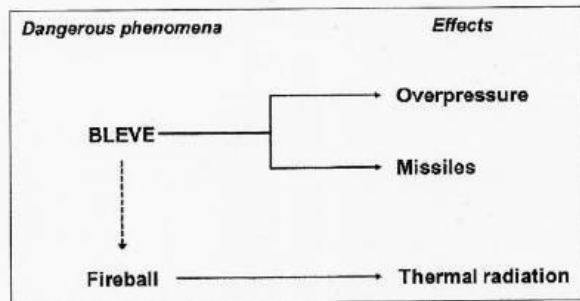
The probability of the flammable gas/ liquid identified above is represented as *event trees* for working daytime and night-time periods in the following diagrams.



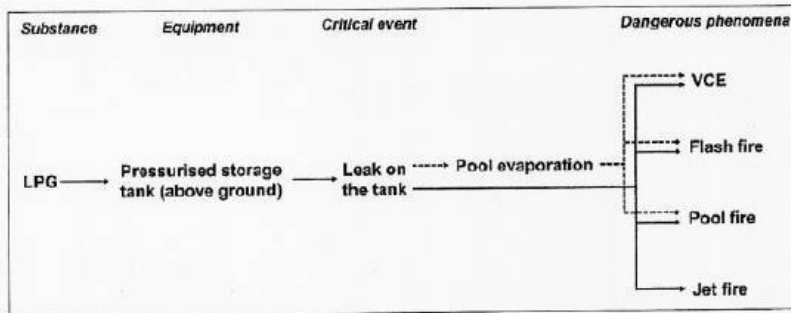
*Physical Effects of Jet Fire*



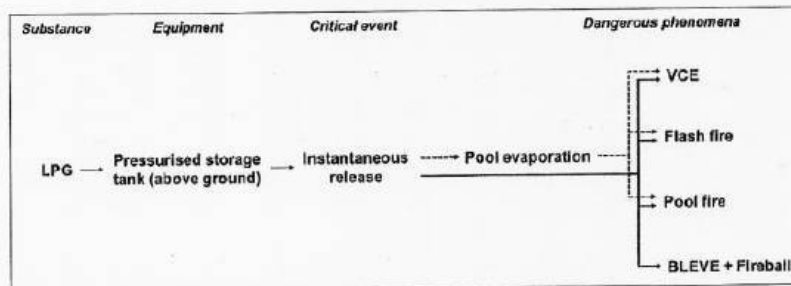
*Physical Effects of Flash Fire and Vapour Cloud Explosion*



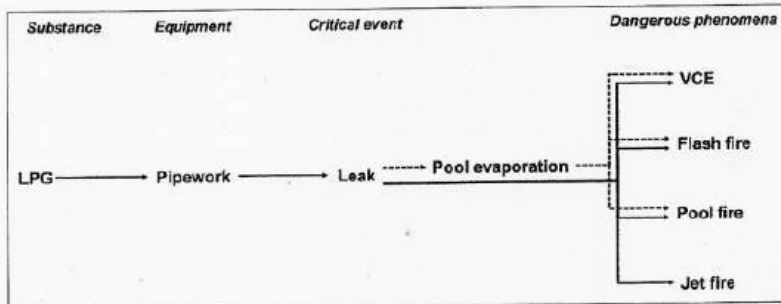
*Physical Effects of Fireball and BLEVE*



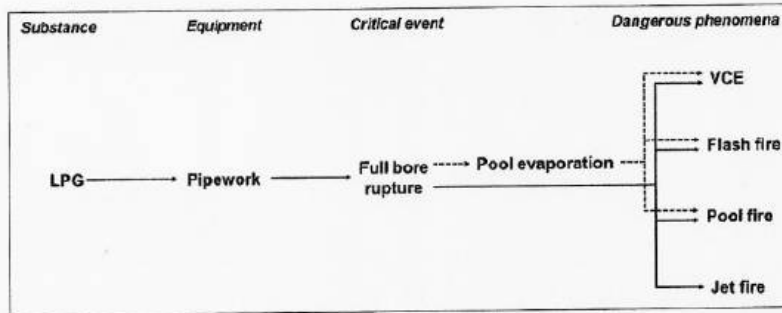
Event Tree of LPG Vessel Leak



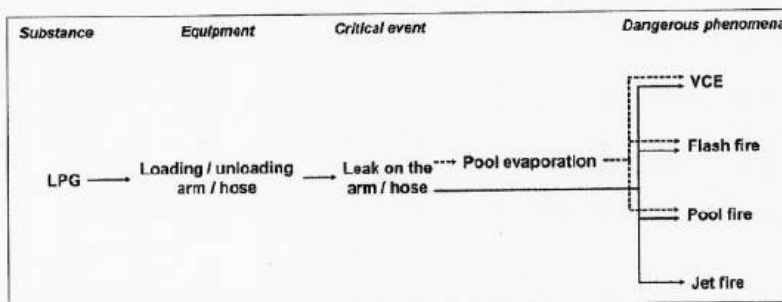
Event Tree of Instantaneous Release of LPG Vessel



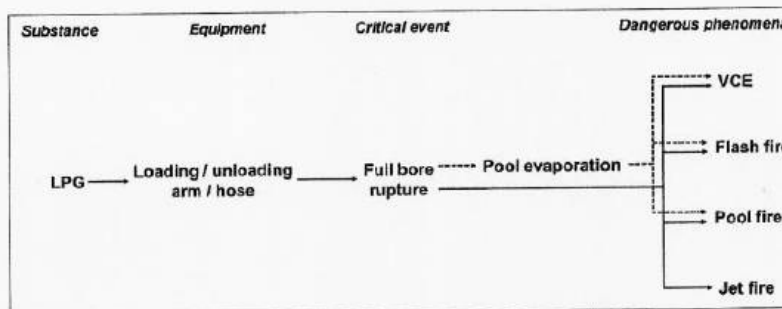
Event Tree of LPG Pipe Leak



Event Tree of LPG Pipe Rupture



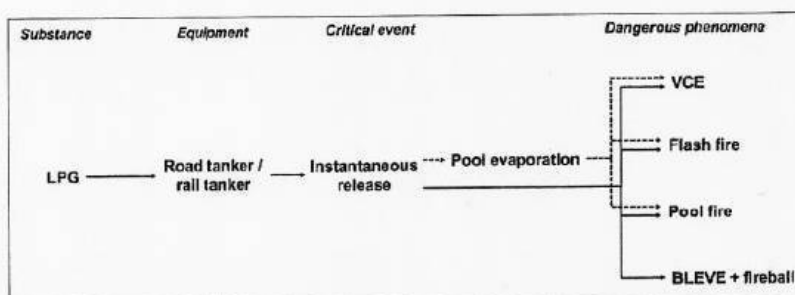
Event Tree of LPG Loading Hose Leak



Event Tree of LPG Loading Hose Rupture

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*Event Tree of Instantaneous Release of LPG Road Tanker*

#### 4.4. Scenarios Modelled

The following scenarios were modelled for this Risk Assessment:

##### Flammable Scenarios

##### LPG Fire Scenarios

- Jet fire as the result of a 3.3mm hole in an LPG cylinder;
- Jet fire as the result of a 10mm hole in the bulk LPG vessel;
- Jet fire as the result of a loading hose shear;
- Jet fire as the result of a 10mm hole in a loading hose;
- Flash fire as the result of a loading hose failure;
- Flash fire as the result of a catastrophic vessel leak.

##### LPG Explosion Scenarios

- VCE as the result of a catastrophic vessel failure;
- VCE as the result of a catastrophic road tanker failure;
- BLEVE of a vessel;
- BLEVE of a road tanker.

4.5. Hazard Analysis Breakdown

Equipment	Hazard Breakdown				Final Consequence
	Failures and Causes	Preventative Measures	Hazardous Event	Protective Measures	
LPG Vessel & Cylinders	<ul style="list-style-type: none"> <li>- Leak</li> <li>- BLEVE</li> <li>- Catastrophic Rupture</li> </ul>	<ul style="list-style-type: none"> <li>- Installation complies to the relevant SANS standards</li> <li>- Suitably qualified companies to do maintenance/ repairs</li> <li>- Installations are fenced-off and strict access control is exercised</li> </ul>	<ul style="list-style-type: none"> <li>- Pipe leak/ rupture resulting in jet fire</li> <li>- Gas cloud release that could lead to a flash fire or unconfined vapour cloud explosion</li> </ul>	<ul style="list-style-type: none"> <li>- Firefighting equipment installed</li> <li>- Emergency Plan is implemented</li> <li>- Regular maintenance to be done as per the pressure vessel regulation and the SANS standards</li> </ul>	<ul style="list-style-type: none"> <li>- Possible employee injuries or fatalities</li> <li>- Possible public injuries or fatalities</li> <li>- Possible domino effect on LPG road tanker causing jet fires or catastrophic failure of road tanker</li> </ul>
LPG Road Tanker	<ul style="list-style-type: none"> <li>- Hose Leak</li> <li>- Hose Rupture</li> <li>- BLEVE</li> <li>- Catastrophic Rupture</li> </ul>	<ul style="list-style-type: none"> <li>- Installation complies to the relevant SANS standards</li> <li>- Road tanker to visit the site no more than twice a month</li> <li>- Only trained staff and driver to exercise offloading procedures</li> </ul>	<ul style="list-style-type: none"> <li>- Hose leak/ rupture resulting in jet fire</li> <li>- Gas cloud release that could lead to a flash fire or unconfined vapour cloud explosion</li> </ul>	<ul style="list-style-type: none"> <li>- Loading hose to be inspected and maintained by transporter as specified by Pressure Vessel Regulation</li> <li>- Firefighting equipment installed</li> <li>- Emergency Plan is implemented</li> <li>- Road tanker maintenance to be done as per the pressure vessel regulation and the SANS standards</li> <li>- Driver to be suitably trained in offloading procedure and emergency procedure</li> <li>- Tanker to be earthed prior and during offloading operation</li> </ul>	<ul style="list-style-type: none"> <li>- Possible employee injuries or fatalities</li> <li>- Possible public injuries or fatalities</li> <li>- Possible domino effect on LPG vessel installation causing jet fires or catastrophic failure</li> </ul>

## 5. CONSEQUENCE ANALYSES

### 5.1. Background

The consequence analysis describes the extent of impacts from major events. The results of this analysis are used as input to the risk analysis section as well as providing guidance to Emergency Planning.

In order to establish the impact following an accident, it is necessary to first estimate the physical process of the spill (i.e. rate and size), spreading of the spill, the evaporation from the spill and the subsequent atmospheric dispersion of the airborne cloud or, in the case of ignition, the burning rate, the resulting thermal radiation or the overpressures from an explosion.

The second step is to estimate the consequences of a spill on humans and structures. For humans this is normally expressed as a probability of fatality at distances from the release point.

The consequence analysis as documented in the Risk Assessment is to provide sufficient process data, calculations etc. to allow for a reasonable verification of key consequence modelling results.

### 5.2. Source Term Analysis

When determining the amount of materials possibly released or involved in an incident, the following aspects should be considered:

- The amount of material available for release from each item should be at least the full inventory of the piece of equipment when it is filled to its maximum capacity. The maximum capacity of equipment is the total amount of fluid that can be accommodated in that equipment in the absence of equipment inventory control. For example, the volume of a cube vessel would be the product of the width, length and height of the vessel.
- When a component fails, such as a vessel, subsequent delivery of other system components which are connected with the vessel may take place. If the quantity that is subsequently delivered is significant, the combined volume/flows need to be taken into consideration.
- If in the case of an on-site pipeline failure an increased pumping rate occurs, this is modelled by increasing the flow rate to that of 1.5 times the pumping rate.
- The effects of measures affecting outflow, such as shutting off valves can be considered.
- In the case of a 'long pipeline' rupture scenario the outflow is calculated based upon the content of the pipeline and a pumping rate. This means that the outflow from a reservoir that may be connected is not included. The 'long pipeline' scenario can therefore only be used when the pumping rate and the content of the transport pipeline is critical for the outflow. It is also important that the condition that  $L/D > 1000$  is complied with, where L is the (total) length of the pipeline and D is the diameter of the pipeline.
- In the case of a line rupture, outflow occurs from both ends of the rupture. There are several possibilities:

- If the outflow mainly takes place from one end, the scenario can be modelled as a rupture of one pipeline ('line rupture').
- If the rupture occurs in a long transport pipeline, the various contributions from both ends of the rupture are included in the calculation of the outflow.
- If the contributions from both ends of the line rupture are relevant to the outflow, one effective pipeline diameter must be used in the calculation, for which the outflow rate matches the outflow rate from both ends added together.

### 5.3. Site Specific Consequence Analysis

At the LPG installation, the impacts of a loss of containment have been calculated without taking the probability of it occurring into account. This is done to show the consequence of the incident and how it will impact on the site and the surrounding area. Domino effects were also investigated in this section.

In the following sections various scenarios were calculated for the proposed installation.

### 5.4. Fires

Flammable liquids and gases may ignite and burn if ignited. This normally occurs as a result of a loss of containment and ignition. Fires include pool fires, jet fires and flash fires.

The consequence of a fire will be thermal radiation.

It is expected that an individual either in pain from a thermal dose received or suffering from first degree burns should escape rapidly as the injury should not be sufficient to impede movement, yet the pain will be too uncomfortable to bear standing still.

An individual with second degree burns will have even greater motivation to escape, commonly referred to as the fight or flight response. However, at this level of injury, any exposed skin will be very uncomfortable and difficult to use in contact with another surface. Simple tasks, such as turning door handles or dressing in survival equipment will take longer, if at all possible. Depending on the location and extent of injury, more difficult tasks such as operating control panels or turning valves may be impossible.

With third degree burns an individual will be in severe pain and will realise that they are in immediate danger of losing their life. Individual response is hard to predict. Fine control of injured extremities will be impossible and other functions will be severely impaired. Escape will probably incur further injury as skin may fall away from the wound. Individuals with third degree burns should be considered as casualties who cannot evacuate unaided.

Thermal radiation levels used in this report are as follows:

- 4.5 kW/m<sup>2</sup> is the radiation that would cause pain and second degree burns within 20 seconds (Yellow Contour).
- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds (Orange Contour).
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame (Red Contour).

#### 5.4.1. Thermal Radiation

The effect of thermal radiation is dependent on the type of fire and duration exposed to the thermal radiation. Codes such as API 520 and 2000 suggest the maximum heat absorbed on vessels for adequate relief designs to prevent the vessel from failure due to overpressure. Other codes such as API 510 and BS 5980 give guidelines for the maximum thermal radiation intensity as a guide to equipment layout.

The effect of thermal radiation on human health has been widely studied and it has been found that injuries developed due to the exposure and intensity of the radiation. Two values normally quoted are 1.5kW/m<sup>2</sup> or 'safe' value where people can be exposed for a long period of time and 5kW/m<sup>2</sup> for people performing an emergency operation for short periods of time.

#### Thermal Radiation Guidelines (BS 5980-1990)

Thermal Radiation Intensity (kW/m <sup>2</sup> )	Limit
1.5	Will cause no discomfort for long exposure
2.1	Sufficient to cause pain if unable to reach cover within 40 seconds
4.5	Sufficient to cause pain if unable to reach cover within 20 seconds
12.5	Minimum energy required for piloted ignition of wood and melting of plastic tubing
25	Minimum energy required to ignite wood at indefinitely long exposures
37.5	Sufficient to cause serious damage to process equipment

#### 5.4.2. Pool Fires

A loss of containment of gas does not normally result in the formation of a flammable pool. Pool fires were not modelled.

#### 5.4.3. Jet Fires

Jet fires occur when flammable material of a high exit velocity ignites. Ejection of flammable material from a vessel, pipe or pipe flange may give rise to a jet fire and in some instances the jet flame could have substantial 'reach'. Depending on wind speed, the flame may tilt and impinge on pipelines, equipment or structures. Thermal radiation from these fires may cause injury to people or damage equipment some distance from the source of the flame.

For this Assessment, jet fires from a 10mm leak in pipes, flanges, pumps and vessels were assumed; for the road tanker a 10mm leak and 50mm hose rupture were assumed. For cylinders, a 3.3mm leak was assumed. The worst-case scenario of the jet fire being horizontal and in the same direction of the wind was assumed in all cases.

The following mitigation will be implemented to deal with consequences of a jet fire at the proposed LPG installation:

- Installation will comply with SANS 10087;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;
- Enclosure will be kept locked at all times and only trained personnel allowed access.

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The consequences of a 3.3mm jet fire at the cylinder storage areas are as follows:

48kg LPG Cylinder				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
9.058	10m	11m	13m	11m

The consequences of a 10mm jet fire at the LPG bulk vessel are as follows:

Bulk LPG Vessel				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
8.8	10m	11m	13m	12m

The consequences of a jet fire at the LPG road tanker are as follows:

LPG Road Tanker				
10mm Hose Leak				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
12.872	14m	16m	19m	17m
50mm Hose Rupture				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
48.6	59m	68m	80m	70m

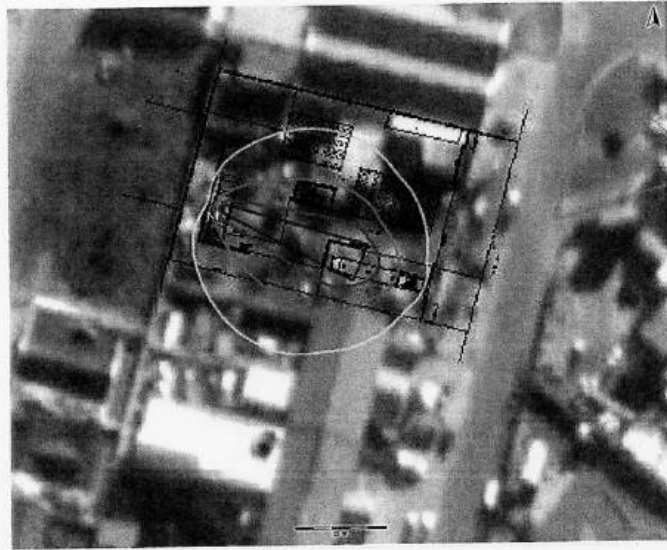
The effects from jet fires could extend beyond the site boundaries.

Thermal radiation from jet fires is shown below.

- 4.5 kW/m<sup>2</sup> is the radiation that would cause pain and second degree burns within 20 seconds. (Yellow Contour)
- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds. (Orange Contour)
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame. (Red Contour)
- 1% Lethality contour represents a 1% fatality for people exposed to the fire for 20 seconds. (Blue Contour)
- The flame is represented by the purple contour.



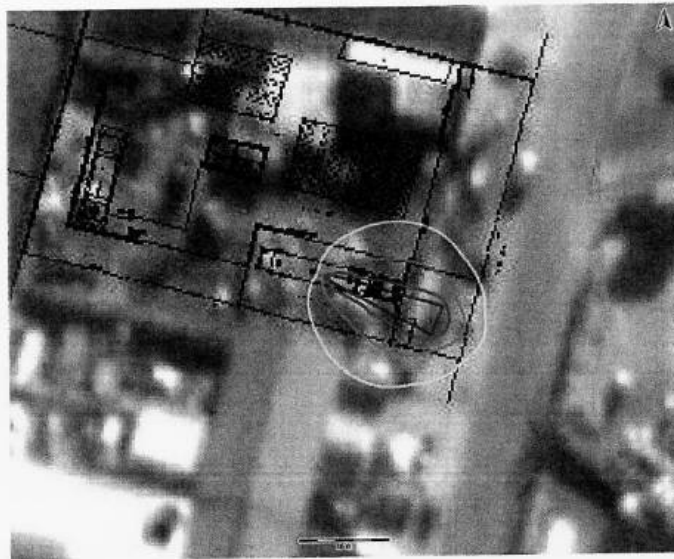
**3.3mm Jet Fire at the Proposed Cylinder Filling and Storage Area**



**10mm Jet Fire at the Proposed Bulk Vessel**



*Loading Hose Shear Jet Fire at the Proposed Truck Loading Area*



*Loading Hose 10mm Jet Fire at the Proposed Truck Loading Area*

#### 5.4.4. Flash Fires

A loss of containment of flammable materials if not immediately ignited, would mix with air and form a flammable cloud. This cloud could drift and if ignited could result in a flash fire or vapour cloud explosion.

The cloud of flammable material would be defined by the lower flammable limit (LFL) and the upper flammable limit (UFL). An ignition within a flammable cloud can result in an explosion if the front is propagated by pressure. If the front is propagated by heat, the fire moves across the flammable cloud at the flame velocity and is called a flash fire. In some instances, pockets of flammable clouds may extend beyond the LFL due to localised conditions. The ½ LFL endpoint assumes there are no isolated pockets, and that ignition would not occur beyond this point.

The following mitigation will be implemented to deal with consequences of a flash fire at the proposed LPG installation:

- Installation will comply with SANS 10087 part 7;
- Strict vessel filling procedures will be followed;
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;
- Enclosure will be kept locked at all times and only trained personnel allowed access.

The consequences of a flash fire at the LPG road tanker and bulk vessel are as follows:

LPG Road Tanker Loading Hose Rupture			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
22m	30m	22,5m	23m

LPG Bulk Vessel Catastrophic Leak			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
131m	99m	115,2m	103m

A flash fire from a catastrophic leak from the LPG vessel is shown below.

Flash fires could not impact beyond the property boundaries.

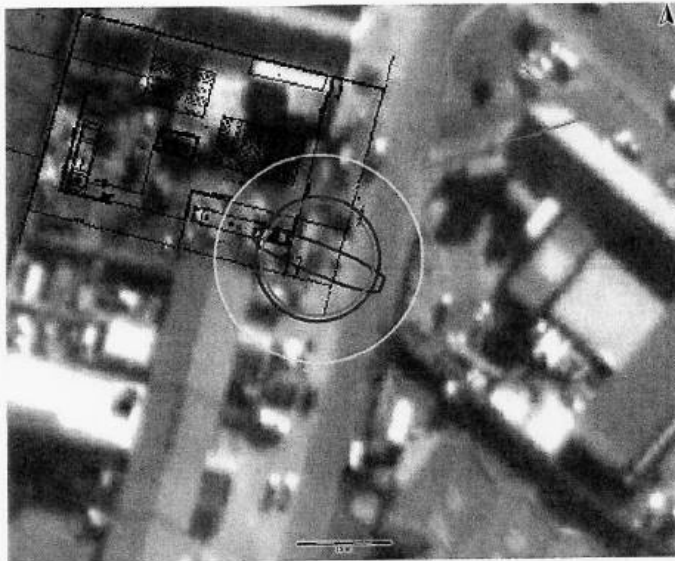
The figures below show the following contours:

- 14kPa overpressure yellow contour;
- 35kPa overpressure orange contour;
- 1% lethality blue contour;
- Flammable cloud purple contour.

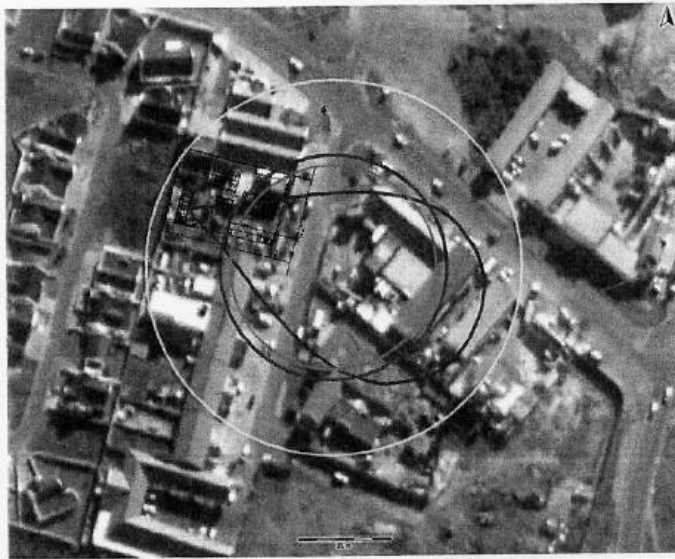
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*Flash Fire from a Hose Shear at the Proposed Tanker Point*



*Flash Fire from a Catastrophic Leak at the Bulk Vessel*

## 5.5. Explosions

An explosion is a rapid increase in volume and release of energy in an extreme manner, usually with the generation of high temperatures and the release of gases. Supersonic explosions created by high explosives are known as detonations and travel via supersonic shock waves. Subsonic explosions are created by low explosives through a slower burning process known as deflagration.

Explosions associated with flammable gas installations are vapour cloud explosions (subsonic explosions), confined vapour cloud explosions (supersonic explosions) and boiling liquid expanding vapour explosions (BLEVE).

### 5.5.1. Vapour Cloud Explosion Consequences

A vapour cloud is formed by the release and mixing of a flammable vapour, gas or spray from an installation. The concentration of the material mixture within the vapour cloud must be in the explosive range to ignite and cause an overpressure. The rate of acceleration of the flames within the vapour cloud will lead to significant overpressure. Should the rate of ignition in the vapour cloud be instantaneous an explosion will occur. The rate of ignition will be influenced by the confinement of the vapour cloud. This will lead to a higher concentration of the flammable mixture. The results of a vapour cloud can be extensive property damage and injury or loss of life.

### 5.5.2. Unconfined Gas Explosions

An unconfined gas explosion is a flammable gas cloud that detonates within an area that is uncluttered and the expanding gases can easily escape. The maximum overpressure from an unconfined gas explosion is much lower than that of a confined explosion and hence the overpressure distance to safety is lower.

### 5.5.3. Confined Gas Explosions

Vapour cloud explosions are one of the most devastating events which can occur in the process industries. It was recognised that a facility design should include limiting explosion damage. The determination of peak overpressures from gas explosions and development of design criteria for structural support become more complex due to high pressure inventories in congested areas.

There are four key factors in an explosion. These are related to the overpressure which is the pressure rise above normal atmospheric pressure, the positive phase duration which is the time during which the pressure is above atmospheric pressure, the degree of confinement of the flammable mixture which causes turbulence and acceleration of the flame front and influences the overpressure, and the impulse (area under the pressure-time profile).

It is well established that it is not the size of the vapour cloud that matters when it comes to blast strength, but the degree of confinement of the vapour cloud and congestion in the path of the flame front. The energy of ignition source (e.g. naked flame) plays a dominant role in determining the blast strength, although a well-designed facility with strict implementation of hazardous area classification requirements in terms of hardware and safety management system can reduce the strength of a potential ignition source significantly.

The Multi-Energy Model (MEM) for rapid assessment of explosion overpressure has been developed by TNO (1997). It is based on the concept that significant overpressures can

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be generated by the ignition of a vapour cloud only in the presence of partial confinement or obstacles in the path of the flame front. This model, however, requires assumptions on the initial blast strength, which significantly influences the predictions. CFD models used in offshore modules have shown that rapid assessment models can underestimate the blast overpressures.

There are no confined areas at the site.

The figures below show the vapour cloud result of a cloud drifting across an ignition point (delayed ignition).

The 0.1bar (10kPa) overpressure contour in blue would typically severely damage 10% of buildings and a probability of death indoors equal to 0.025. No lethal effects are expected below 0.1 bar overpressure for people in the open.

The following mitigation will be implemented to deal with consequences of a vapour cloud explosion at the proposed LPG installation and LPG road tanker:

- Installation will comply with SANS 10087;
- Strict vessel filling procedure will be followed;
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;
- Cages will be kept locked at all times and only trained personnel allowed to remove and install LPG cylinders.

The consequences of a VCE fire at the LPG installation are as follows:

LPG Bulk Vessel			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
193m	121m	78,2m	130m
LPG 48kg Cylinder			
12m	7m	5m	8m

The consequences of a flash fire at the LPG road tanker are as follows:

LPG Road Tanker			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
142m	88m	117m	94m

The effects from a flash fire could extend beyond the site boundaries.

The figures below show the following contours:

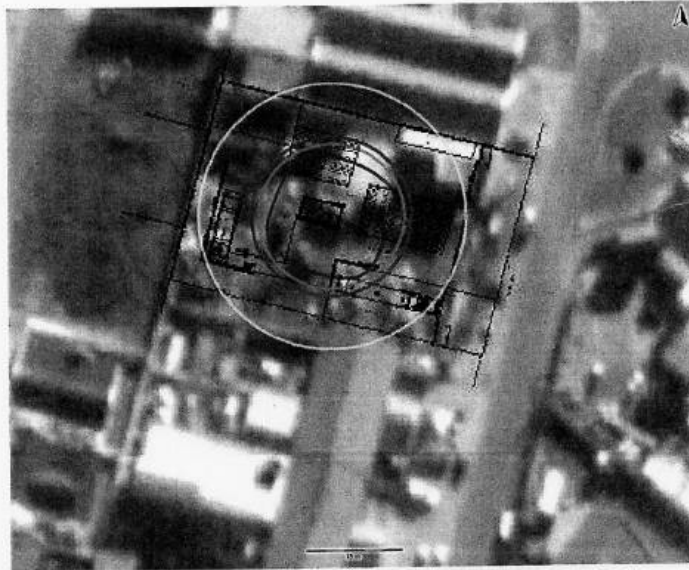
- 14kPa overpressure yellow contour;
- 35kPa overpressure orange contour;
- 1% lethality blue contour;
- Flammable cloud purple contour.

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*VCE from a Catastrophic Failure of Bulk Vessel*



*VCE from a Catastrophic Failure of a 48kg LPG Cylinder at the Storage Area*



*VCE from a Catastrophic Failure of the Proposed LPG Tanker Area*

#### 5.5.4. Boiling Liquid Expanding Vapour Explosion (BLEVE)

Boiling liquid expanding vapor explosions (BLEVEs) are one of the most severe accidents that can occur in the process industry or in the transportation of hazardous materials. Strictly speaking, these explosions do not necessarily imply thermal effects. However, in most cases the substance involved is a fuel that causes a severe fireball after the explosion. Usually BLEVE refers to the combination of these two phenomena, BLEVE and fireball, i.e., to an accident simultaneously involving mechanical and thermal effects.

While the explosion of a tank containing a pressurised flammable liquid will almost always lead to a fireball, the explosion cannot always be considered strictly a BLEVE. To qualify as this type of explosion, the following conditions must be met:

- **Significant superheating of the liquid.** Most liquefied gases under fire attack (GAS, Ammonia, Sulphur Dioxide) fulfil this condition; it can also be fulfilled by other liquids contained in closed containers that undergo anomalous heating, for example due to a fire; and, as stated before, water can also be at this condition upon instantaneous depressurisation.
- **Instantaneous depressurisation.** This phenomenon is usually related to the type of failure of the vessel. The sudden pressure drop in the container upon failure causes the liquid superheat. If the liquid superheat is significant, the flashing may be explosive.

When these two conditions are met, a practically instantaneous evaporation of the contents takes place, with the formation of a large number of boiling nuclei in all the liquid mass (homogeneous nucleation). In these conditions the velocity at which the

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volume increases are extraordinary, and the explosion is therefore very violent. Strictly speaking, this is the phenomenon associated with the BLEVE explosion.

When a BLEVE explosion involves a flammable substance, it is usually followed by a fireball, intense thermal radiation will be released and fragments from the shattered vessel. The thermal energy is released in a short time, usually less than 40 seconds (although this time is a function of the mass in the tank). The phenomenon is characterised from the first moments by strong radiation; this eliminates the possibility of escaping for the persons nearby (who also will have suffered the effects of the blast).

The following mitigation will be implemented to deal with consequences of a BLEVE at the proposed LPG installation:

- Installation will comply with SANS 10087;
- Strict vessel filling procedure will be followed;
- Bulk vessel will be 'Mounded and therefore it cannot BLEVE;
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;
- Cages will be kept locked at all times and only trained personnel allowed to remove and install LPG cylinders;
- The area around the cages will be kept clear of any flammable materials.

The consequences of a BLEVE at the LPG cylinders are as follows:

LPG 48kg Cylinder				
Fire Ball	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
22,69m	N/A	33m	60m	14

The consequences of a BLEVE at the LPG road tanker are as follows:

LPG Road Tanker				
Fire Ball	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
121.8m	87m	218m	386m	172m

A blast wave from a BLEVE is fairly localised but can cause significant damage to immediate equipment and buildings.

Thermal radiation from a BLEVE is shown below.

- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds. (Orange Contour)
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame. (Red Contour)
- 1% Lethality contour represents a 1% fatality for people exposed to the fire for 20 seconds. (Blue Contour)
- The fireball is represented by the purple contour

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**48kg LPG Cylinder BLEVE**



**LPG Tanker BLEVE**

**5.6. Potential Offsite and Onsite Domino Effects**

There are no other Major Hazard Installations around Gas Hub.

A fire or explosion at the bulk vessel, the filling installation and the road tanker will have domino effects on the LPG storage installation and vice versa. These domino effects have been included in the calculations.

## 6. FREQUENCY ANALYSES

### 6.1. Site Specific (Final) Frequencies

The frequencies indicated below are generic frequencies as specified in *BEVI*. Site specific frequencies are calculated utilising these generic frequencies as a base. The final frequency calculations are included in the Appendices.

### 6.2. Generic Equipment Failure Scenarios

The main hazard when storing toxics is the loss of containment. The toxic vapour cloud would move with the wind until the effects of dispersion dilute the cloud below the toxic concentration. A loss of containment of toxics may occur during delivery or during the operation of the refrigeration plant. The possible hazards are to be identified, together with the failure modes and the possible initiating events that may cause such a failure. Failure rates were obtained from '*RIVM - Reference Manual Bevi Risk Assessments*'.

### 6.3. Blocking Systems

Blocking systems are used to limit the released quantity following a loss of containment. A blocking system consists of a detection system, for example gas detection, combined with shut-off valves. The shut-off valves can be closed automatically or manually. The effectiveness of a blocking system is determined by various factors, such as the position of gas detection monitors and their distribution throughout the various wind directions. Furthermore, the detection limit and the response time of the system as well as the operator's intervention time are also relevant.

The following conditions must be met to include the operation of a blocking system in the risk analysis:

- An automatic detection system must be present that results in signalling within the control room, or automatic control of the blocking valves. An example of this is a gas detection system with sufficiently sensitive monitors and adequate detection points. In the case of signalling in the control room this room must be continuously staffed.
- The detection system and the shut-off valves must regularly be tested.

The default values specified here for three representative systems were used as a guideline:

#### 1. Automatic blocking system

An automatic blocking system is a system in which the detection of the leak and the closing of the blocking valves take place automatically. Action by an operator is not necessary.

#### 2. Semi-automatic blocking system

A semi-automatic blocking system is a system in which the detection of the leak takes place automatically and leads to an alarm signal in a continuously staffed control room. After validation of the signal the operator closes the blocking valves by actuating a switch in the control room. The probability of failure per operation is equal to 0.01, the time required for closing the blocking valves is equal to 10 minutes.

### 3. Non-automated blocking system

A non-automated blocking system is a system in which the detection of the leak takes place automatically and leads to an alarm signal in a continuously staffed control room. The operator does not have the facilities to shut off the blocking valves by actuating a switch in the control room but has to take action outside the control room. For such a system the time required to effectively perform the required actions is so long that there is no effect on the QRA, given the maximum duration of an outflow of 30 minutes that is generally applied.

All the installations were modelled as having a non-automated blocking system. This is discussed in Section 2 of the report.

### 6.4. Pressure Vessels

The scenarios considered under this category are partial failure and catastrophic failure. Factors that have been identified as having an effect on the integrity of cylinders are related to design, inspection, maintenance, and corrosion.

- A pressure cylinder is a storage vessel that contains a fluid under a design pressure equal to, or greater than 50kPa.

The failure frequencies are as follows:

	Frequency (per annum)
Instantaneous release of entire contents	5 x 1.0e-7
Release of entire contents in 10 minutes in a continuous and constant stream	5 x 1.0e-7
Continuous release of contents from a hole with an effective diameter of 10mm	1 x 1.0e-5

### 6.5. Valves

The failure frequency of valves is dependent on the valve and the leak size. The ratio of the leak size ( $d$ ) to the valve size ( $D$ ) should firstly be determined in order to determine the valve failure frequency per year, for example:

$d/D$	Leak Frequency (per valve per year)
0.1	1.4 x 1.0e-4
0.2	1.9 x 1.0e-4
0.5	2.5 x 1.0e-4
1.0	3.0 x 1.0e-4

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### 6.6. Flanges

Pressure surge or significant deviations of pressure or temperature may cause a flanged joint to be over stressed, resulting in a small leak. Larger holes through to complete line fracture may conceivably result from mechanical impact or pressure surge. These events are likely to be detected more rapidly, resulting in a quicker isolation of the leak.

The flange failures per year vary greatly with the flange and gasket quality. A reasonable average based on current practices is summarised below:

Pipe Diameter (mm)	Equivalent Hole Size (mm)	Leak Frequency (per item per year)
100	5	1 x 1.0e-5
> 100	25	1 x 1.0e-6

### 6.7. Ignition Probability of Flammable Gases

#### 6.7.1. Direct Ignition

The probability of direct ignition depends on the type of installation (stationary installation or transport unit), the substance category and the outflow quantity.

- Values for stationary installations are given in the table below;
- Values for transport units are given in the next table;
- Definition of the substance category is given in the third table.

Substance Category	Source Term Continuous	Source Term Instantaneous	Probability of Direct Ignition
Category 0 Average/High reactivity	<10 kg/s	<1000 kg	0.2
	10 – 100 kg/s	1000 – 10000 kg	0.5
	>100 kg/s	>10000 kg	0.7
Category 0 Low reactivity	<10 kg/s	<1000 kg	0.2
	10 – 100 kg/s	1000 – 10000 kg	0.4
	>100 kg/s	>10000 kg	0.9
Category 1	All flow rates	All quantities	0.065
Category 2	All flow rates	All quantities	0.01
Category 3, 4	All flow rates	All quantities	0

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Substance Category	Transport Unit	Scenario	Probability of Direct Ignition
Category 0	Road tanker	Continuous	0.1
	Road tanker	Instantaneous	0.4
	Tank wagon	Continuous	0.1
	Tank wagon	Instantaneous	0.8
	Ships – gas tankers	Continuous, 180m <sup>3</sup>	0.7
	Ships – gas tankers	Continuous, 90m <sup>3</sup>	0.5
	Ships – semi gas tankers	Continuous	0.7
Category 1	Road tanker, tank Ships	Continuous, instantaneous	0.065
Category 2	Road tanker, tank ships	Continuous, instantaneous	0.01
Category 3, 4	Road tanker, tank ships	Continuous, instantaneous	0

Category	WMS Category	Limits
Category 0	Extremely flammable	Liquid substances and preparations with a flash point lower than 0°C and a boiling point (or the start of a boiling range) less than or equal to 35°C. Gaseous substances and preparations which may ignite at normal temperature and pressure when exposed to air.
Category 1	Highly flammable	Liquid substances and preparations with a flash point below 21°C, which are not extremely flammable
Category 2	Flammable	Liquid substances and preparations with a flash point greater than or equal to 21°C and less than or equal to 55°C.
Category 4	Flammable	Liquid substances and preparations with a flash point greater than 55°C and less than or equal to 100°C.
Category 4	Flammable	Liquid substances and preparations with a flash point greater than 100°C.

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**6.7.2. Delayed Ignition**

The probability of delayed ignition depends on the end point of the calculation. In the calculation of the location-specific risk only ignition sources on the site of the establishment are considered. Ignition sources outside the establishment are ignored; it is assumed that if the cloud does not ignite on site and a flammable cloud forms outside the establishment, ignition always occurs at the biggest cloud size. In the calculation of societal risk, all ignition sources are considered, including population. If ignition sources are absent, it is possible in the societal risk calculation that the flammable cloud does not ignite (see the table below).

Substance Category	Probability of Delayed Ignition for the Biggest Cloud Size, PRm	Probability of Delayed Ignition, GR
Category 0	1 – Pdirect ignition	Ignition sources
Category 1	1 – Pdirect ignition	Ignition sources
Category 2	0	0
Category 3	0	0
Category 4	0	0

## 7. RISK CALCULATIONS

Consequence analysis has been the main focus of the report up to now while the consideration of probability has not been discussed. Risk is defined as consequence times probability.

Probability is defined as the risk of an event occurring and impacting on the individual and society at large.

### 7.1. Location Specific Individual Risk Levels

The likelihood that a person in some fixed relation to a hazard (e.g. at a particular location, level of vulnerability, protection and escape) might sustain a specific level of harm.

The frequency at which an individual may be expected to sustain a given level of harm from the realisation of specified hazards. For example, there may be an individual risk of one-in-a-million that a particular person would be killed by an explosion at a major hazard near their home for every year that a person lives at that address. [*HSE Societal Risk: Initial briefing to Societal Risk Technical Advisory Group: p60*].

#### 7.1. Employee Risk

Scenarios considered regarding risk to employees are toxic vapour clouds from Ammonia plant failures. Employees and the public are indoors and outdoors during the day and major events associated with these installations would occur outside of the building in the vicinity of the installation areas. When exposed to hazards such as toxic clouds, people who are indoors (sheltered) will generally be less vulnerable than those outdoors (unsheltered). The risks should not be more than one-in-a-thousand ( $1.0e-3$  per year).

#### 7.2. Individual Risk

This Risk Assessment has modelled the effects of the proposed LPG installation.

The results are low, with the one-in-a-million contour confined to the property and only extending over the western boundary by 7m.

The one-in-thirty million contour, extends for a maximum of 13m over the southern boundary and 30m over the western boundary of the site.

The contours do not reach any sensitive populations or installations.

As can be seen from the above results, the risks are relatively low and acceptable for this industrial and commercial area.

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*Individual Risk for the Proposed Installation*

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### 7.3. Risk Levels and Ranking

Individual risk levels at several important points around the proposed installation:

#### At Northern Neighbour

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	80,3	1,61E-07
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	17,4	3,50E-08
3.	3.3mm Leak (Storage Area 1)	1,71	3,43E-09
4.	Small Leak (LPG 48m3 Vessel)	0,484	9,72E-10

#### At Southern Neighbour

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	60	2,50E-07
2.	Small Leak (LPG 48m3 Vessel)	23,9	9,96E-08
3.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	15,9	6,63E-08
4.	Hose Shear (LPG Road Tanker)	0,205	8,54E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	0,00024	9,98E-13

#### At Western Neighbour

	Scenario	Contribution %	Risk Value
1.	Small Leak (LPG 48m3 Vessel)	72,6	1,01E-06
2.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	18	2,50E-07
3.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	9,33	1,30E-07
4.	Hose Shear (LPG Road Tanker)	0,0343	4,77E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	6,68E-5	9,27E-13

#### At Office

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	74,7	1,18E-07
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	25,2	3,99E-08
3.	Hose Shear (LPG Road Tanker)	0,0513	8,11E-11
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000616	9,74E-13

#### On Road

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	60,2	8,89E-08
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	39,6	5,85E-08
3.	Hose Shear (LPG Road Tanker)	0,239	3,53E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000675	9,97E-13

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**Risk Ranking**

	Scenario	Contribution %	Risk Value
1.	Flash Fire (Storage Area 1)	35,6	2,80E-05
2.	Flash Fire (Main Cylinder Storage)	21,1	1,65E-05
3.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	11,6	9,11E-06
4.	Catastrophic Failure BLEVE (Storage Area 1)	8,9	6,99E-06
5.	Catastrophic Failure BLEVE (Main Cylinder Storage)	5,26	4,14E-06
6.	3.3mm Leak (Main Cylinder Storage)	4,77	3,75E-06
7.	3.3mm Leak (Storage Area 1)	4,77	3,75E-06
8.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	4,64	3,65E-06
9.	Small Leak B2 Set (LPG 48m3 Vessel)	1,8	1,42E-06
10.	Catastrophic Failure Flash Fire (Filling Area)	1,05	8,27E-07
11.	3.3mm Leak (Filling Area)	0,286	2,25E-07
12.	Catastrophic Failure BLEVE (Filling Area)	0,263	2,07E-07
13.	Hose Shear (LPG Road Tanker)	0,013	1,02E-08
14.	Small Leak (LPG Road Tanker)	0,0021	1,65E-09
15.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000147	1,16E-10

**7.4. Societal Risk**

Societal risk is defined as the relationship between frequency and the number of people suffering from a specified level of harm in a given population from the realisation of specified hazards [Jones, 1985]. Societal risk evaluation is concerned with estimation of the chances of more than one individual being harmed simultaneously by an incident. The likelihood of the primary event (an accident at a major hazard installation) is still a factor, but the consequences are assessed in terms of level of harm and the numbers affected (severity), to provide an idea of the scale of an accident in terms of numbers killed or harmed.

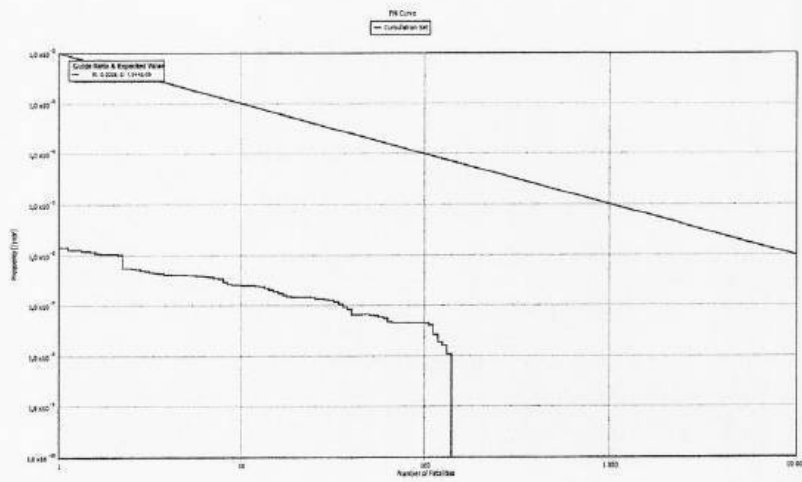
Societal risk is dependent on the risks from the substances and processes located on a major hazard installation. A key factor in estimating societal risk is the population around the site, in particular its location and density. For example, the more (occupied) buildings in any particular area, the more people could be harmed by a flammable gas cloud passing through that area. For an installation with a population located in a specific compass direction, the chance of a flammable gas release would depend on the probability of drift in that direction.

Scenarios to be included in a risk assessment can be characterised as having a frequency ( $F$ ) and a consequence ( $N$ , number of casualties).  $F$  is used to denote the sum of the frequencies of all the individual events that could lead to  $N$  or more fatalities (hence the reference to  $FN$  curves).

Societal risk can be represented by  $FN$  curves, which are plots of the cumulative frequency ( $F$ ) of various accident scenarios against the number ( $N$ ) of casualties associated with the modelled incidents. The plot is cumulative in the sense that, for each frequency,  $N$  is the number of casualties that could be equalled or exceeded. Often 'casualties' are defined in a risk assessment as fatal injuries, in which case  $N$  is the number of people that could be killed by the incident.

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**FN Curves for Proposed Installation**

As seen on the graph above, the societal risk is less than  $1 \times 10^{-6}$  of one fatality, which is acceptable.

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## 8. RISK JUDGEMENT

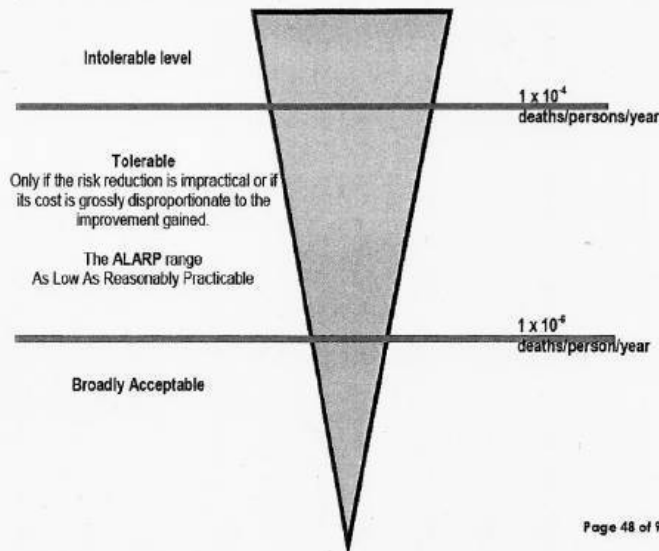
### 8.1. Risk Judgement Criteria

This Assessment indicates in a clear statement whether the risks or aspects of the risks are intolerably high, tolerable provided ALARP or broadly acceptable, both in terms of location specific, individual risk and societal risk.

The risk evaluation criteria are set out as follows:

- A risk of death for members of the public greater than  $1.0 \times 10^{-4}$  (one-in-ten thousand) per year is considered intolerable.
- A risk of death below  $1.0 \times 10^{-6}$  (one-in-a-million) per year for members of the public is considered broadly acceptable provided sensitive or vulnerable receptors in the vicinity have been considered.
- Risks between  $1.0 \times 10^{-6}$  per year and  $1.0 \times 10^{-4}$  per year for members of the public can be considered tolerable, provided the risks have been reduced so far as is reasonably practicable, i.e. this is referred to as the ALARP region.

Figure 1 - The public ALARP risk decision making framework



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The individual risks at the Gas Hub site are 'Broadly Acceptable', as they fall within the ALARP range. The risks off site are 'Broadly Acceptable'.

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## **9. RISK TREATMENT**

### **9.1. Major Hazard Installation**

The scenario contributing the most towards the total risk at the facility is a catastrophic failure of the bulk LPG vessel.

The risks posed by the installations were found to be acceptable for the commercial area in which they are located.

### **9.2. Risk Reduction**

The recommendations are as follows:

- Good housekeeping must always be observed on site;
- Emergency Plan must be drafted for the site and must include all the risks identified in this report;
- Emergency Plan must comply with the MHI Regulations;
- Emergency Plan must comply with SANS 1514;
- All work must be done by qualified companies;
- Installation must comply with Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- Fire Department must witness a pressure test prior to issuing flammable substance certificate.

### **9.3. ALARP Conclusions**

If the LPG installation is maintained as per the relevant SANS codes, the necessary safety equipment and procedures are in place and the personnel are trained to deal with emergencies, risks imposed by the installation will always be acceptable.

## 10. LAND USE PLANNING

Where a site near to a major hazard chemical installation or pipeline is being developed, the City Council's Planning Authority has a statutory duty to refer to this Risk Assessment. This report will help the Planning Authority to 'Advise Against' or 'Don't Advise Against' the granting of planning permission on health and safety grounds that arise from the possible consequences of a major accident at the hazardous installation.

This report is designed to help planners, developers and others who want to work out for themselves about a planning proposal. In some cases, it may be that working through the report will allow one to modify the size, layout or location of a proposed development.

This report was compiled as per SANS 1461:2018 Codes of Practice. Land use planning is based on the United Kingdom's Health and Safety Executive HSEs '*Planning Advice for Developments near Hazardous Installations (PADHI)*'.

### 10.1. The Principles Behind Land Use Planning Methodology

- The risk considered is the residual risk which remains after all reasonably practicable preventative measures have been taken to ensure compliance with the requirements of the Major Hazard Regulations.
- Advice takes account of risk as well as hazard, that is the likelihood of an accident as well as its consequences.
- Account is taken of the size and nature of the proposed development, the inherent vulnerability of the exposed population and the ease of evacuation or other emergency procedures for the type of development proposed. Some categories of development (e.g. schools and hospitals) are regarded as more sensitive than others (e.g. light industrial) and advice is weighted accordingly.
- Consideration of the risk of serious injury, including that of fatality, attaching weight to the risk where a proposed development might result in a large number of casualties in the event of an accident.

### 10.2. Introduction to PADHI

The Risk Assessor sets a consultation distance (CD) around major hazard sites and pipelines after assessing the risks and likely effects of major accidents at the installation or pipeline.

Major hazards comprise a wide range of chemical process sites, fuel and chemical storage sites, and pipelines. The CDs are based on scientific knowledge using quantitative risk assessments.

PADHI uses two inputs to a decision matrix to generate the CDs or 'Restricted Development Distances'

- The zone in which the development is located of the three zones (that make up the CD);
- The 'sensitivity level' of the proposed development (see 'Development type tables').

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### 10.3. Zone Mapping

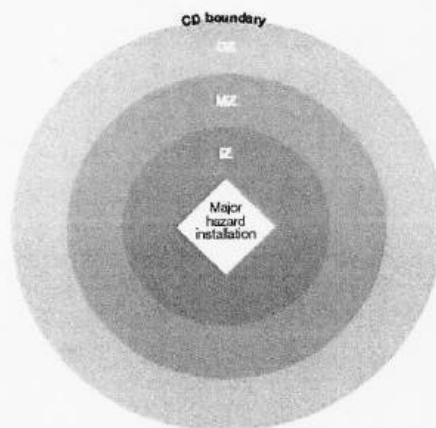
PADHI uses a 'three-zone' system. ('inner' (IZ), 'middle' (MZ) and 'outer' (OZ);) The zones are determined by a detailed assessment of the risks of the installation or pipeline which takes the following factors into account:

- The hazard ranges and consequences of the toxic and/or flammable substances present;
- The volume of those substances for which the site has consent;
- The method of storage. The risks and hazards from the major hazard are greatest in the inner zone, so the restrictions on development are strictest. The CD is all the land enclosed by all the zones and the installation itself.

Inner zone includes all areas where risk is > 10 chances per million per annum. (Red Contour)

Middle zone > 1 chance per million per annum. (Orange Contour)

Outer zone > 0.3 chances per million per annum. (Yellow Contour)

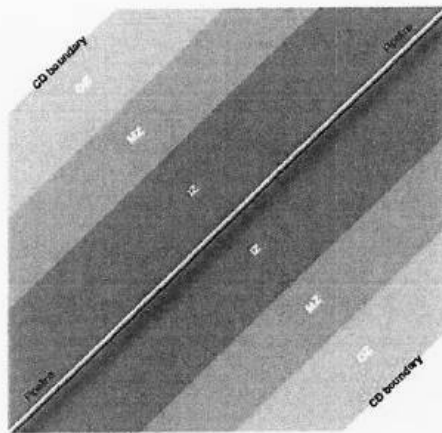


**Three Zone Map**

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**Three Zone Pipeline Map**

The development zones for the proposed installation are indicated on the map below.

- There are no inner and middle zones.
- The outer zone (yellow) extends to the north and east of the installation but does not reach the road boundaries.



**Proposed Installation Development Zone Map**

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#### 10.4. Development 'Sensitivity Levels'

The sensitivity levels are based on a clear rationale to allow progressively more severe restrictions to be imposed as the sensitivity of the proposed development increases. There are four sensitivity levels:

- Level 1 – Based on normal working population;
- Level 2 – Based on the general public – at home and involved in normal activities;
- Level 3 – Based on vulnerable members of the public (children, those with mobility difficulties or those unable to recognise physical danger);
- Level 4 – Large examples of Level 3 and very large outdoor examples of Level 2.

The tables in the Appendices expand on the four basic development types.

#### 10.5. Decision Matrix

Having determined which risk zone, the surrounding developments fall into and the sensitivity level of these developments, the matrix below can be utilised to decide whether one should advise for or against a specific development. Beyond the outer risk zone there are no specified restrictions on developments.

Level of Sensitivity	Development in inner zone	Development in middle zone	Development in outer zone
Level 1	Do not Advise Against (DAA)	Do not Advise Against (DAA)	Do not Advise Against (DAA)
Level 2	Advise Against (AA)	Do not Advise Against (DAA)	Do not Advise Against (DAA)
Level 3	Advise Against (AA)	Advise Against (AA)	Advise Against (AA)
Level 4	Advise Against (AA)	Advise Against (AA)	Advise Against (AA)

*Decision Matrix*

#### 10.6. Site Specific Zoning

The area surrounding the site is commercial, light industrial and residential area. All the existing developments are Level 1. The existing zoning around Gas Hub is correct.

#### 10.7. Land Use Conflicts

There are no land use conflicts at the site.

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**11. EMERGENCY RESPONSE DATA****11.1. Emergency Plan**

<b>Document Name</b>	Non-Available
<b>Date of Document</b>	N/A
<b>Fire Fighting Addressed</b>	N/A
<b>Emergency Evacuation Addressed</b>	N/A
<b>Statutory Requirements</b>	N/A

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**12. CONCLUSION****12.1. Major Hazard Installation**

This Assessment established that an incident involving the proposed LPG installation on the premises of Gas Hub in Hermanus could impact past the boundaries. The risks associated with this MHI were found to be low.

A site is deemed to be an MHI if more than the prescribed quantity is stored as per the General Machinery Act or if a product is stored, handled or produced which has the potential to cause a major incident as per the Operational Health and Safety Act.

**12.2. 1% Consequence Lethality Distances**

Component	Scenarios	1% Fatality Distance
<b>LPG installations</b>		
48kg LPG Cylinder	Catastrophic Vessel Failure BLEVE	14m
48kg LPG Cylinder	Catastrophic Vessel Failure VCE	14m
48kg LPG Cylinder	Vessel Leak-Jet Fire	12m
Bulk Vessel	Vessel Leak-VCE	14m
Bulk Vessel	Vessel Leak-Jet Fire	32m
LPG Road Tanker	Loading Hose Leak-Jet Fire	17m
LPG Road Tanker	Loading Hose Rupture-Jet Fire	70m
LPG Road Tanker	Road Tanker Failure-Flash Fire	27m
LPG Road Tanker	Road Tanker Failure-BLEVE	172m
LPG Road Tanker	Road Tanker Catastrophic Leak-VCE	94m

**12.3. Risk Level Posed to Various Populations**

Individual risk levels at several important points around the proposed installation:

**At Northern Neighbour**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	80,3	1,61E-07
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	17,4	3,50E-08
3.	3.3mm Leak (Storage Area 1)	1,71	3,43E-09
4.	Small Leak (LPG 48m3 Vessel)	0,484	9,72E-10

**At Southern Neighbour**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	60	2,50E-07
2.	Small Leak (LPG 48m3 Vessel)	23,9	9,96E-08
3.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	15,9	6,63E-08
4.	Hose Shear (LPG Road Tanker)	0,205	8,54E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	0,00024	9,98E-13

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**At Western Neighbour**

	Scenario	Contribution %	Risk Value
1.	Small Leak (LPG 48m3 Vessel)	72,6	1,01E-06
2.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	18	2,50E-07
3.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	9,33	1,30E-07
4.	Hose Shear (LPG Road Tanker)	0,0343	4,77E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	6,68E-5	9,27E-13

**At Office**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	74,7	1,18E-07
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	25,2	3,99E-08
3.	Hose Shear (LPG Road Tanker)	0,0513	8,11E-11
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000616	9,74E-13

**On Road**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	60,2	8,89E-08
2.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	39,6	5,85E-08
3.	Hose Shear (LPG Road Tanker)	0,239	3,53E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000675	9,97E-13

**Risk Ranking**

	Scenario	Contribution %	Risk Value
1.	Flash Fire (Storage Area 1)	35,6	2,80E-05
2.	Flash Fire (Main Cylinder Storage)	21,1	1,65E-05
3.	Catastrophic Vessel Failure (LPG 48m3 Vessel)	11,6	9,11E-06
4.	Catastrophic Failure BLEVE (Storage Area 1)	8,9	6,99E-06
5.	Catastrophic Failure BLEVE (Main Cylinder Storage)	5,26	4,14E-06
6.	3.3mm Leak (Main Cylinder Storage)	4,77	3,75E-06
7.	3.3mm Leak (Storage Area 1)	4,77	3,75E-06
8.	Catastrophic Vessel Leak (LPG 48m3 Vessel)	4,64	3,65E-06
9.	Small Leak B2 Set (LPG 48m3 Vessel)	1,8	1,42E-06
10.	Catastrophic Failure Flash Fire (Filling Area)	1,05	8,27E-07
11.	3.3mm Leak (Filling Area)	0,286	2,25E-07
12.	Catastrophic Failure BLEVE (Filling Area)	0,263	2,07E-07
13.	Hose Shear (LPG Road Tanker)	0,013	1,02E-08
14.	Small Leak (LPG Road Tanker)	0,0021	1,65E-09
15.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000147	1,16E-10

**12.4. Risk Reduction Recommendations**

The following is recommended in order to reduce the risks associated with the installation:

- Good housekeeping must always be observed on site;
- All work must be done by qualified companies;

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- Installation must comply to Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- Fire Department must witness a pressure test prior to issuing flammable substance certificate.

#### 12.5. Emergency Plan

There is no Emergency Plan for the site. An Emergency Plan must be drafted, and the following is recommended:

- Emergency Plan must comply SANS 1514 Codes;
- Emergency Plan must comply to the MHI Regulations;
- Emergency Plan must be accepted and signed by management and the Local Authority.

#### 12.6. Review of Risk Assessment

This Risk Assessment is valid for the duration of 5 years from the above date unless:

- Changes have been made to the plant that can alter the risks on the facility;
- The Emergency Plan was invoked or there was a near miss;
- The changing neighbourhood could result in offsite risks;
- There is reason to suspect that the current Assessment is no longer valid.

#### 12.7. Risk Reduction Programmes

Risk reduction programmes should continually be investigated to reduce the impact from accidental fires and explosions on surrounding communities.

#### 12.8. Surrounding Land Development

The development of land surrounding the site should be done with caution as not to pose unnecessary risks onto the surrounding communities. This caution is aimed at ensuring the adjacent developments are suitable for the risk imposed.

#### 12.9. MHI Notification

In the event of the installation being deemed to be a Major Hazard Installation (MHI), the following levels of Government need to be notified:

- Local Authority;
- Provincial Government;
- National Government.

The process is as follows:

- Copy of this report, along with a cover letter notifying the fire department/ emergency services (Local Authority). A proof of receipt needs to be obtained from the Local Authority;
- Copy of the report, along with a cover letter notifying the Provincial Director from the Provincial Department of Labour. A proof of receipt needs to be obtained from the Provincial Department of Labour;
- An advert needs to be placed in a local newspaper informing the public about the MHI. The information that needs to be included in the advert is as follows:

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- Physical address of the MHI;
- Maximum quantity of the substance that resulted in the installation being classified as an MHI;
- Contact person where more information can be obtained;
- Notifying the public that they can comment/ object to the installation with the Department of Labour or the Local Authority;
- Expiry date of the 60-day commenting period;
- Copy of the report, along with a cover letter notifying the Chief Inspector from the National Department of Labour. Copies of the proof of receipts and a copy of the advert must be included.

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13. PROOF OF COMPETENCY

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## CERTIFICATE OF ACCREDITATION

*In terms of section 22(2)(b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-*

### MAJOR HAZARD RISK CONSULTANTS CC

Co. Reg. No.: 2007/079078/23  
CAPE TOWN

Accreditation Number: **MHI0017**

is a South African National Accreditation System Accredited Inspection Body to undertake **TYPE A** Inspection provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying scope of accreditation, Annexure "A", bearing the above accreditation number for

### THE ASSESSMENT OF RISK ON MAJOR HAZARD INSTALLATIONS

The facility is accredited in accordance with the recognised International and National Standard

**ISO/IEC 17020:2012 and SANS 1461:2018**

The accreditation demonstrates technical competency for a defined scope and the operation of a management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr M. Phaloane  
Acting Chief Executive Officer

Effective Date: 21 January 2021  
Certificate Expires: 20 January 2025

This certificate does not on its own confer authority to act as an Approved Inspection Authority as contemplated in the Major Hazard Installation Regulations. Approval to inspect within the regulatory domain is granted by the Department of Employment and Labour.

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## ANNEXURE A

## SCOPE OF ACCREDITATION

Accreditation Number: MHI0017


TYPE A

<b>Permanent Address:</b> MHR Consultants CC 13 Slade Street Parklands Tableview 7441  Tel: (021) 426-5688 Fax: 086 520-4872 E-mail: <a href="mailto:claude@petrostruct.co.za">claude@petrostruct.co.za</a>		<b>Postal Address:</b> 13 Slade Street Parklands Tableview 7441  Issue No.: 08 Date of Issue: 19 January 2021 Expiry Date: 20 January 2025
<b>Nominated Representative:</b> Mr CC Thackway  <b>Quality Manager:</b> Mr CC Thackway	<b>Technical Manager:</b> Mr SA Stevens	<b>Technical Signatories</b> Mr TC Thackway Mr SA Stevens
<b>Field of Inspection</b>	<b>Type and Range of Inspection</b>	<b>Standards and Specifications</b>
<b>Regulatory:</b> The supply of services as an Inspection Authority for Major Hazard Risk Installation as defined in the Major Hazard Risk Installation Regulations, Government Notice No. R 692 of 30 July 2001	Major Hazard Installation Risk Assessments for the following material categories: 1) Explosive chemicals 2) Gases: i) Flammable Gases ii) Non-flammable, non-toxic gases (asphyxiants) iii) Toxic gases 3) Flammable liquids 4) Flammable solids, substances liable to spontaneous combustion, substances that on contact with water release flammable gases 5) Oxidizing substances and organic peroxides 6) Toxic liquids and solids	MHI regulation par. 5 (5) (b) i) Frequency/Probability Analysis ii) Consequence Modelling iii) Hazard Identification and Analysis iv) Emergency planning reviews SANS 31000 SANS 31010 SANS1461:2018 CPR 14 E. Methods for the Calculation of Physical Effects ("Yellow Book"), 3 <sup>rd</sup> Edition, TNO, Apeldoorn. Guideline for Quantitative Risk Assessment ("Purple Book") CPR 18E. First Ed. 1999 A Guide for the Control of Major Accident Hazard Regulations 1999, UK HSE.

Original Date of Accreditation: 21 January 2009

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ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

  
Accreditation Manager

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## employment & labour

Department:  
Employment and Labour  
REPUBLIC OF SOUTH AFRICA

National Department of Employment and Labour  
Republic of South Africa

### APPROVED INSPECTION AUTHORITY

*Registered in accordance with the provisions of the Occupational Health and Safety Act, Act 85 of 1993, as amended and the Major Hazard Installation Regulations.*

THIS IS TO CERTIFY THAT:

### MAJOR HAZARD RISK CONSULTANTS CC

*has been registered by the Department of Employment and Labour as an Approved Inspection Authority: Type A, to conduct Major Hazard Installation Risk Assessment, in terms of Regulation 5(5)(a), of the Major Hazard Installation Regulations.*

#### CONDITIONS OF REGISTRATION:

- *The AIA must at all time comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993, as amended.*
- *This registration certificate is not transferable.*
- *This registration will lapse if there is a name change of the AIA or change in ownership.*

  
CHIEF INSPECTOR



Valid from: 21 January 2021  
Expires: 20 January 2025  
Certificate Number: CI MHI 0007

**14. REFERENCES**

- Ale B J M (1991)**. 'Risk Analysis and Risk Policy in the Netherlands and the EEC', J. Loss. Prev. Process Ind., 4(1), 58
- CPR 12 E (1997)**. 'Methods for Determining and Processing Probabilities' ("Red Book") First Edition, TNO, Apeldoorn
- CPR 14 E (1997)**. 'Methods for the Calculation of Physical Effects' ("Yellow Book"), Third Edition, TNO, Apeldoorn.
- CPR 16 E (1992)**. 'Methods for the Determination of Possible Damage' ("Green Book"), First Edition, TNO, Apeldoorn.
- CPR 18 E (1999)**. 'Guidelines for Quantitative Risk Assessment. ("Purple Book"), First Edition, TNO, Apeldoorn.
- EPA (1993)**. 'Offsite Consequence Analysis: Risk Management Programme Guidance', May 1996.
- HSE (1989)**. 'Risk Criteria for Land Use Planning in the Vicinity of Major Hazards', Health and Safety Executive, HMSO
- Schulze (1986)**. 'Climate of South Africa: Climate Statistics up to 1984', WB 40, South African Weather Bureau, Pretoria, 474 pp.
- 'Reference Manual Bevi Risk Assessments Version 3.2'*
- SANS 1461:2018**
- HSE "Planning advice for developments near hazardous installations (PADHI)"**
- JRC Technical Reports (2017)**. 'Handbook of Scenarios for Assessing Major Chemical Accident Risks', Gyenes., Wood M-H, Struckl M.
- RIVM Report 620100003/2005**. 'Distance Table Ammonia Refrigeration' PAM Uijt the Hague

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**15. APPENDICES**

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**15.1. Emergency Plan**  
*(Non-Available)*

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**15.2. Material Safety Data Sheets**

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## SAFETY DATA SHEET

SA-MS-PR-012-V01-E

6 March 2020

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** LPG (Liquid Petroleum Gas)

**Product Code:** LPG

**Product Use:** LPG is used as a domestic, commercial, industrial and automotive fuel, a feedstock in chemical processes and as propellant in pressurised aerosol containers.

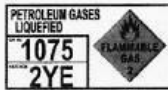
**Company Name:** Oryx Oil South Africa (Pty) Limited

**Address:** Ground Floor - Block A, Hobart Square Office Park, 10 Hobart Road, Bryanston, Republic of South Africa

**Telephone / Fax Number:** Tel: +27 (0) 10 045-0800 Fax: +27 (0) 10 046-0850

**Other Names:** **Name:** **Product Code:**  
Customer Contact Centre: +27 (0) 82 847 5198 Hazchem 1075

## 2. HAZARDS IDENTIFICATION



Classified as a Dangerous Good according to **NATIONAL ROAD TRAFFIC ACT, 1996 (ACT No 93 OF 199)**  
Extremely flammable compressed gas or liquid.  
Explosive air / vapour mixtures may form at ambient temperature.  
Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, in basements, etcetera).  
Will cause cold burns and frostbite if skin contact with liquid occurs. Will present a risk of frostbite and serious damage to eye if contact occurs with the liquid.  
Abuse involving wilful inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness or might prove fatal.

## 3. COMPOSITION / INFORMATION OF INGREDIENTS

**Information on Composition:** **Chemical Composition:** Hydrocarbon mixture of propane and butane with propene (propylene) and butane (butylene). A small quantity (typically up to 50 ppm) of ethyl mercaptan (stenching agent) is commonly added to assist in leak detection.

LPG components: Typically	CAS No:	Proportion Vol%
Propane	74-98-6	55%
N-Butane	106-67-8	17%
Iso-Butane	75-28-5	26%
Ethane	74-84-0	2%
Ethyl mercaptan	75-08-1	< 50 ppm

**Other information:** LPG varies slightly in composition and physical properties depending on source. It is possible that imported LPG could contain up to 5% of propene.

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## SAFETY DATA SHEET

SA-MS-PR-012-V01-E

6 March 2020

## 4. FIRST AID MEASURES

<b>Inhalation:</b>	If exposure to vapour causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If symptoms persist, obtain medical advice. Unconscious patients must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth-to-mouth method (expired air resuscitation).
<b>Ingestion:</b>	Ingestion of product is unlikely.
<b>Skin:</b>	If cold burns are present, drench with water and obtain immediate medical advice. Keep clothes away from ignition sources.
<b>Eye:</b>	Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain <b>IMMEDIATE</b> medical advice.
<b>Advice to Doctor:</b>	Treatment should in general be symptomatic and directed to relieving effects. Monitor for cardiac dysrhythmias.
<b>Ingestion:</b>	No known effect

## 5. FIRE FIGHTING MEASURES

This material is delivered, stored and used at a temperature above its flash point and at pressure above normal atmospheric pressure.  
 For major fires, call the Fire Brigade immediately.  
 Ensure an escape path is always available from any fire.  
 There is a risk of flashback if sparks or hot surfaces ignite vapour.  
 Wear Self-Contained Breathing Apparatus (S.C.B.A.) and full protective clothing to minimise skin exposure.  
 If gas has ignited, do not attempt to extinguish but stop the flow of gas, if safe to do so, and allow to burn out. Water may be used to cool nearby heat exposed containers, and to protect surrounding areas and personnel effecting shut-off.  
 Every precaution must be taken to keep containers cool to avoid the possibility of a boiling liquid expanding vapour explosion (BLEVE).  
 Pressurised containers are liable to explode violently when subjected to high temperatures.

**Hazardous Combustion Products:**

See Stability and Reactivity, Section 10 of this Safety Data Sheet.

## 6. ACCIDENTAL RELEASE MEASURES

As the product has a very low flash point, any spillage or leak is a severe fire and/or explosion hazard.  
 Small quantities of spilled liquid may be allowed to evaporate. Vapour should be dispersed by effective ventilation.  
 If leak has not ignited, stop the flow of gas, if safe to do so and isolate sources of ignition. Evacuate all non-essential personnel from the immediate area.  
 Isolate the spillage from all ignition sources including road traffic.  
 Ensure good ventilation.  
 Liquid leaks generate large volumes of flammable vapour, which is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems). Wear protective equipment. (See Exposure Controls/Personal protection, Section 8 of this Safety Data Sheet for details).  
 If spillage/leakage has occurred in a confined space, ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry. Do not enter a vapour cloud. Control and remedy of large leaks should be effected by specialist personnel.  
 Protect drains from potential spills to minimise contamination.  
 In the event of a leak, contact the appropriate authorities.

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## SAFETY DATA SHEET

SA-MS-PR-012-V01-E

6 March 2020

## 7. HANDLING AND STORAGE

<b>Handling:</b>	<p>Ensure good ventilation and avoid, as far as reasonably practicable, the inhalation and contact with vapours which may be generated during use. If vapour is generated, its concentration in the workplace air should be controlled to the lowest reasonably practicable level.</p> <p>Avoid contact with liquid and cold storage containers. Wear gloves and suitable overalls to prevent cold burns and frostbite. In cylinder filling operations, wear protective clothing including impervious thermally insulated gloves, safety goggles and face shields. If there is a risk of high vapour concentrations, respiratory protection/breathing apparatus should be worn.</p> <p>When handling cylinders, wear protective footwear.</p> <p>Liquefied petroleum gas spill on clothing may give rise to delayed evaporation and subsequent fire hazard.</p> <p>Whilst using, do not eat, drink or smoke. Wash hands thoroughly after contact.</p>
<b>Storage:</b>	<p>Store and dispense only in well-ventilated areas away from heat and sources of ignition. Store and use only in equipment/containers designed for use with the product.</p> <p>Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated, and the tank atmosphere has been shown to contain hydrocarbon vapour concentrations below 1% of the lower flammability limit and an oxygen concentration of at least 20% by volume.</p> <p>Always have enough personnel standing by outside the tank with appropriate breathing apparatus and equipment to effect a quick rescue. Containers must be properly labelled and kept closed when not in use. Do not remove warning labels from containers.</p>
<b>Other information:</b>	<p>Fire prevention.</p> <p>Explosive air / vapour mixtures may form at ambient temperature.</p> <p>Ensure equipment used is properly earthed or bonded to the tank structure to prevent static accumulation.</p> <p>Exposure of storage vessels to excessive heat may cause relief valves to discharge vapour, or in extreme cases can lead to a boiling liquid expanding vapour explosion (BLEVE).</p> <p>If fuel encounters hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists will create a flammability or explosion hazard. Do not weld, heat or drill the contained. Do not introduce an ignition source.</p> <p>Heating may cause an explosion.</p>

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>National Exposure Standards:</b>	<p>Ensure good ventilation. Avoid, as far as reasonably practicable, inhalation of vapour generated during handling. The vapour is an asphyxiant at high concentrations.</p> <p>If vapour is generated, its concentration in the workplace air should be controlled to the lowest reasonably practicable level.</p> <p>The Department of Labour recommends a Workplace Exposure Standard for an 8-hour time-weighted average exposure (TWA) of 1800 mg/m<sup>3</sup> for liquefied petroleum gas.</p>
<b>Respiratory Protection:</b>	<p>If operations are such that exposure to vapour may be anticipated, then suitable approved respiratory equipment should be worn.</p> <p>The use of respiratory equipment must be strictly in accordance with the manufacturers' instructions and any statutory requirements governing its selection and use.</p>
<b>Body Protection:</b>	<p>Wear suitable gloves and overalls to prevent cold burns and frostbite. In cylinder filling operations, wear protective clothing including impervious gloves, safety goggles or face shield.</p>

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SA-MS-PR-012-V01-E

6 March 2020

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Odour:</b>	Strong, mercaptan-like
<b>Boiling Point:</b>	-45°C to -0.6°C
<b>Vapour Pressure :</b>	500 kPa @ 15°C (400 kPa gauge)
<b>Vapour Density: (Air=1)</b>	1.75
<b>Physical State:</b>	Gas/Liquid
<b>Colour:</b>	Colourless
<b>Density:</b>	0.537 kg/L @ 15°C (liquid)
<b>Flash Point:</b>	-105°C (PMC) ASTM D 93
<b>Auto – Ignition temperature</b>	>450° C
<b>Flammable Limits :</b>	2.2%
<b>LEL</b>	
<b>Flammable Limits :</b>	9.5%
<b>UEL</b>	

## 10. STABILITY AND REACTIVITY

<b>Hazardous Polymerisation:</b>	Hazardous polymerisation reactions will not occur. This material is extremely flammable.
<b>Materials to Avoid:</b>	Avoid contact with strong oxidizing agents.
<b>Hazardous Decomposition Products:</b>	Incomplete combustion / thermal decomposition will generate smoke, carbon dioxide and hazardous gases, which will include carbon monoxide.
<b>Conditions to Avoid:</b>	Products of this type are stable and unlikely to react in a hazardous manner under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

<b>Inhalation:</b>	Likely to be irritating to the respiratory tract if high concentrations of vapour are inhaled. Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. May have a narcotic effect if high concentrations of vapour are inhaled. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness.
<b>Abuse:</b>	Under normal conditions of use, the product is not hazardous; however, abuse involving deliberate inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness and/or result in sudden fatality.
<b>Skin:</b>	Will cause cold burns and frostbite if skin contact with liquid occurs.
<b>Eye:</b>	Will present a risk of frostbite and serious damage to eye if contact occurs with the liquid.
<b>Sensitization:</b>	Not classified as causing skin or respiratory sensitisation.
<b>Mutagenicity</b>	Not classified as a mutagen.
<b>Carcinogenicity</b>	Not classified as a carcinogen.
<b>Reproductive toxicity</b>	Not classified as a reproductive toxin.

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## 12. ECOLOGICAL INFORMATION

<b>Mobility:</b>	Spillages are unlikely to penetrate the soil causing ground water contamination.
<b>Persistence / Degradability:</b>	This product is inherently biodegradable.
<b>Bioaccumulation:</b>	This is not expected to bio accumulate.
<b>Acute Toxicity - Other Organisms</b>	Unlikely to cause long term effects in the aquatic environment.
<b>Eco Toxicity</b>	Not toxic for flora, fauna or soil organisms. Will not cause long term adverse effect in environment and is not dangerous to the ozone layer.

## 13. DISPOSAL CONSIDERATIONS

Do not dispose of any LPG container. Return all cylinders / vessels to your supplier or Cylinder Test Station.  
 Empty containers may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty containers and should not be removed.  
 Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Do not weld, heat or drill the container. Heating may cause an explosion.  
 Small quantities of LPG may be allowed to vaporise, but the vapour must be dispersed by efficient ventilation.

Given the nature and uses of this product, the need for disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment must be under the supervision of qualified Technician. If this is not possible, contact the supplier.

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## 14. TRANSPORT INFORMATION (National Road Traffic Act, 1996 (ACT No, 93 of 1996))

This material is classified as a Class 2.1 - Flammable Gas according to **Hazardous Substance (Classification) Regulations 2001**

Must not be loaded in the same freight container or on the same vehicle with:

- (Class 1) Explosives
- (Class 2.3) Toxic gases
- (Class 3) Flammable liquids
- (Class 4.2) Spontaneously combustible substances
- (Class 4.3) Dangerous when wet substances
- (Class 5.1) Oxidising substances
- (Class 5.2) Organic peroxides
- (Class 7) Radioactive materials unless specifically exempted.

Must not be loaded with in the same freight container, and on the same vehicle must be separated horizontally by at least 3 metres unless all but one is packed in separate freight containers with:

- (Class 4.1) Flammable solids.

U.N. Number: 1075

Proper Shipping Name: PETROLEUM GASES, LIQUEFIED

DG Class: 2.1

Hazchem Code: 2WE

Packaging Method: 5.9.2RT2

Packing Group: 2.1 Packing Group not Applicable

Storage and Transport: Marine Transport  
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods (IMDG) Code for transport by sea.

1075  
2.1 Flammable Gas  
2.1 Packing Group not Applicable  
PETROLEUM GASES, LIQUEFIED  
2-07

EmS:

Stowage and Segregation Category: E. Clear of living quarters

Air Transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

1075  
2.1 Flammable Gas  
2.1 Packing Group not Applicable  
PETROLEUM GASES, LIQUEFIED

Road Transport

Classified as a Dangerous Good according to NATIONAL ROAD TRAFFIC ACT, 1996 (ACT No 93 OF 199)

UN-NO:

1075

Class:

2.1 Flammable Gas

Packing group:

2.1 Packing Group not Applicable

Proper Shipping Name:

PETROLEUM GASES, LIQUEFIED

EPG Number: 2.1.001

IERG Number: 04

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## SAFETY DATA SHEET

SA-MS-PR-012-V01-E

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## 15. REGULATORY INFORMATION (Hazardous Substances (Classification) Regulations 2001)

This product is classified as a 2.1.1A - Flammable Gas; High Hazard, according to the Hazardous Substances (Classification) Regulations 2001.

## 16. OTHER INFORMATION

**Contact Person/Point:**

This data sheet and the health, safety and environmental information it contains, is considered accurate as of the date specified above. We have reviewed any information contained herein which we received from sources outside Oryx Oil South Africa (Pty) Limited. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the data and information contained in this data sheet.

Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission, recommendation or authorisation given or implied to practise any patented invention without a valid licence. Oryx Oil South Africa (Pty) Limited shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of material.

\*\*\*\*\* End of SDS\*\*\*\*\*

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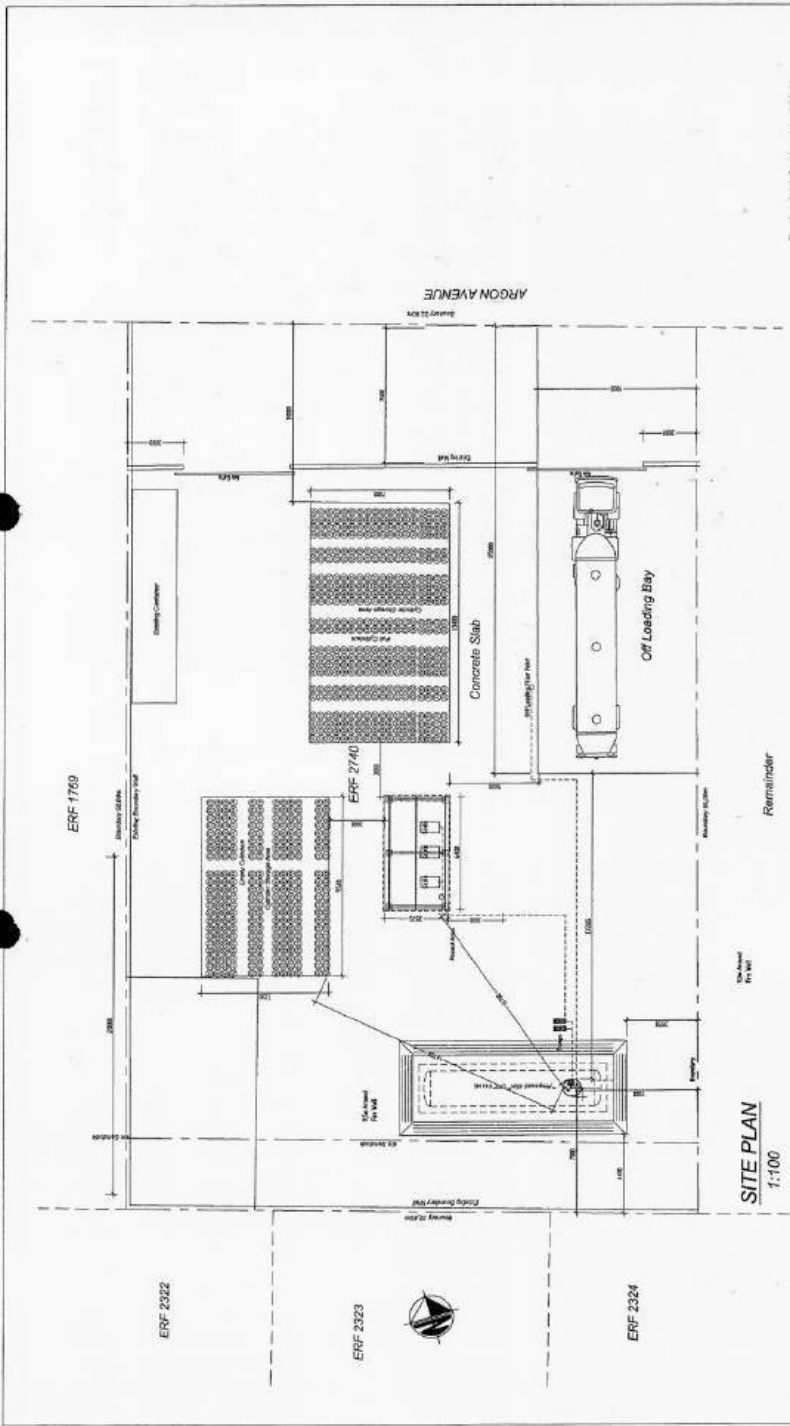
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**15.3. Drawings**

15 September 2021

0140001



Revised 11 September 2021

**SITE PLAN**  
Scale: 1:100

Contract Number:	2020/17/132
Date:	11 Sept 2021
Drawn by:	J. D. WOODWARD
Checked by:	
Project Name:	PROPOSED MOVED SIGN FOR WESSEL, OULANDY KILMAR
Address:	5 SPORRIS AVENUE FOR GAS FOR PORT MULLI-HORNSBROOK RD
City:	PORT MULLI, ARRON AVENUE, PERTH/AS

**NOTES**

**GAS INSTALLATION**  
Installation to be in accordance with AS/NZS 5801:2015 and AS/NZS 5802:2015.  
All gas work to be done in accordance with the relevant codes of practice.  
The installation must be completed in accordance with the relevant codes of practice.  
All work must be done in accordance with the relevant codes of practice.  
All work must be done in accordance with the relevant codes of practice.  
All work must be done in accordance with the relevant codes of practice.

**FIRE PROTECTION SYSTEM**  
The fire protection system to be installed in accordance with the relevant codes of practice.  
The fire protection system to be installed in accordance with the relevant codes of practice.  
The fire protection system to be installed in accordance with the relevant codes of practice.  
The fire protection system to be installed in accordance with the relevant codes of practice.

**SIGNAGE**  
The sign to be installed in accordance with the relevant codes of practice.  
The sign to be installed in accordance with the relevant codes of practice.  
The sign to be installed in accordance with the relevant codes of practice.  
The sign to be installed in accordance with the relevant codes of practice.

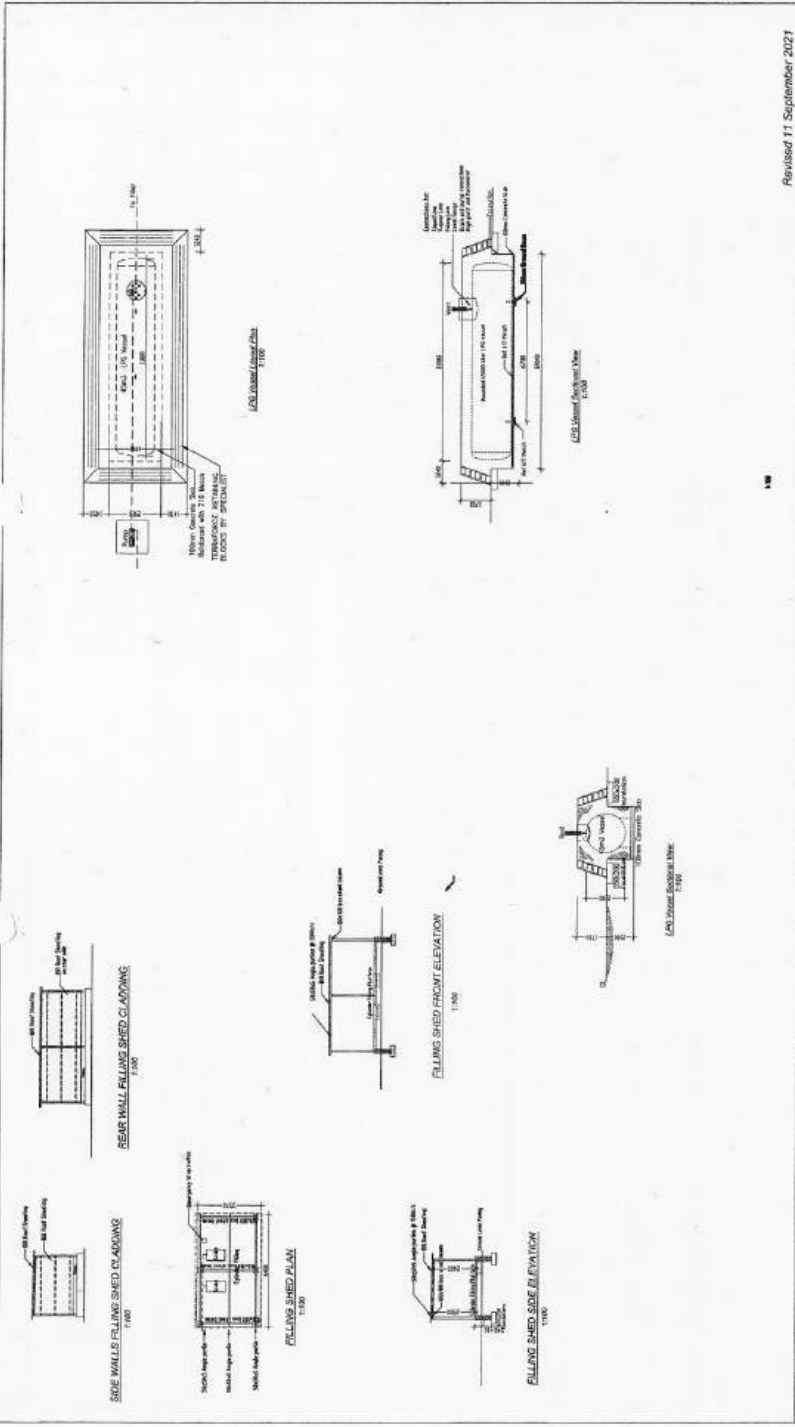
**GENERAL**  
The site plan is to be used in accordance with the relevant codes of practice.  
The site plan is to be used in accordance with the relevant codes of practice.  
The site plan is to be used in accordance with the relevant codes of practice.  
The site plan is to be used in accordance with the relevant codes of practice.

**OCCUPANCY CLASSIFICATION: J1**

**SITE PLAN**  
1:100

13 September 2021

018524



Revised 11 September 2021

**LAYOUT DETAILS**  
 Scale As Shown

Project Name	88/111
Client	...
Drawn By	...
Checked By	...
Date	11/09/2021

**PetroStruct**  
 10000 15th Street, Suite 100  
 Houston, TX 77034  
 Phone: 281.486.2800  
 Fax: 281.486.2800  
 Email: info@petrostruct.com

PROPOSAL: FILLING SHED FOR LPS PROCESS, CDA ROCKET FILLING  
 A FILLING SHED FOR GAS AND AIR AND AIR AND GAS STORAGE AT  
 ONE ERF 2140, ARDRAVA AVENUE, ARDMORE

OBDFPANDY CLASSIFICATION J 1

**2. MESSAGE**  
 This drawing is the property of PetroStruct Pty Ltd and shall remain the property of PetroStruct Pty Ltd. It is not to be used for any other purpose without the written consent of PetroStruct Pty Ltd. The user of this drawing is to be held responsible for any errors or omissions and for any consequences arising therefrom.

**FIRE PROTECTION SYSTEM**  
 The fire protection system is detailed in accordance with the relevant standards and codes of practice. The fire protection system is to be installed in accordance with the relevant standards and codes of practice.

**NOTES**  
**GAS INSTALLATION**  
 The gas installation is to be installed in accordance with the relevant standards and codes of practice. The gas installation is to be installed in accordance with the relevant standards and codes of practice.

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#### 15.4. Frequency Analyses

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**PROJECT:** Gas Hub December 2020 Flammable Installations

**Vessels and Tanks (BEVI)**

Equipment Description	Scenario	Base Frequency	Reasons for Adjustment	Adjustment	Final Frequency
45m3 Vessel	Pressure Vessel A/G Instant Release	5,00E-07	Typical Average System 1	1	5,00E-07
	Pressure Vessel A/G 10 Minute Release	5,00E-07	Typical Average System 1	1	5,00E-07
	Pressure Vessel A/G 10mm Leak	1,00E-05	Typical Average System 1	1	1,00E-05

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**Loading (BEVI)**

LPG Road Tanker

Frequency of Use Per Annum

Scenario

312 Rupture Loading / Unload	4.00E-06
312 Leak In Loading / Unload	4.00E-05
312 Road Tank Pressure Vessel	5.80E-10

Conversion from /hr to /pa

1.42466E-07
1.42466E-05
2.06575E-11

Reasons for Adjustment

Typical Avera	1
Typical Avera	1
Typical Avera	1

Final Frequency

1	1.43E-07
1	1.43E-05
1	2.07E-11

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**Cylinders**

Description	Amount of Cylinders Stored	Scenario	Base Frequency	Failure Frequency	Reasons for Adjustment	Final Frequency
Filling Area		10 Cylinder BLEVE		1.0E-07	Typical Avera	1.00E-05
		10 Cylinder Flash Fire		4.0E-07	Typical Avera	4.00E-05
		10 Cylinder Leak	#N/A	5.00E-06	Typical Avera	5.00E-05
Storage Area		200 Cylinder BLEVE	#N/A	#N/A	#N/A	#N/A
		200 Cylinder Flash Fire		1.0E-07	Typical Avera	2.00E-05
		200 Cylinder Leak		4.0E-07	Typical Avera	8.00E-05
Storage Area		200 Cylinder BLEVE	#N/A	1.0E-07	Typical Avera	1.00E-04
		200 Cylinder Flash Fire		4.0E-07	Typical Avera	#N/A
		200 Cylinder Leak		5.0E-07	Typical Avera	2.00E-05
					Typical Avera	8.00E-05
					Typical Avera	1.00E-04

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**15.5. HSE Development Sensitivity Tables**

**Table 1** Development type: People at work, parking**DT1.1** – Workplaces**DT1.2** – Parking area

Development type	Examples	Development detail and size	Justification
<b>DT1.1 – Workplaces</b>	Offices, factories, warehouses, haulage depots, farm buildings, non-retail markets, builder's yards	Workplaces (predominantly non-retail), providing for less than 100 occupants in each building <b>and</b> less than 3 occupied storeys – <b>Level 1</b>	Places where the occupants will be fit and healthy, and could be organised easily for emergency action. Members of the public will not be present or will be present in very small numbers and for a short time
	<b>Exclusions</b>		
		<b>DT1.1 x1</b> Workplaces (predominantly non-retail) providing for 100 or more occupants in any building <b>or</b> 3 or more occupied storeys in height – <b>Level 2</b> (except where the development is at the major hazard site itself, where it remains <b>Level 1</b> )	Substantial increase in numbers at risk with no direct benefit from exposure to the risk
	Sheltered workshops, Remploy	<b>DT1.1 x2</b> Workplaces (predominantly non-retail) specifically for people with disabilities – <b>Level 3</b>	Those at risk may be especially vulnerable to injury from hazardous events <b>and/or</b> they may not be able to be organised easily for emergency action
<b>DT1.2 – Parking areas</b>	Car parks, truck parks, lock-up garages	Parking areas with no other associated facilities (other than toilets) – <b>Level 1</b>	
	<b>Exclusions</b>		
	Car parks with picnic areas, or at a retail or leisure development, or serving a park and ride interchange	<b>DT1.2 x1</b> Where parking areas are associated with other facilities and developments the sensitivity level and the decision will be based on the facility or development	

**Table 2** Development type: Developments for use by the general public

**DT2.1** – Housing  
**DT2.2** – Hotel/hostel/holiday accommodation  
**DT2.3** – Transport links  
**DT2.4** – Indoor use by public  
**DT2.5** – Outdoor use by public

Development type	Examples	Development detail and size	Justification
<b>DT2.1 – Housing</b>	Houses, flats, retirement flats/ bungalows, residential caravans, mobile homes	Developments up to and including 30 dwelling units <b>and</b> at a density of no more than 40 per hectare – <b>Level 2</b>	Development where people live or are temporarily resident. It may be difficult to organise people in the event of an emergency
	<b>Exclusions</b>		
	Infill, backland development	<b>DT2.1 x1</b> Developments of 1 or 2 dwelling units – <b>Level 1</b>	Minimal increase in numbers at risk
	Larger housing developments	<b>DT2.1 x2</b> Larger developments for more than 30 dwelling units – <b>Level 3</b>	Substantial increase in numbers at risk
		<b>DT2.1 x3</b> Any developments (for more than 2 dwelling units) at a density of more than 40 dwelling units per hectare – <b>Level 3</b>	High-density developments
<b>DT2.2 – Hotel/hostel/holiday accommodation</b>	Hotels, motels, guest houses, hostels, youth hostels, holiday camps, holiday homes, halls of residence, dormitories, accommodation centres, holiday caravan sites, camping sites	Accommodation up to 100 beds or 33 caravans/ tent pitches – <b>Level 2</b>	Development where people are temporarily resident. It may be difficult to organise people in the event of an emergency

**Table 2** Development type: Developments for use by the general public (continued)

<b>DT2.2 – Hotel/ hostel/holiday accommodation</b>	<b>Exclusions</b>		
	Smaller – guest houses, hostels, youth hostels, holiday homes, halls of residence, dormitories, holiday caravan sites, camping sites	<b>DT2.2 x1</b> Accommodation of less than 10 beds or 3 caravan/tent pitches – <b>Level 1</b>	Minimal increase in numbers at risk
	Larger – hotels, motels, hostels, youth hostels, holiday camps, holiday homes, halls of residence, dormitories, holiday caravan sites, camping sites	<b>DT2.2 x2</b> Accommodation of more than 100 beds or 33 caravan/tent pitches – <b>Level 3</b>	Substantial increase in numbers at risk
<b>DT2.3 – Transport links</b>	Motorway, dual carriageway	Major transport links in their own right, ie not as an integral part of other developments – <b>Level 2</b>	Prime purpose is as a transport link. Potentially large numbers exposed to risk, but exposure of an individual is only for a short period
	<b>Exclusions</b>		
	Estate roads, access roads	<b>DT2.3 x1</b> Single carriageway roads – <b>Level 1</b>	Minimal numbers present and mostly a small period of time exposed to risk. Associated with other development
	Any railway or tram track	<b>DT2.3 x2</b> Railways – <b>Level 1</b>	Transient population, small period of time exposed to risk. Periods of time with no population present

**Table 2** Development type: Developments for use by the general public (continued)

<p><b>DT2.4 – Indoor use by public</b></p>	<p><b>Food &amp; drink:</b> Restaurants, cafes, drive-through fast food, pubs</p> <p><b>Retail:</b> Shops, petrol filling station (total floor space based on shop area not forecourt), vehicle dealers (total floor space based on showroom/sales building not outside display areas), retail warehouses, super-stores, small shopping centres, markets, financial and professional services to the public</p> <p><b>Community &amp; adult education:</b> Libraries, art galleries, museums, exhibition halls, day surgeries, health centres, religious buildings, community centres, Adult education, 6th-form college, college of FE</p> <p><b>Assembly &amp; leisure:</b> Coach/bus/railway stations, ferry terminals, airports. Cinemas, concert/ bingo/dance halls. Conference centres. Sports/leisure centres, sports halls. Facilities associated with golf courses, flying clubs (eg changing rooms, club house), indoor go-kart tracks</p>	<p>Developments for use by the general public where total floor space is from 250 m<sup>2</sup> up to 5000 m<sup>2</sup> – <b>Level 2</b></p>	<p>Developments where members of the public will be present (but not resident). Emergency action may be difficult to co-ordinate</p>
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**Table 2** Development type: Developments for use by the general public (continued)

<b>DT2.4 – Indoor use by public</b>	<b>Exclusions</b>		
		<b>DT2.4 x1</b> Development with less than 250 m <sup>2</sup> total floor space – <b>Level 1</b>	Minimal increase in numbers at risk
		<b>DT2.4 x2</b> Development with more than 5000 m <sup>2</sup> total floor space – <b>Level 3</b>	Substantial increase in numbers at risk
<b>DT2.5 – Outdoor use by public</b>	<p><b>Food &amp; drink:</b> Food festivals, picnic areas</p> <p><b>Retail:</b> Outdoor markets, car boot sales</p> <p><b>Community &amp; adult education:</b> Open-air theatres and exhibitions</p> <p><b>Assembly &amp; leisure:</b> Coach/bus/railway stations, park &amp; ride interchange, ferry terminals. Sports stadia, sports fields/pitches, funfairs, theme parks, viewing stands. Marinas, playing fields, children's play areas, BMX/go-kart tracks. Country parks, nature reserves, picnic sites, marquees</p>	Principally an outdoor development for use by the general public, ie developments where people will predominantly be outdoors and not more than 100 people will gather at the facility at any one time – <b>Level 2</b>	Developments where members of the public will be present (but not resident) either indoors or outdoors. Emergency action may be difficult to co-ordinate
	<b>Exclusions</b>		
	Outdoor markets, car boot sales, funfairs. Picnic area, park & ride interchange, viewing stands, marquees	<b>DT2.5 x1</b> Predominantly open-air developments likely to attract the general public in numbers greater than 100 people but up to 1000 at any one time – <b>Level 3</b>	Substantial increase in numbers at risk and more vulnerable due to being outside

Exclusions (continued)			
<b>DT2.5 – Outdoor use by public</b>	Theme parks, funfairs, large sports stadia and events, open-air markets, outdoor concerts, pop festivals	<b>DT2.5 x2</b> Predominantly open-air developments likely to attract the general public in numbers greater than 1000 people at any one time – <b>Level 4</b>	Very substantial increase in numbers at risk, more vulnerable due to being outside and emergency action may be difficult to co-ordinate

**Table 3** Development type: Developments for use by vulnerable people**DT3.1** – Institutional accommodation and education**DT3.2** – Prisons

Development type	Examples	Development detail and size	Justification
<b>DT3.1 – Institutional accommodation and education</b>	Hospitals, convalescent homes, nursing homes. Old people's homes with warden on site or 'on call', sheltered housing. Nurseries, crèches. Schools and academies for children up to school leaving age	Institutional, educational and special accommodation for vulnerable people, or that provides a protective environment – <b>Level 3</b>	Places providing an element of care or protection. Because of age, infirmity or state of health the occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult
	<b>Exclusions</b>		
	Hospitals, convalescent homes, nursing homes, old people's homes, sheltered housing	<b>DT3.1 x1</b> 24-hour care where the site on the planning application being developed is larger than 0.25 hectares – <b>Level 4</b>	Substantial increase in numbers of vulnerable people at risk
	Nurseries, crèches, schools for children up to school leaving age	<b>DT3.1 x2</b> Day care where the site on the planning application being developed is larger than 1.4 hectares – <b>Level 4</b>	Substantial increase in numbers of vulnerable people at risk
<b>DT3.2 – Prisons</b>	Prisons, remand centres	Secure accommodation for those sentenced by court, or awaiting trial etc – <b>Level 3</b>	Places providing detention. Emergency action and evacuation may be very difficult

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Health and Safety  
Executive**Table 4** Development type: Very large and sensitive developments**DT4.1** – Institutional accommodation**DT4.2** – Very large outdoor use by public

*(Note: All Level 4 developments are by exception from Level 2 or 3. They are reproduced in this table for convenient reference)*

Development type	Examples	Development detail and size	Justification
<b>DT4.1 – Institutional accommodation</b>	Hospitals, convalescent homes, nursing homes, old people's homes, sheltered housing	Large developments of institutional and special accommodation for vulnerable people (or that provide a protective environment) where 24-hour care is provided and where the site on the planning application being developed is larger than 0.25 hectare – <b>Level 4</b>	Places providing an element of care or protection. Because of age or state of health, occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult. The risk to an individual may be small but there is a larger societal concern
	Nurseries, crèches. Schools for children up to school leaving age	Large developments of institutional and special accommodation for vulnerable people (or that provide a protective environment) where day care (not 24-hour care) is provided and where the site on the planning application being developed is larger than 1.4 hectare – <b>Level 4</b>	Places providing an element of care or protection. Because of age the occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult. The risk to an individual may be small but there is a larger societal concern
<b>DT4.2 – Very large outdoor use by public</b>	Theme parks, large sports stadia and events, open air markets, outdoor concerts, and pop festivals	Predominantly open air developments where there could be more than 1000 people present at any one time – <b>Level 4</b>	People in the open air may be more exposed to toxic fumes and thermal radiation than if they were in buildings. Large numbers make emergency action and evacuation difficult. The risk to an individual may be small but there is a larger societal concern

## Decision matrix

47 Having determined which zone the development falls into and also the sensitivity level of the development, the following matrix is used to decide the type of advice.

Level of sensitivity	Development in inner zone	Development in middle zone	Development in outer zone
1	DAA	DAA	DAA
2	AA	DAA	DAA
3	AA	AA	DAA
4	AA	AA	AA

DAA = Don't Advise Against development  
AA = Advise Against development

48 If all developments result in DAA then DAA is the final HSE advice.

49 If any one development gives an AA result then the interim result for the consultation is AA. Each AA result is always subjected to an additional rule check (Rule 4) to determine if it will remain AA or change to a DAA. If any one development is still AA after application of this rule then the final advice will be AA.

## How the rules are applied

### Overview of the rules

50 The rules have been developed to allow consideration of the more complex planning consultations. More detail on each of the rules is given after this overview.

51 There are five main rules to consider for each development:

- **Rule 1 – Straddling developments.** When the site area of the proposed development lies across a zone boundary you need to use this rule to decide which zone will be used in the decision matrix. The CD is considered a zone boundary in this context.
- **Rule 2 – Multiple major hazards.** For each major hazard, you need to determine which zone the development is in, after applying the straddling rule if necessary. The final advice is decided on the basis of the most onerous of the zones that the development is in.
- **Rule 3 – Multiple-use developments.** You need to use this rule when the planning consultation is for a multiple use development (eg a mix of housing, indoor use by the public and a workplace). You need to identify the separate parts of the proposal according to the development types. You then need to group together all facilities of the same development type before proceeding (for example before going on to use the straddling rule – Rule 1).
- **Rule 4 – Developments which involve a small extension to an existing facility.** This rule is concerned with Advise Against responses and taking any

existing development on the site into account, if the proposed development is a **small** extension to the existing development, before deciding on the final advice. It is only concerned with 'extensions' to existing developments, not to new developments, or change of use, on sites which may have an existing use.

■ **Rule 5 – Temporary/time-limited planning permissions.**

**The rules in detail**

**Rule 1 – Straddling developments**

52 Use this rule set (1a, then 1b if applicable) when the site area of the proposed development lies across a zone boundary.

53 Rule 1a: Developments that 'straddle' zone boundaries will normally be considered as being in the innermost zone to the major hazard unless either of the two following conditions applies. The development is in the **outermost** of the zones if:

- less than 10% of the site area marked on the application for that development type is inside that boundary; or
- it is only car parking, landscaping (including gardens of housing), parks and open spaces, golf greens and fairways, or access roads etc, associated with the development that are in the inner of the zones.

54 Rule 1b: For the special case where the development straddles the CD boundary, follow the rule above, then:

- If, after using the rules, the development is 'considered' to be outside the CD, then there is no need to categorise further; a DAA response is appropriate.
- If, after using the rules, the development is 'considered' to be within the CD then look at all the facilities that make up the development proposal. Any that are **entirely outside** the CD should be discounted when coming to a decision about the sensitivity level. All the facilities that are **completely and/or partly inside** the CD are then considered together for the purpose of determining the sensitivity level. (If appropriate, apply the 'multiple-use developments' rule – Rule 3.)

*(NB: Rules 1a and 1b do not apply where the development type is a [sensitivity level 2] transport link. Even though this type of development is likely to 'straddle' zone boundaries, it must always be considered as being in the innermost of the zones to the major hazard that it straddles.)*

**Rule 2 – Multiple major hazards**

55 Where the development is in the CD of more than one hazardous installation and/or pipeline, it is necessary to determine which zone the development is in for each major hazard (after applying the straddling rule (Rule 1) if necessary). The overall advice is decided on the basis of the most onerous of any of the zones the development is in (inner zone more onerous than middle zone, middle zone more onerous than outer zone).

56 In some cases HSE has provided a composite three-zone map for complexes of adjacent major hazards and has merged the zones. In this case the assessment is simplified, as only the one three-zone map needs to be considered.

**Rule 3 – Multiple-use developments**

57 This rule set is used when the planning consultation is for multiple-use developments (eg a mix of housing, indoor use by the public and a workplace).

- First identify the separate parts of the proposal according to the development types, as in column 1 of Tables 1–4. Group together all facilities of the same development type and determine the sensitivity level of each of the groups. The only exception, where facilities are not grouped together, are sensitivity level 4 examples of 'Outdoor use by the public' and 'Institutional accommodation and education' development types. These should be considered separately to other (sensitivity level 3 and below) facilities of the same development type, but as part of the same consultation record.
- Determine which zone each development is in, if necessary using the straddling rule (Rule 1) for each development type.
- Determine the appropriate AA or DAA response from the decision matrix for each development.
- Apply Rule 4a.

**Rule 4 – Developments which involve a small extension to an existing facility**

58 Many proposed developments are not on 'green field' sites. They may involve extension to an existing development.

59 Rule 4a. First **consider the development in the application on its own merit** according to the normal procedure and rules. There are two outcome options:

- a DAA outcome, in which case there is no need to apply Rule 4b. (For 'multiple-use developments', if the application of Rule 3 results in all outcomes from the matrix being DAA, then that is the final advice. In which case there is no need to apply Rule 4b); or
- an AA outcome, then Rule 4b should be applied if appropriate. (For 'multiple-use developments', if the application of Rule 3 results in one or more AA outcomes from the matrix, then apply Rule 4b individually to every one of the development type groups resulting in these AA outcomes.)

*NB only the details supplied with the planning application or pre-planning enquiry are used to determine if, and how, Rule 4b applies.*

56 Rule 4b. Extensions (**including minor modifications, alterations, or additions**):

If...	Then...
<p>the proposal is for an extension to an existing development, and the proposed extension is of the same development type as the existing development that is going to be extended.</p> <p><b>And</b> the population at the development will not increase by more than 10% (or, if the population data is not readily available, the total floor area will not increase by more than 10%).</p>	<p>the consultation should be treated as though the proposed extension had a sensitivity level one less than the sensitivity level of the existing (ie not that of the proposed) development.</p> <p>If this reduced sensitivity level, combined with the zone that the extension is in, produces a DAA response, then this will replace the initial AA response.</p>
<p>For 'multiple-use developments', if the application of Rule 4b changes ALL of the AA outcomes to DAA.</p>	<p>this will replace the initial AA response.</p> <p>If at least one outcome remains AA, then an AA response is the final advice. Any remaining AA from 4b dominates for 'multiple-use developments' and an AA response is the final advice.</p>

**Rule 5 – Temporary/time-limited planning permissions**

57 HSE treats proposals for these the same way as any other planning permission consultations; no allowance is given for the time restriction. Existing temporary/time limited permissions are not taken into account when applying Rule 4, however.

## Glossary

**beds** the number of residents/visits for which sleeping accommodation is provided.

**consultation** the enquiry that comes to HSE (normally from a PA) for HSE's comment on a proposed change to land usage within a CD. The consultation will consist of at least one 'development'.

**development** to consider any planning proposal using the PADHI system, all proposed new buildings (or extension, change of use of land etc) need to be categorised into a PADHI 'development type'. A proportion of planning proposals will consist of more than one development type. Having identified all development types, each is subsequently assessed using the decision matrix. An Advise Against decision for any single development will dominate the final PADHI advice for the proposal.

**development type** (see the first column in the development type tables) term used to group together developments (and/or facilities) that are considered to be of the same sensitivity level.

**DPZ** development proximity zone.

**dwelling units** mean the smallest individual unit of accommodation, eg house, apartment, caravan.

**extension** clarification on what constitutes an extension is provided on the relevant PADHI+ Help screen, which can be accessed by clicking on the 'Help' button on the screen which asks if the proposed development is an extension to an existing development. If you do not have access to PADHI+, then contact the PA or HSE if you need further information.

**facilities** buildings and other provisions (eg picnic area, children's play area, park-and-ride bus stop) where people may congregate.

**'green field' site** site to be developed where the current use generally involves minimal buildings and also does not attract people to it in significant numbers. Typically agricultural land, but can also be parkland or other open spaces of a similar nature.

**hectare** unit of area equal to 10 000 square metres (m<sup>2</sup>) in any shape (eg rectangles 10 m x 1000 m or 25 m x 400 m; square 100 m x 100 m; or other regular and irregular shapes).

**LUP** land use planning.

**multiple-use development** see 'development'.

**PA** planning authority.

**PADHI** planning advice for developments near hazardous installations.

**pre-planning enquiry (PPE)** an informal, non-statutory LUP consultation made by a developer (or a PA) to determine what HSE's advice is likely to be before submitting a formal planning permission application to the PA.

**protective environment** there is provision of some element of supervision or care, eg by a warden being available on site or on call.

**school leaving age** the minimum age at which a young person can leave school – currently 16.

**sensitivity level** the scale used in the PADHI system to define the vulnerability of a development population to major accident hazards. It is based on pragmatic criteria; the type of development, likely numbers present and whether any vulnerable people will be present. The scale ascends from Level 1 to Level 4: the more vulnerable the population, the higher the sensitivity level.

**total floor space** – the area of buildings enclosed by the exterior walls multiplied by the number of floors (units are m<sup>2</sup>).

**use class** – the way different types of development are described by planners. They are not identical to HSE's development types or sensitivity levels.

**vulnerable people** – people who by virtue of age (children and elderly) and/or ill health may be particularly susceptible to the effects of a major accident.

## Annex 1

### HSE's land use planning advice provision

1 HSE's land use planning (LUP) advice is based on the recommendations of the Advisory Committee on Major Hazards (ACMH) enshrined in Government-agreed principles and framework; see for example Planning Circular 04/2000. These principles remain valid today. A failure to adopt them can only lead to non-compliance with Article 12 of the Seveso Directive. Indeed the principles and objectives HSE uses in giving its advice received strong support in a public consultation in 2007 (CD211 *Proposals for revised policies for HSE advice on development control around large-scale petrol storage sites*).

2 It is currently delivered promptly and transparently through the PADHI (planning advice for developments near hazardous installations) scheme, which is a codification of that given by HSE over the last 30 years or more. Pre-PADHI, HSE staff in local offices used a codified matrix from which the majority of consultations could be quickly turned around with either an 'allow' or 'refuse' decision. However, the system still required a significant number of consultations to be forwarded to a central HSE team of specialist risk assessors. The need for this risk assessment work resulted in a lengthy turnaround time on these consultations and was extremely resource intensive for HSE. Following a review of its position on land use planning around hazardous installations HSE developed a comprehensive, codified methodology, PADHI, which allowed all consultations to be dealt with at a local level, significantly speeding up the provision of advice to PAs.

3 Under Section 16 of the Town and Country Planning (Development Management Procedure) (England) Order 2010 (the 'DMPO'), Article 10 of the Town and Country Planning (General Development Procedure) Order 1995 as

amended (the 'GDPO') in Wales, and section 25 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008, decision-makers are required to consult HSE on certain planning proposals around major hazard establishments and major hazard pipelines and to take into account HSE's representations when determining associated applications. This is to ensure that the UK complies with Article 12 of the Seveso II Directive which has the specific objective of controlling certain new development to maintain adequate separation, including residential areas, buildings and areas of public use around major hazards when the development is such as to increase the risk or consequences of a major accident. In essence, decision-makers should ensure that new development does not significantly worsen the situation should a major accident occur.

4 In some instances there may already be existing development which is closer to a potentially hazardous installation. In these cases HSE has recognised the views of the ACMH as expressed in paragraphs 108 and 109 of their Second Report which read as follows:

*'108... The HSE is also frequently asked to comment on proposals to develop or to redevelop land in the neighbourhood of an existing hazardous undertaking where there may already be other land users which are closer and possibly incompatible. In these cases, HSE tells us that it takes the view, which we fully endorse, that the existence of intervening developments should not in any way affect the advice that it gives about the possible effects of that activity on proposed developments which may appear to be less at risk than the existing ones.'*

*'109... The overall objective should always be to reduce the number of people at risk, and in the case of people who unavoidably remain at risk, to reduce the likelihood and the extent of harm if loss of containment occurs...'*

5 HSE's approach balances the principle of stabilising and not increasing the numbers at risk with a pragmatic awareness of the limited land available for development in the UK. An HSE discussion document in 1989 (*Risk criteria for land-use planning in the vicinity of major industrial hazards* ISBN 978 0 1188 5491 7, available from HSE Books) sets out the basis of HSE's approach at that time.

6 The Government committee of experts, ACMH, which originally proposed HSE's role in the LUP system, did recognise *'the remote possibility that in some instances a local planning authority may not feel inclined, for a variety of reasons, to follow the advice of the Executive on particular applications for potentially hazardous developments or other developments in their vicinity.'* As a consequence, arrangements were set up so that in this rare circumstance, a planning authority is required by Planning Circular 04/2000 (England and Wales) or Circular 3/2009 (Scotland) to formally notify HSE of its intention to grant against HSE's advice. This is so that HSE can decide whether or not to request the Secretary of State to call-in the application for his own determination. There have been recent changes to procedures in Scotland. Part 3 of the Planning etc. (Scotland) Act 2008 introduced changes to the way in which the planning system will operate in Scotland. See Scottish planning circular 6/2009 *Planning Appeals*, and planning circular 7/2009 *Schemes of Delegation and Local Reviews*. These circulars accompany the Town and Country Planning (Schemes of Delegation and Local Review Procedure) (Scotland) Regulations 2008.

7 HSE's consideration of call-in should not be confused with its LUP advice delivered through PADHI; it is the latter which is provided to enable LUP decision-makers to comply with the objectives of Seveso II, Article 12. In line with Government policy, HSE normally requests call-in only in cases of exceptional concern (there have been only four such requests over the last 30 years in England

and Wales). However if HSE decides not to make such a request this does not mean that it has withdrawn its advice against permission, which remains on file and is likely to be published on the HSE website. **A decision not to request call-in does not disregard HSE's LUP advice.**

8 HSE's role in the LUP process is to provide independent advice on the residual risks from major accidents to people at certain proposed new developments. This is delivered through PADHI+ and planning authorities must 'seriously consider' it in accordance with Planning Circular 04/2000, which advises decision-makers that:

*'A5. In view of their acknowledged expertise in assessing the off-site risks presented by the use of hazardous substances, any advice from HSE that planning permission should be refused for development for, at or near a hazardous installation or pipeline, ... should not be overridden without the most careful consideration.'*

Furthermore the Courts (Regina v Tandridge District Council, Ex parte Al Fayed, Times Law Report 28 January 1999) have decided that on technical issues, local authorities, while not bound to follow the advice of statutory bodies such as HSE, 'should nevertheless give great weight to their advice' when determining planning applications.

A published external review, *Analysis of planning appeal decision reports CRR262/2000*, concluded 'It is clear the HSE's risk policies have largely been upheld at planning appeals. It is viewed as a competent and expert body, and its advice provides considerable support to PA decisions.'

## Annex 2

**Types of development on which to consult HSE under the Town and Country Planning (Development Management Procedure) (England) Order 2010, the Town and Country Planning (General Development Procedure) Order 1995 (as amended) in Wales, and the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008**

The following circulars provide further guidance on when HSE is a statutory consultee:

DCLG Circular 04/2000  
SOEnD Circular 5/1993 (This document is not available on the internet)  
National Assembly for Wales Circular 20/01

They identify the following developments:

1 Within the Consultation Distance (CD) of major hazard installations/complexes and pipelines, HSE should only be consulted on developments involving:

- residential accommodation;
- more than 250 square metres of retail floor space;
- more than 500 square metres of office floor space;
- more than 750 square metres of floor space to be used for an industrial process;
- transport links (railways, major roads etc);
- a material increase in the number of persons working within, or visiting, a CD;
- and then only if the development is within the CD.

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Executive

2 For licensed explosive sites the criteria are the same as above, but only if within the explosive site's safeguarding zone.

3 The Office for Nuclear Regulation (ONR) is a non-statutory consultee for certain developments near licensed nuclear sites. The criteria are:

- any development involving more than 50 people (or 20 people if previously advised of this figure by ONR) within the detailed emergency planning zone;
- any development of more than 500 people within the outer zone (only applies on sites which have an outer zone).

4 HSE will also:

- advise hazardous substances authorities prior to them determining a hazardous substances consent application;
- comment on planning developments involving quarries.

5 HSE does not give retrospective advice on planning applications where the decision has already been made by the planning authority.

## Annex 3

### Information needed when using PADHI

To properly apply the PADHI methodology to a planning proposal you will require the following information:

- 1 Sufficient details of the location of the proposed development to relate it to the consultation distance and the zones of all the relevant hazardous installations, complexes and pipelines.
- 2 Sufficient details of the proposed development, and those people likely to be there, to enable you to categorise the development within its 'sensitivity levels'. (If the proposal involves the extension of an existing facility then, to be able to take account of that when formulating the final advice, it is necessary to have similar information for that existing use.) These details should include:
  - Principal purpose of the proposed development.
  - The area (hectare or m<sup>2</sup>) of the development site.
  - Certain building sizes:

Development type	Indication
<b>predominantly workplaces</b> (ie not retail, community, leisure, accommodation etc) – the number of normally occupied storeys. Or at the very least an indication that:	<ul style="list-style-type: none"> <li>■ all buildings have less than 3 occupied storeys; or</li> <li>■ at least one building has at least 3 occupied storeys.</li> </ul>
for <b>retail, community, assembly or leisure</b> etc use – the total floor area (m <sup>2</sup> ). Or at the very least an indication if this total is:	<ul style="list-style-type: none"> <li>■ less than 250 m<sup>2</sup>; or</li> <li>■ between 250 m<sup>2</sup> and 5000 m<sup>2</sup>; or</li> <li>■ more than 5000 m<sup>2</sup>.</li> </ul>

Development type	Indication
<b>institutional accommodation and educational facilities</b> where day-care is provided – the total site area (hectares). Or at the very least an indication if this is:	<ul style="list-style-type: none"> <li>■ 1.4 hectares or less; or</li> <li>■ more than 1.4 hectares.</li> </ul>
<b>institutional accommodation and educational facilities</b> where 24-hour care is provided – the total site area (hectares). Or at the very least an indication if this is:	<ul style="list-style-type: none"> <li>■ 0.25 hectares or less; or</li> <li>■ more than 0.25 hectares.</li> </ul>

- For certain developments it is essential that there is an indication of the maximum number of people likely to be at the development at any one time. These may be actual numbers or best estimates/guesses. This can be in the form of:

Development type	Indication
<b>predominantly workplaces</b> (ie not retail, community, leisure, accommodation etc) – the number of people and the number of normally occupied buildings. Or at the very least an indication:	<ul style="list-style-type: none"> <li>■ that no building is likely to contain more than 100 people; or</li> <li>■ if any building is likely to contain more than 100 people.</li> </ul>
for <b>houses, flats, residential caravans</b> etc – the actual number of 'dwelling units'. Or at the very least an indication if it is for:	<ul style="list-style-type: none"> <li>■ less than 3 dwelling units; or</li> <li>■ between 3 and 30 dwelling units; or</li> <li>■ more than 30 dwelling units.</li> </ul>
for <b>hotels, hostels, campsites, caravan sites</b> etc – the actual number of beds. Or at the very least an indication if it is for:	<ul style="list-style-type: none"> <li>■ less than 10 beds, or less than 3 caravan/tent pitches; or</li> <li>■ between 10 and 100 beds, or between 3 and 33 caravan/tent pitches; or</li> <li>■ more than 100 beds, or more than 33 caravan/tent pitches.</li> </ul>
for <b>predominantly outdoor events</b> and outdoor facilities – the number of people anticipated. Or at the very least an indication if the event will attract a peak attendance of:	<ul style="list-style-type: none"> <li>■ less than 100 people; or</li> <li>■ between 100 and 1000 people; or</li> <li>■ more than 1000 people.</li> </ul>

## Annex 4

## HSE office addresses

Only HSE offices that deal with land-use planning are listed. Please address any correspondence to Health and Safety Executive, Hazardous Installations Directorate, Chemical Industries Division at the addresses below.

Offices	Geographical coverage
<b>SCOTLAND AND NORTH EAST</b>	
Belford House 59 Belford Road Edinburgh EH4 3UE	Scotland
BP6301 Benton Park View Newcastle-upon-Tyne NE98 1YX	Cleveland, Durham, Tyne & Wear, Northumberland, North Yorkshire (except Selby District Council)
Marshall House Ringway Preston PR1 2HS	Cumbria, Greater Manchester, Lancashire
<b>WALES &amp; WESTERN ENGLAND</b>	
Redgrave Court (HID C12) Merton Road Bootle Merseyside L20 7HS	Merseyside, Conwy, Gwynedd, Isle of Anglesey, Denbighshire, Flintshire, Wrexham, Shropshire, Staffordshire, Cheshire
1 Hagley Road Birmingham B16 8HS	West Midlands, Powys, Worcestershire, Gloucestershire, South Gloucestershire, Bristol
Government Buildings Ty Glas Llanishen Cardiff CF14 5SH	Cardiganshire, Pembrokeshire, Carmarthenshire, Swansea, Neath and Port Talbot, Bridgend, Rhondda Cynon, Taff, Blaenau Gwent, Merthyr Tydfil, Vale of Glamorgan, Cardiff, Caerphilly, Torfaen, Newport, Monmouthshire, North West Somerset, Bath and North East Somerset, Somerset, Devon, Cornwall, Isle of Scilly

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Executive

SOUTH & EAST ENGLAND	
Foundry House 3 Millsands Riverside Exchange Sheffield S3 8NH	South Yorkshire, Humberside, Derbyshire, Nottinghamshire, Lincolnshire
The Lateral 8 City Walk Leeds LS11 9AT	West Yorkshire, Selby District Council
Wren House Hedgerows Business Park Colchester Road Springfield Chelmsford Essex CM2 5PF	Essex, Norfolk, Suffolk
900 Pavilion Drive Northampton Business Park Northampton NN4 7RG	Leicestershire, Northamptonshire, Oxfordshire, Bedfordshire, Buckinghamshire, Cambridgeshire, Warwickshire, Hertfordshire, London boroughs north of the Thames
Priestley House Priestley Road Basingstoke RG24 9NS	Berkshire, Dorset, Hampshire, Wiltshire, Isle of Wight, East & West Sussex, London boroughs south of the Thames, Surrey
Phoenix House 23-25 Cantelupe Road East Grinstead West Sussex RH19 3BE	Kent

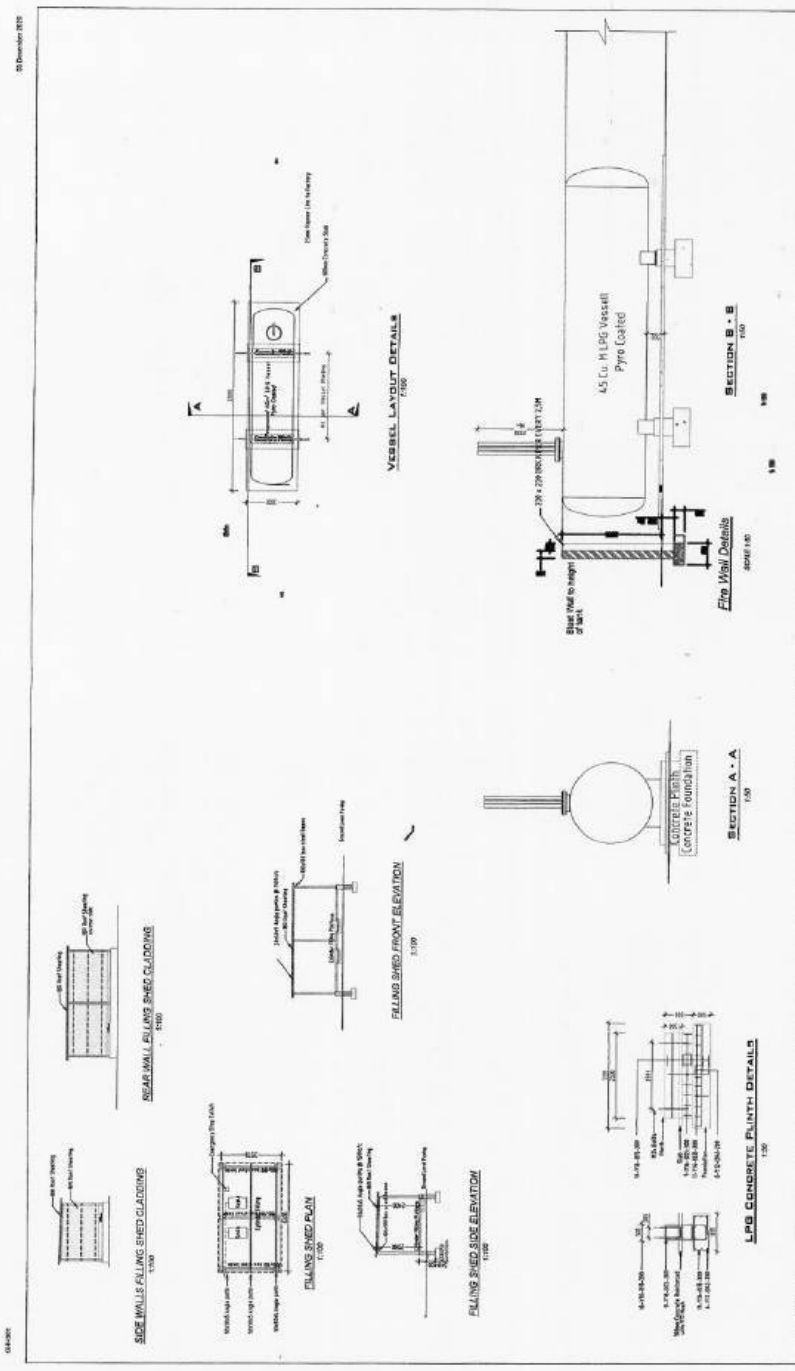
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Published by HSE Version May 2011 05/11

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15 December 2015



**NOTES**

**GAS INSTALLATION**  
 Install in the accordance with AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The 230 x 230 mm VENT 1.0M shall be installed in accordance with AS/NZS 5807:2012.  
 The installation shall comply with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The installation shall be in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The installation shall be in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**FIRE PROTECTION SYSTEM**  
 The fire protection system shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The fire protection system shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The fire protection system shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**VERBELL LAYOUT DETAILS**  
 The Verbell layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The Verbell layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The Verbell layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**VESSEL LAYOUT DETAILS**  
 The vessel layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The vessel layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The vessel layout details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**LPG CONCRETE PILEHOLE DETAILS**  
 The LPG concrete pilehole details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The LPG concrete pilehole details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The LPG concrete pilehole details shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**CONCRETE FOUNDATION**  
 The concrete foundation shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The concrete foundation shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
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**CONCRETE PILEHOLE**  
 The concrete pilehole shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
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 The concrete pilehole shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**SECTION A - A**  
 SECTION B - B

**LAYOUT DETAILS**  
 Scale/As Shown

**PetroStuct**  
 Drawing Number: P20071710  
 Project: 15/00000000  
 Client: C. C. Technology  
 Designer: J. J. J.  
 Date: 15/12/2015  
 File: 15/00000000.dwg

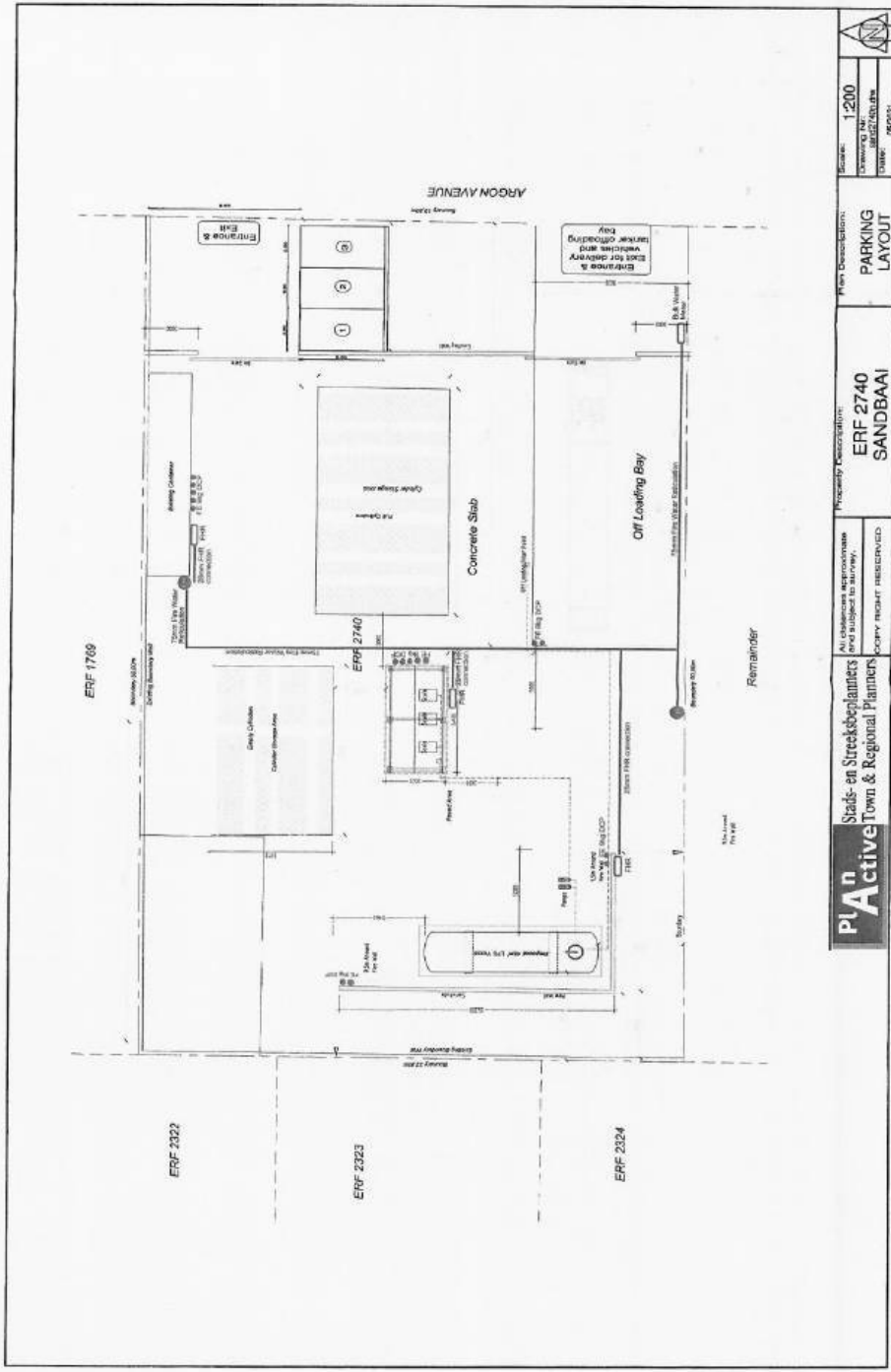
**OCCUPANCY CLASSIFICATION: J1**

**SIGNAGE**  
 The signage shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The signage shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The signage shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**GENERAL**  
 The drawings shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The drawings shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.  
 The drawings shall be installed in accordance with the relevant provisions of AS/NZS 5807:2012 and AS/NZS 5808:2012.

**4 STORAGE AREA FOR GAS-HV FOR BLUE-FLUORINE PRODF 22**  
 DW 817 214E, ARDRAV AVENUE, HERMANUS

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**PIA n** Stralsen Streetsplanners  
Town & Regional Planners

Project Description:  
**ERF 2740**  
**SANDBAAI**

Plan Description:  
**PARKING**  
**LAYOUT**

Scale: **1:200**  
Drawing No: **0802740/01**  
Date: **2008/01**

All instances of approximate dimensions are subject to survey.  
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ANNEXURE M 1/110  
03 December 2020**RISK ASSESSMENT**

In terms of:

**THE MAJOR HAZARD INSTALLATION REGULATIONS**

and

**SANS 1461:2018**

for:



For the proposed LPG installation at:

**Sandbaai, Hermanus**

By:



Major Hazard Risk Consultants

Nominated Representative:  
Technical Signatory:C C Thackwray  
C C Thackwray

02 December 2020

GOVERNMENT  
APPROVED  
INSPECTION  
AUTHORITY  
No MHI 0007

MHI 0017

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## DETAILS AND CONTROL PAGE

TYPE OF ASSESSMENT				
New Installation	X	Changes to Existing Installation	5 Year Renewal	Other

<b>Name</b>	Gas Hub Hermanus		
<b>Address</b>	Argon Avenue Sandbaai Hermanus		
<b>Contact Person</b>	Steve Rundle Tel: 028 312 2020		
<b>Date of Assessment</b>	12 October 2020		
<b>Date of Report</b>	02 December 2020		
<b>Dates of Previous Assessments</b>	<b>Date</b>	<b>Reference</b>	<b>AIA</b>
	N/A		
<b>Technical Signatory</b>	C C Thackwray 13 Slade Street Parklands North Tel: 083 746 8933		
<b>Reference Number</b>	GHH001		
<b>Revision</b>	001		

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This is to verify that an MHI Risk Assessment has been completed in accordance with the Major Hazard Installation Regulations. The risks associated with the MHI were found to be acceptable.

This Risk Assessment is valid for the duration of 5 years from the above date, unless:

- Changes have been made to the plant that can alter the risks on the facility;
- The Emergency Plan was invoked or there was a near miss;
- The changing neighbourhood resulted in offsite risks;
- There is reason to suspect that the current Assessment is no longer valid.

Signed



**C C THACKWRAY**  
**TECNICAL MANAGER**

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**A QUANTITATIVE RISK ASSESSMENT OF THE  
PROPOSED LPG INSTALLATION ON THE PREMISES OF  
GAS HUB, HERMANUS**

**EXECUTIVE SUMMARY**

**1. INTRODUCTION**

Gas Hub (Pty) Ltd is an agency for Oryx and will be selling and distributing LPG to clients in Hermanus.

Gas Hub will be storing liquid petroleum gas (LPG) in a bulk vessel and cylinders for sale to the public and for distribution.

As LPG has the potential to cause onsite and offsite incidents, Major Hazard Risk Consultants cc was commissioned to conduct a Risk Assessment in accordance with the Major Hazard Installation Regulations to determine the impact of the facility on the surrounding area.

This investigation would serve as a basis for the notification of the facility in accordance with the Major Hazard Installation Regulations. The purpose of this report is to convey the essential details, including a short description of the hazards, the receiving environment, the design, the risks and consequences of an accident.

The main aim of the investigation was to quantify the risks to employees and neighbours regarding the facility in Hermanus.

Risk is the severity of the consequence of a hazardous event and the probability of the event occurring.

This Risk Assessment was conducted in accordance with the Major Hazard Installation Regulations and SANS 1461:2018 and could be used as notification of the facility. The Risk Assessment includes the following:

- Identifying likely hazards associated with the processes of the installations including the causes, consequences and their effects;
- Quantifying the likely hazards in terms of their magnitude;
- Quantifying the consequences for each hazard (thermal radiation, domino effect, toxic cloud formation, etc.);
- Determining the lethality of the effects of the consequences;
- Determining the frequency of all the hazardous events;
- Calculating the individual risk values considering all accidents, meteorological conditions and lethality;
- Using the population density around the facility to determine the societal risk posed by the facility;
- Reporting on the risks in terms of internationally acceptable criteria;
- Providing an assessment of the adequacy of emergency response programmes, fire prevention and fire-fighting measures;
- Proposing measures to reduce or eliminate the risks.

The Risk Assessment may not meet the requirements of environmental legislation as it is not intended as an Environmental Risk Assessment.

## 2. CONCLUSIONS

This Risk Assessment has modelled the effects of the proposed LPG installation.

The results are low, with the  $1.0e-6$  (one-in-a-million) contour mainly confined to the property and only extending over the western boundary by 20m.

The  $3.0e-7$  (one-in-thirty million) green contour, extends for a maximum of 120m over the boundaries of the site.

The contours do not reach any sensitive populations or installations.

As can be seen from the above results, the risks are relatively low and acceptable for this industrial area.

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*Individual Risk for the Proposed Installation*

### 3. RECOMMENDATIONS

The scenario contributing the most towards the total risk at the facility is a BLEVE at the cylinder storage area.

The risks posed by the installation were found to be low for the commercial and residential area in which it is located.

The recommendations are as follows:

- Good housekeeping always needs to be observed on site;
- An Emergency Plan must be drafted for the site and must include all the risks identified in this report;
- The Emergency Plan must comply with the MHI Regulations;
- Onsite Emergency Plan must comply with SANS 1514;
- All work must be done by qualified companies;
- Installation must comply to Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- The Fire Department must witness a pressure test prior to issuing flammable substance certificate.

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## DEFINITIONS

### As Low as Reasonably Practicable (ALARP)

Risks in this range are risks that the public are generally prepared to tolerate in order to secure certain benefits. A risk in the ALARP range risk means that for new installations or modifications/ expansions to existing installations, the risk assessment shall not advise against the development. For existing installations (without modifications/ expansions) a broadly acceptable risk means that risk should continue to be monitored and all reasonably practicable risk reduction measures shall be implemented. A level of risk that is tolerable and cannot be reduced further without expenditure at costs that are disproportionate to the benefit gained, or where the solution is impractical to implement.

### Broadly Acceptable

Risks which are broadly acceptable are generally regarded as insignificant and adequately controlled. Risk in the region would usually not require further action to reduce risks unless reasonably practicable measures are available. A broadly acceptable risk means that for new installations or modifications/ expansions to existing installations the risk assessment shall not advise against the development. For existing installations (without modifications/ expansions) a broadly acceptable risk means that risk should continue to be monitored and reduction implemented if necessary. For either new or existing installations, if reasonably practicable risk reduction measures are available, then these should be implemented.

### BLEVE

Boiling liquid expanding vapour explosion.

### Containment System

One or several devices, any parts of which are continuously in open contact with one another and are intended to contain one or several substances.

### Critical Scenarios

Intended to mean:

- The scenarios that when added together define at least 90% of the location-specific risk for the  $1.0e-6$  contour (i.e. the 'remainder' that has not been defined in detail is added together as  $< 10\%$ );
- The scenarios that are added together define at least 90% of the societal risk in the intervals 10 – 100 and 100 – 1000.

### Informal Residential Area

A residential area where the structures are not formally approved.

### Inspection

An examination or measurement to verify whether an item or activity conforms to specified requirements.

### Intolerable

Risks in this range are generally regarded as unacceptable whatever the level of benefits associated with the activity. An intolerable risk means that for new installations or modifications/ expansions to existing installations the risk assessment shall advise against the development. For existing installations (without modifications/ expansions) an intolerable risk means that risk reduction shall be implemented until the risks fall within the ALARP range or the broadly acceptable range.

**Location Specific Individual Risk**

The probability that during a period of one year a person will become the victim of an accident, in which case this person is in a particular location permanently and without protection and without means of escape.

**Major Hazard Installation**

The Operational Health and Safety Act defines a Major Hazard Installation as the following:

- where more than the prescribed quantity of any substance is or may be kept, whether permanently or temporarily; or
- where any substance is produced, used, handled or stored in such a form and quantity that it has the potential to cause a major incident.

**Maximum Capacity**

For equipment this is the total amount of material that can be accommodated in that equipment in the absence of equipment inventory control. For example, the volume of a cube vessel would be the product of the width, length and height of the vessel.

**Occupied Building**

Permanent or temporary structures/ buildings within a major hazard installation that are occupied by employees and/or contractors or that contain critical process control equipment (e.g. control rooms).

**Procedure**

Description of how to perform an activity, usually in the form of a document.

**Recommendations**

Suggestions put forward by the AIA, within the scope of the accreditation of the AIA, for consideration by the owner/ user of an MHE/ MHI.

**Regulations**

Regulations promulgated under the relevant Act.

**Regulatory Authority**

Body authorised to make Regulations or to control the application of such Regulations, in the field of Major Hazard Installations (see 3.1.22) which includes the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the South African National Accreditation System.

**Restricted Development Distance**

The maximum distance from an MHI/ MHE where land use planning restrictions should be considered. This is defined as the  $3.0e-7$  fatalities / person / year location specific individual risk contour.

**Safety Report**

A report which addresses major incident prevention and safety management systems at the installation/ establishments.

**Sensitivity Level**

The sensitivity levels of a proposed development take into consideration the structure of the development and the characteristics of the population occupying the development. The larger the development and the more vulnerable the occupying population, the higher the level of sensitivity.

**Societal Risk (F-N Curve)**

Societal risk is a measure of the risk posed on a society and an F-N Curve is a tool to indicate societal risk. They are plots of the cumulative frequency (F) of various accident scenarios against the number (N) of fatalities associated with the modelled incidents. The plot is cumulative in the sense that, for each frequency, N is the number of fatalities that could be equalled or exceeded.

**Verification**

The act of reviewing, inspecting, testing, checking, auditing or otherwise determining and documenting whether items, processes, services or documents conform to specified requirements.

**Vulnerable Groups/ Populations**

The elderly, children, persons in hospitals/ clinics and people with certain disabilities are considered particularly vulnerable and may need special attention. In the South African context, concentrations of homeless persons and persons occupying informal settlements should also be considered vulnerable.

**ABBREVIATIONS**

The following are key abbreviations used in this document:

<b>ACDS</b>	Advisory Committee on Dangerous Substances
<b>AIA</b>	Approved Inspection Authority
<b>ALARP</b>	As Low as Reasonably Practicable
<b>API</b>	American Petroleum Institute
<b>BEVI</b>	Besluit Externe Veiligheid Inrichtingen (Dutch safety legislation)
<b>BLEVE</b>	Boiling Liquid Expanding Vapour Explosion
<b>BP</b>	Boiling Point (usually at 101.325 kPa)
<b>CAS</b>	Chemical Abstracts Service
<b>CASRN</b>	Chemical Abstracts Service Registry Number
<b>RDD</b>	Restricted Development Distance
<b>CFD</b>	Computational Fluid Dynamics
<b>CIA</b>	Chemical Industries Association
<b>DTL</b>	Dangerous Toxic Load
<b>ERPG</b>	Emergency Response Planning Guideline
<b>F – N (cumulative)</b>	Frequency - Number
<b>FMECA</b>	Failure Mode Effect and Criticality Analysis
<b>FP</b>	Flash Point
<b>HAZID</b>	HAZard IDentification
<b>HAZAN</b>	HAZard ANalysis
<b>HEL</b>	Higher Explosive Limits
<b>IBC</b>	Intermediate Bulk Container (typically 1m <sup>3</sup> capacity)
<b>IDLH</b>	Immediately Dangerous to Life and Health
<b>IEC</b>	International Electro-technical Commission
<b>ISO</b>	International Standards Organisation
<b>IZ</b>	Inner Zone
<b>kPa</b>	Kilopascal
<b>kW/m<sup>2</sup></b>	Kilowatts Per Square Meter
<b>L/D</b>	Length/ Diameter
<b>LEL</b>	Lower Explosive Limits
<b>LFL</b>	Lower Flammable Limit
<b>LOC</b>	Loss of Containment
<b>LOPA</b>	Layer of Protection Analysis
<b>LPG</b>	Liquefied Petroleum Gas
<b>MAHPs</b>	Major Accident Hazard Pipelines

<b>MAPP</b>	Major Accident Prevention Policy
<b>mg/m<sup>3</sup></b>	Milligram Per Cubic Meter
<b>MHI</b>	Major Hazard Installation
<b>MZ</b>	Middle Zone
<b>OHS</b>	Occupational Health and Safety
<b>OZ</b>	Outer Zone
<b>PAC</b>	Protective Action Criteria
<b>PAHDI</b>	Planning Advice for Developments near Hazardous Installations
<b>PFD</b>	Process Flow Diagram
<b>P&amp;ID</b>	Piping and Instrumentation Diagram
<b>ppm</b>	Parts-per-million (volume basis)
<b>PSM</b>	Process Safety Management
<b>QRA</b>	Quantitative Risk Assessment
<b>UFL</b>	Upper Flammable Limit

**A QUANTITATIVE RISK ASSESSMENT OF THE  
PROPOSED LPG INSTALLATION ON THE PREMISES OF  
GAS HUB, HERMANUS**

**1. INTRODUCTION**

Gas Hub (Pty) Ltd is an agency for Oryx and will be selling and distributing LPG to clients in Hermanus.

Gas Hub will be storing liquid petroleum gas (LPG) in a bulk vessel and cylinders for sale to the public and for distribution.

As LPG has the potential to cause onsite and offsite incidents, Major Hazard Risk Consultants cc was commissioned to conduct a Risk Assessment in accordance with the Major Hazard Installation Regulations to determine the impact of the facility on the surrounding area.

This investigation would serve as a basis for the notification of the facility in accordance with the Major Hazard Installation Regulations. The purpose of this report is to convey the essential details, including a short description of the hazards, the receiving environment, the design, the risks and consequences of an accident.

The main aim of the investigation was to quantify the risks to employees and neighbours regarding the facility in Hermanus.

Risk is the severity of the consequence of a hazardous event and the probability of the event occurring.

This report summarises the results of the Risk Assessment conducted by MHR Consultants.

This Assessment is based on the best possible information and expertise and MHR Consultants cannot be held liable for any incident which may occur at this facility which directly or indirectly relates to the work in this report.

**1.1. Legal Framework**

The Occupational Health and Safety Act (OHS Act) defines an Approved Inspection Authority (AIA) in Section 1(1)(i) as *"An inspection authority approved by the Chief Inspector: Provided that an inspection authority approved by the Chief Inspector with respect to any particular service shall be an approved inspection authority with respect to that service only."*

The Major Hazard Installation Regulations (MHI Regulations), which were promulgated under the OHS Act provides more specifically for an AIA in terms of MHI Regulation 5 (5)(a) as *"An employer, self-employed person and a user shall ensure that the assessment contemplated in Sub-regulation (1), shall be carried out by an Approved Inspection Authority which is competent to express an opinion as to the risks associated with the major hazard installation."*

This Risk Assessment was conducted as per SANS 1461:2018 Codes of Practice.

### 1.2. Purpose and Scope of Investigation

The purpose of this investigation was to quantify the risks to employees and neighbours with regard to the facility in Hermanus.

This Risk Assessment was conducted in accordance with the Major Hazard Installation Regulations and could be used as notification of the facility. The Risk Assessment includes the following:

- Identifying likely hazards associated with the processes of the installations including the causes, consequences and their effects;
- Quantifying the likely hazards in terms of their magnitude;
- Quantifying the consequences for each hazard (thermal radiation, domino effect, toxic cloud formation, etc.);
- Determining the lethality of the effects of the consequences;
- Determining the frequency of all the hazardous events;
- Calculating the individual risk values considering all accidents, meteorological conditions and lethality;
- Using the population density around the facility to determine the societal risk posed by the facility;
- Reporting on the risks in terms of internationally acceptable criteria;
- Providing an assessment of the adequacy of emergency response programmes, fire prevention and fire-fighting measures;
- Proposing measures to reduce or eliminate the risks.

### 1.3. Methodologies

Methodologies and techniques used for this Assessment are as follows.

- Site visits and meetings were conducted to collect as much technical information to accurately determine all the processes, materials, etc.;
- It was accepted that the process and storage installations were designed using the correct Codes of Practice and design specifications, and that the installations were built by qualified professionals;
- For this report the public refers to all people outside the boundaries of the facility, including neighbouring facilities and everyone inside the facility is regarded as employees, including visitors;
- The hazards were identified at the site visits and meetings and analysed using international reference publications;
- The consequences were calculated using the computer software 'Effects' by TNO in the Netherlands;
- The risk calculations were made using the computer software 'Risk Curves' by TNO in the Netherlands.

## 2. COMPANY, SITE AND INSTALLATION DESCRIPTION

### 2.1. Main Activity

The main activity of Gas Hub is the filling and distribution of LPG cylinders to customers. The site will consist of the following:

- Shop;
- An LPG Bulk Vessel;
- Two LPG storage areas;
- LPG filling area;
- Road tanker filler point.

The site is a new installation in an existing commercial and residential area.

(See site plan in the Appendices).

### 2.2. Site Address

Argon Avenue, Sandbaai, Hermanus.

### 2.3. Site Installations

The LPG installation will consist of the following:

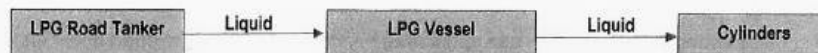
- A 45 m<sup>3</sup> Bulk LPG Vessel that will be 'Pyro Coted';
- An LPG cylinder Filling Area with two scales, a pump and 500kg cylinder storage;
- Two 10 000kg cylinder storage areas.

(See the site layout in Appendices.)

### 2.4. Process Flow and Flow Diagrams

#### LPG Bulk Vessel

A road tanker will offload LPG into the bulk vessel. Liquid will be pumped to the scales for the filling of the cylinders.



### 2.5. LPG Installation

The bulk LPG installation will consist of a 45m<sup>3</sup> vessel. The truck offloading point will be located on a driveway east of the installation.

The bulk vessel will have a liquid take-off that feeds the pump to fill the cylinders.

LPG is kept under pressure of typically about 6.25 bar in order to keep the gas in a liquid state at a temperature of 24°C.

The bulk vessel will be filled a maximum of once per week.

### 2.6. LPG Tanker Offloading Point

The installation will have the LPG tanker park alongside the proposed LPG filler point on a dedicated road tanker driveway. Off-loading will be done in off-peak times.

**2.7. LPG Cylinder Storage**

Two 10 000kg storage areas will be located on the site. The cylinders will be stored in accordance with the requirements of SANS 10087. There will be gangways between cylinders for easy access to all cylinders in the storage area. Full and empty cylinders will be clearly demarcated.

**2.8. LPG Cylinder Storage**

The filling area will be located next to the LPG bulk vessel and will be fitted with two electronic scales. The filling area will be fitted with a roof and suitable for the storage of 500kg of cylinders.

The storage and filling area will be protected by fire extinguishers.

**2.9. Receiving Environment**

The site is in the commercial and industrial area of Hermanus, indicated below.

**2.9.1. Topography of the Surrounding Area**

The area surrounding the facility is flat commercial and residential land. There are no large waterbodies close to the site.

**2.9.2. Population Information**

Area	Daytime Persons/Hectare	Night-time Persons/Hectare
High density commercial and Industrial	500	16

**2.9.3. Surrounding Facilities and Other MHIs**

The area surrounding the facility is all commercial and light industrial businesses. There is a residential area 180m east of the site. There are no MHI sites close to the site. (see satellite image below)

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*Location of Gas Hub Hermanus*

## 2.10. Meteorological Information

### 2.10.1. Climate

The warm season lasts from January to March with an average daily high temperature above 25°C. The hottest day of the year is in January/ February, with an average high above 26°C.

The cold season lasts from June to August with an average daily high temperature below 18°C. The coldest day of the year is in July, with an average low of 8°C.

## HERMANUS WEATHER BY MONTH // WEATHER AVERAGES

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	19.6	19.7	18.3	16.7	15	13.5	12.8	13.1	14	15.5	17.6	18.9
Min. Temperature (°C)	15.2	15.5	14.1	12.7	10.8	9.3	8.3	9	10.1	11.9	13.4	14.8
Max. Temperature (°C)	24.1	23.9	22.6	20.8	19.2	17.7	16.9	17.2	17.9	18.5	21.9	23.3
Avg. Temperature (°F)	67.3	67.5	64.9	62.1	59.0	56.3	54.7	55.6	57.2	60.4	63.7	66.0
Min. Temperature (°F)	59.4	59.9	57.4	54.9	51.4	48.7	46.9	48.2	50.2	53.4	56.1	58.3
Max. Temperature (°F)	75.4	75.0	72.7	69.4	66.6	63.9	62.4	63.0	64.2	67.5	71.4	73.9
Precipitation / Rainfall (mm)	21	23	29	48	69	83	76	78	51	48	33	20

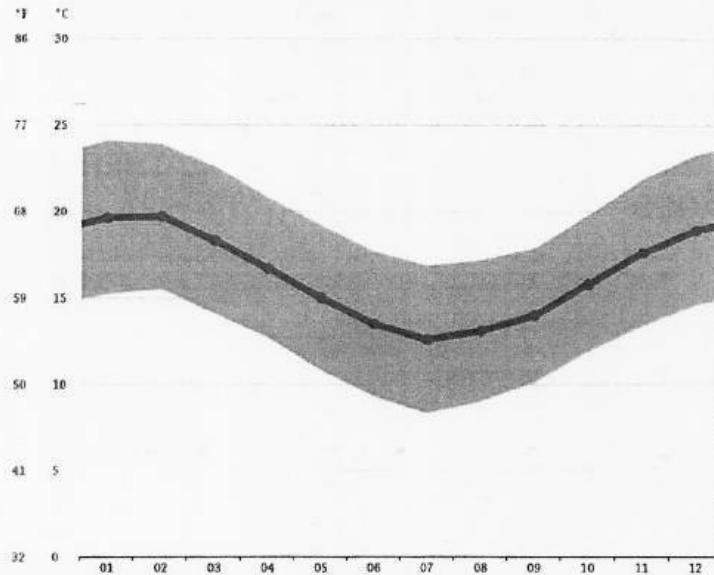
The precipitation varies 63 mm | 2 inch between the driest month and the wettest month. During the year, the average temperatures vary by 7.1 °C | 44.8 °F.

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## HERMANUS AVERAGE TEMPERATURE



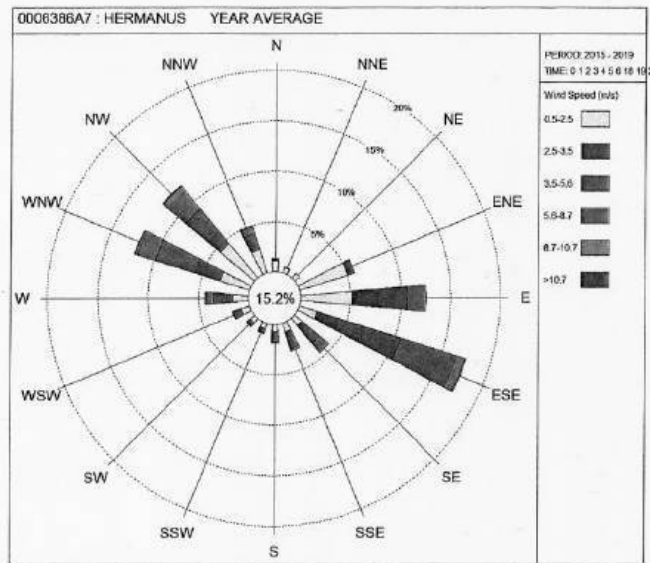
With an average of 19.7 °C | 67.5 °F, February is the warmest month. July has the lowest average temperature of the year. It is 12.6 °C | 54.7 °F.

### 2.10.2. Wind Direction

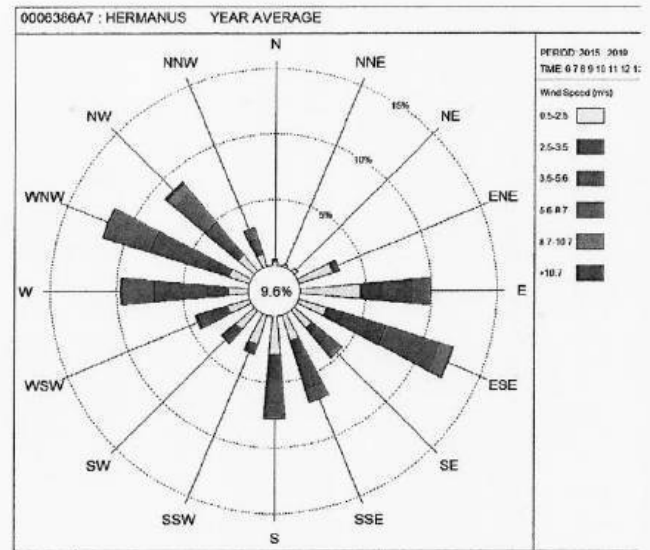
Over the course of the year typical wind speeds vary from 5m/s to 9m/s (light breeze to strong breeze), rarely exceeding 9m/s (strong breeze). The predominant wind direction during the day and night is west-northwest.

### 2.10.3. Wind Rose

The combined annual wind roses for the area is as follows:



Day Time Wind Rose



Night-time Wind Rose

Dispersion models also require the atmospheric condition to be categorised into one of six stability classes, namely:

Stability Category	Meteorological Conditions	Occurrence
A	Very Unstable	Hot daytime conditions, clear skies, calm wind
B	Unstable	Daytime conditions, clear skies
C	Slightly Unstable	Daytime conditions, moderate winds, slightly overcast
D	Neutral	Day and night, high winds or cloudy conditions
E	Stable	Night-time, moderate winds, slightly overcast conditions
F	Very Stable	Night-time, low winds, clear skies, cold conditions

#### 2.10.4. Summary

Based on the above information the meteorological information extracted for the modelling of scenarios was as follows:

- Wind, stability and Temperature information:
  - B 4m/s meaning a stability class of B (moderately unstable conditions) where the wind speed is 4m/s with the maximum daytime temperature.
  - D 7m/s meaning stability class of D (neutral conditions) where the wind speed is greater than 7m/s. D 7m/s gives a conservative daytime and night-time weather condition.
  - F 2m/s meaning a stability class of F (moderately stable) where the wind speed is less than or equal to 2m/s with the min daytime temperature.
- The relative humidity was set to be 0.7.
- The solar radiation flux was set to be 0.5KW/m<sup>2</sup> during the day and 0KW/m<sup>2</sup> at night.
- The *Pasquill stability* was selected instead of the mixing layer height.

### 3. HAZARD IDENTIFICATION

This is the process of examining each work area and work task for the purpose of identifying all the hazards which are inherent to the job.

Hazard analysis is used as the first step in a process used to assess risk. The result of a hazard analysis is the identification of different types of hazards. A hazard is a potential condition and exists or not (probability is 1 or 0). It may be in single existence or in combination with other hazards (sometimes called events) and conditions become an actual Functional Failure or Accident (mishap). Once a hazard has been identified, it is necessary to evaluate it in terms of the risk it presents to the employees and the neighbouring community. In principle, both probability and consequence should be considered, but there are occasions where if either the probability or the consequence can be shown to be sufficiently low or sufficiently high, decisions can be made on just one factor.

During the hazard identification process the complete system of assets, materials, human activities and process operations within the boundaries of the site should be clearly defined and understood, taking account of the original design, subsequent changes and current conditions. Typically, the system should be divided into distinct separate components or sections to enable manageable quantities of information to be handled at each stage.

Some key questions and issues could be:

- What is the design intent, what are the broad ranges of activities to be conducted, what is the condition of equipment, and what limitations apply to activities and operations?
- What are the critical operating parameters? What process operations occur, and how could they deviate from the design intent or critical operating parameters? This should consider routine and abnormal operations, start-up, shutdown and process upsets.
- What materials are present? Are they a potential source of major accidents in their own right? Could they cause an accident involving another material? Could two or more materials interact with each other to create additional hazards?
- What operations, construction or maintenance activities occur that could cause or contribute towards hazards or accidents? How could these activities go wrong? Could other hazardous activities be introduced into this section by error or by work in neighbouring sections of the facility?
- Could other materials, not normally or not intended to be present, be introduced into the process?
- What equipment within the section could fail or be impacted by internal or external hazardous events? What are the possible events?
- What could happen in this section to create additional hazards, e.g. temporary storage or road tankers?
- Could a particular section of the facility interact with other sections (e.g. adjacent equipment, an upstream or downstream process, or something sharing a service) in such a way as to cause an accident?

#### 3.1. Site Layout Details

The Site Plan is included in the Appendices.

### 3.2. Significant Incidents at the Site and Related Sites

This is a proposed installation with no incident history.

The few incidents that have occurred at similar installations were mainly caused by a lack of maintenance and operator negligence.

### 3.2. Preventative Measures

A good Maintenance Plan must be compiled, together with a Maintenance Register for the installation.

### 3.4. Hazard Details

#### 3.4.1. Hazardous Materials

The materials on site were categorised as per SANS 10228:2003 classes of dangerous substance as per the table below:

Class	Description
1	Explosives (Not included in MHI Regulations)
2	Gases (Flammable or Toxic gases only)
3	Flammable Liquids
4	Flammable Solids
5	Oxidising Substances and Peroxides
6	Toxic and Infectious Substances
7	Radioactive Materials (Not included in MHI Regulations)
8	Corrosives
9	Combustible Materials

#### 3.4.2. Hazardous Materials on Site

Gas Hub uses LPG on site, categorised as per the table below:

Substance	CAS Number	Gases	Flammable Liquids	Flammable Solids	Potential for an MHI
Class		2	3	4	
LPG	68476-85-7	Yes			Yes

This Assessment deals only with LPG; the detailed properties of which are included in the Appendices.

### 3.5. Accidents and Incidents

Gas Hub has had no incidents at any of their LPG facilities.

**3.6. Containment and Safety Systems in Design**

The following containment and safety systems have been incorporated in the design of the proposed installation:

- The LPG Bulk Vessel will be protected by firewall towards the road;
- The LPG Bulk Vessel will be protected with 'Pyro Coating';
- The installation will be fenced in to prevent unauthorised tampering;
- The installation will comply with applicable SANS 10087 Codes, part 3;
- There will be fire extinguishers at each installation;
- There will be 3 Fire Hose Reels and 2 Fire Hydrants on the site.

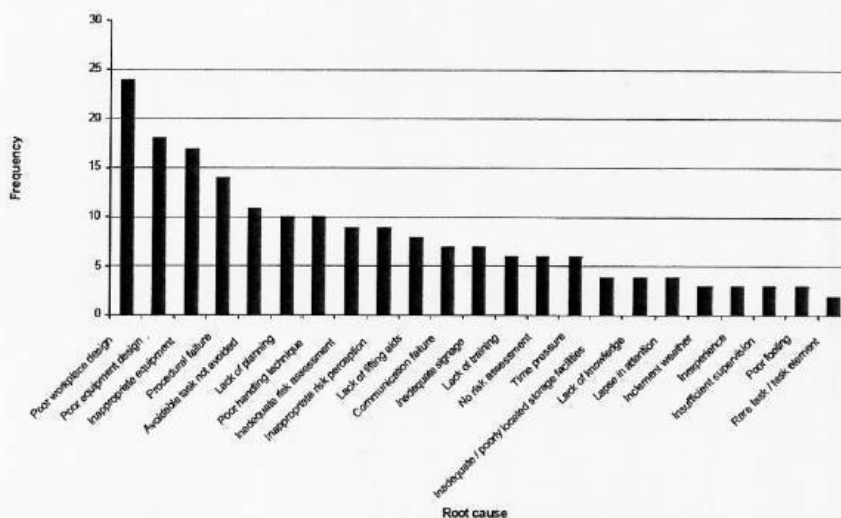
**3.7. Environmental Hazards**

Environmental Hazards are not included in the MHI Regulations and were not included in this report.

#### 4. HAZARD ANALYSES

##### 4.1. Incident Root Causes

One hundred and twenty-six incidents were recorded on HSE report database in the UK. A greater number were reviewed but were not taken forward for analysis. The graph below shows the frequency with which each root cause was identified for the 126 incidents analysed.



The most common causes shown above are linked to the workplace and equipment available:

- Poor workplace design (representing 13%);
- Poor equipment design (10%);
- Inappropriate equipment (9%);
- Procedural failure (7%).

The next most commonly found issues are more closely linked with day-to-day organisation and management:

- Avoidable task not avoided (6%);
- Lack of planning (5%);
- Poor handling technique (5%);
- Inadequate risk assessment (5%);
- Inappropriate risk perception (5%).

The report mentions more than one root cause could be present in the same incident. In the sample analysed, 78 incidents were attributed to a single root cause; the remaining 48 had two or more root causes.

Most incidents are due to a mismatch between the operators' requirements or expectations and workplace or equipment design. If the root causes were principally to do with training or risk assessment (i.e. linked to risk perception and avoidance), it would imply that personnel were failing to use their experience and prior training to predict and avoid manual handling risks. Where an individual has unintentionally harmed themselves or others, it follows that the task carried risks which the operator(s) had to avoid by using safe working procedures and their skill and knowledge. The root cause in fact lies with one or more risky elements of the task that the operator then has to deal with. Training and experience help only to avoid the background risks.

The findings suggest that operators are mostly being injured because of poor equipment, task or workplace design, and to a lesser extent misunderstanding the level of risk. Failure to avoid an avoidable task is similar to a lack of planning as both indicate that an overview of the work was not held that could have highlighted alternatives to risky manual handling. 'Procedural failure' is linked to planning and overview too as this root cause indicates that agreed procedures inadvertently placed operators at risk of injury.

#### **4.2. Events Following a Loss of Containment**

##### **4.2.1. Flammable Gas/ Liquid**

Where no Boiling Liquid Expanding Vapour Explosion (BLEVE) and fireball occur following an instantaneous release with direct ignition, a liquid pool is formed, and a vapour cloud will expand to atmospheric pressure. The direct ignition of the vapour cloud is modelled as a flash fire (probability 0.6) and explosion (probability 0.4).

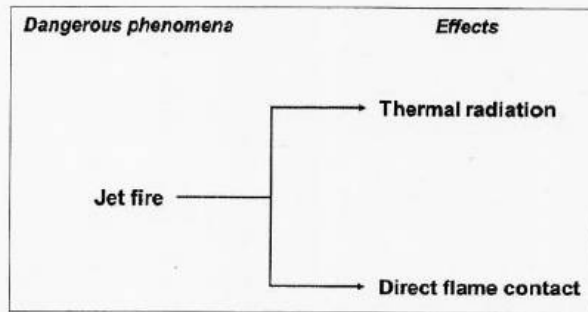
For an above-ground storage tank (or road tanker), a BLEVE or fireball may occur. A BLEVE can occur when a flame impinges on a tank containing a material that is a gas at atmospheric pressure and temperature but is a liquid at storage temperature and pressure. Again, it is assumed that a BLEVE occurs when the vessel or road/ rail tanker is full. While BLEVEs are possible as a result of catastrophic vessel failure and localised vessel failure, they typically occur outside of these two events. Should this not occur, a vapour cloud may form. The ignition of the vapour cloud is modelled as a flash fire and explosion.

The flash fire is modelled through simulating the expansion of the initial cloud to the lower flammability limit (LFL) with air entrainment. The damage area then corresponds to the LFL cloud footprint. The explosion is modelled using the total mass subject to the lower flammability limit (LFL).

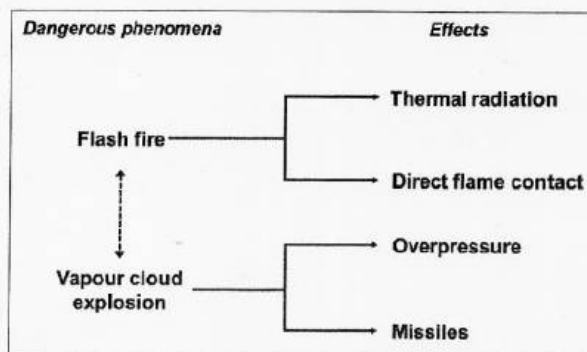
Accidental high velocity releases of ignited flashing liquids of pressurised flammable material at ambient temperature are classed as liquid jet fires. Jet fires occur when the jet of hydrocarbon can entrain air and burn at its edge. The jet remains ignited because the burning of the flame is greater than the velocity of the hydrocarbon jet, i.e. the flame is able to burn back towards the source of the jet. As a worst-case scenario, it is assumed that all failures occur in a horizontal position, i.e. the flame is orientated horizontally.

##### **4.3. Event Trees**

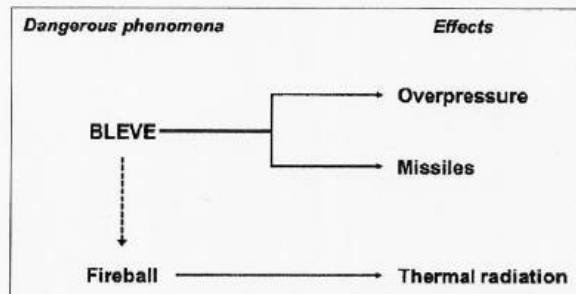
The probability of the flammable gas/ liquid identified above is represented as *event trees* for working daytime and night-time periods in the following diagrams.



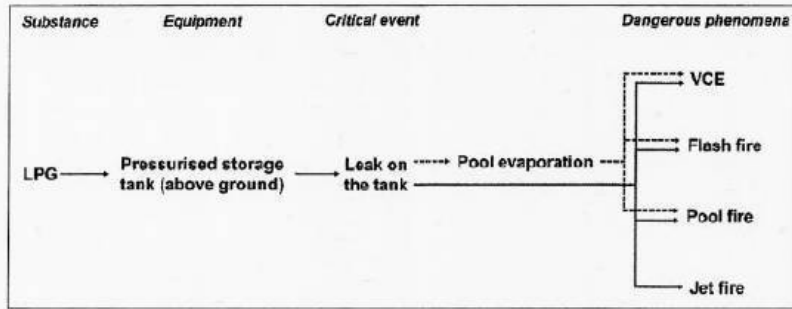
*Physical Effects of Jet Fire*



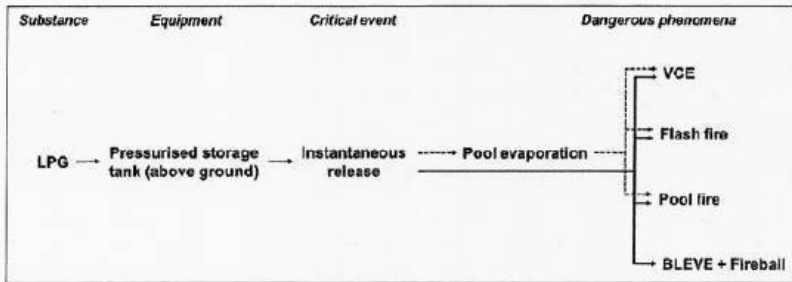
*Physical Effects of Flash Fire and Vapour Cloud Explosion*



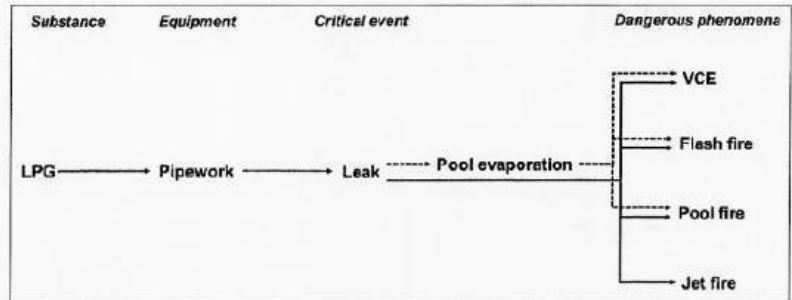
*Physical Effects of Fireball and BLEVE*



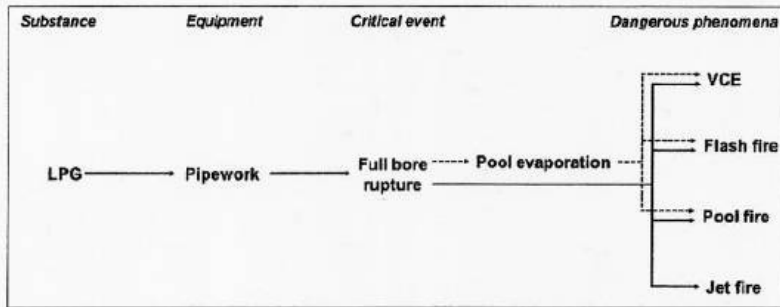
Event Tree of LPG Vessel Leak



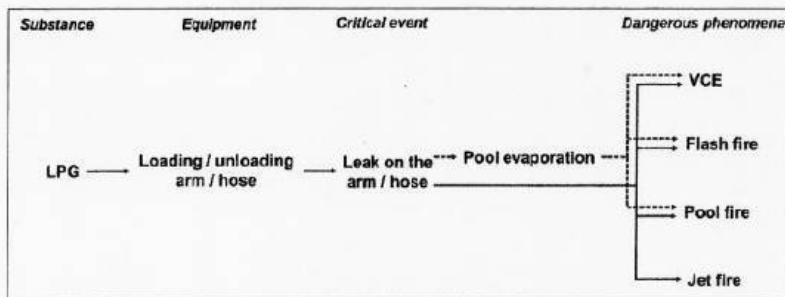
Event Tree of Instantaneous Release of LPG Vessel



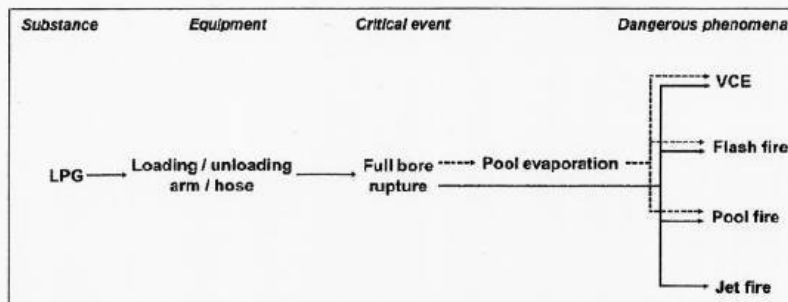
Event Tree of LPG Pipe Leak



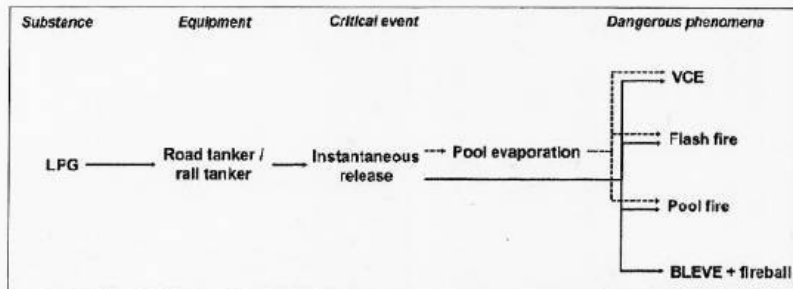
Event Tree of LPG Pipe Rupture



Event Tree of LPG Loading Hose Leak



Event Tree of LPG Loading Hose Rupture



*Event Tree of Instantaneous Release of LPG Road Tanker*

#### 4.4. Scenarios Modelled

The following scenarios were modelled for this Risk Assessment:

##### Flammable Scenarios

##### LPG Fire Scenarios

- Jet fire as the result of a 3.3mm hole in an LPG cylinder;
- Jet fire as the result of a 10mm hole in the bulk LPG vessel;
- Jet fire as the result of a loading hose shear;
- Jet fire as the result of a 10mm hole in a loading hose;
- Flash fire as the result of a loading hose failure;
- Flash fire as the result of a catastrophic vessel leak.

##### LPG Explosion Scenarios

- VCE as the result of a catastrophic vessel failure;
- VCE as the result of a catastrophic road tanker failure;
- BLEVE of a vessel;
- BLEVE of a road tanker.

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## 4.5. Hazard Analysis Breakdown

Hazard Breakdown					
Equipment	Failures and Causes	Preventative Measures	Hazardous Event	Protective Measures	Final Consequence
LPG Vessel & Containers	<ul style="list-style-type: none"> <li>- Leak</li> <li>- BLEVE</li> <li>- Catastrophic Rupture</li> </ul>	<ul style="list-style-type: none"> <li>- Installation complies to the relevant SANS standards</li> <li>- Suitably qualified companies to do maintenance/ repairs</li> <li>- Installations are fenced off and strict access control is exercised</li> </ul>	<ul style="list-style-type: none"> <li>- Pipe leak/ rupture resulting in jet fire</li> <li>- Gas cloud release that could lead to a flash fire or unconfined vapour cloud explosion</li> </ul>	<ul style="list-style-type: none"> <li>- Firefighting equipment installed</li> <li>- Emergency Plan is implemented</li> <li>- Regular maintenance to be done as per the pressure vessel regulation and the SANS standards</li> </ul>	<ul style="list-style-type: none"> <li>- Possible employee injuries or fatalities</li> <li>- Possible public injuries or fatalities</li> <li>- Possible domino effect on LPG road tanker causing jet fires or catastrophic failure of road tanker</li> </ul>
LPG Road Tanker	<ul style="list-style-type: none"> <li>- Hose Leak</li> <li>- Hose Rupture</li> <li>- BLEVE</li> <li>- Catastrophic Rupture</li> </ul>	<ul style="list-style-type: none"> <li>- Installation complies to the relevant SANS standards</li> <li>- Road tanker to visit the site no more than twice a month</li> <li>- Only trained staff and driver to exercise offloading procedures</li> </ul>	<ul style="list-style-type: none"> <li>- Hose leak/ rupture resulting in jet fire</li> <li>- Gas cloud release that could lead to a flash fire or unconfined vapour cloud explosion</li> </ul>	<ul style="list-style-type: none"> <li>- Loading hose to be inspected and maintained by transporter as specified by Pressure Vessel Regulation</li> <li>- Firefighting equipment installed</li> <li>- Emergency Plan is implemented</li> <li>- Road tanker maintenance to be done as per the pressure vessel regulation and the SANS standards</li> <li>- Driver to be suitably trained in offloading procedure and emergency procedure</li> <li>- Tanker to be earthed prior and during offloading operation</li> </ul>	<ul style="list-style-type: none"> <li>- Possible employee injuries or fatalities</li> <li>- Possible public injuries or fatalities</li> <li>- Possible domino effect on LPG vessel installation causing jet fires or catastrophic failure</li> </ul>

## 5. CONSEQUENCE ANALYSES

### 5.1. Background

The consequence analysis describes the extent of impacts from major events. The results of this analysis are used as input to the risk analysis section as well as providing guidance to Emergency Planning.

In order to establish the impact following an accident, it is necessary to first estimate the physical process of the spill (i.e. rate and size), spreading of the spill, the evaporation from the spill and the subsequent atmospheric dispersion of the airborne cloud or, in the case of ignition, the burning rate, the resulting thermal radiation or the overpressures from an explosion.

The second step is to estimate the consequences of a spill on humans and structures. For humans this is normally expressed as a probability of fatality at distances from the release point.

The consequence analysis as documented in the Risk Assessment is to provide sufficient process data, calculations etc. to allow for a reasonable verification of key consequence modelling results.

### 5.2. Source Term Analysis

When determining the amount of materials possibly released or involved in an incident, the following aspects should be considered:

- The amount of material available for release from each item should be at least the full inventory of the piece of equipment when it is filled to its maximum capacity. The maximum capacity of equipment is the total amount of fluid that can be accommodated in that equipment in the absence of equipment inventory control. For example, the volume of a cube vessel would be the product of the width, length and height of the vessel.
- When a component fails, such as a vessel, subsequent delivery of other system components which are connected with the vessel may take place. If the quantity that is subsequently delivered is significant, the combined volume/flows need to be taken into consideration.
- If in the case of an on-site pipeline failure an increased pumping rate occurs, this is modelled by increasing the flow rate to that of 1.5 times the pumping rate.
- The effects of measures affecting outflow, such as shutting off valves can be considered.
- In the case of a 'long pipeline' rupture scenario the outflow is calculated based upon the content of the pipeline and a pumping rate. This means that the outflow from a reservoir that may be connected is not included. The 'long pipeline' scenario can therefore only be used when the pumping rate and the content of the transport pipeline is critical for the outflow. It is also important that the condition that  $L/D > 1000$  is complied with, where L is the (total) length of the pipeline and D is the diameter of the pipeline.
- In the case of a line rupture, outflow occurs from both ends of the rupture. There are several possibilities:

- If the outflow mainly takes place from one end, the scenario can be modelled as a rupture of one pipeline ('line rupture').
- If the rupture occurs in a long transport pipeline, the various contributions from both ends of the rupture are included in the calculation of the outflow.
- If the contributions from both ends of the line rupture are relevant to the outflow, one effective pipeline diameter must be used in the calculation, for which the outflow rate matches the outflow rate from both ends added together.

### 5.3. Site Specific Consequence Analysis

At the LPG installation, the impacts of a loss of containment have been calculated without taking the probability of it occurring into account. This is done to show the consequence of the incident and how it will impact on the site and the surrounding area. Domino effects were also investigated in this section.

In the following sections various scenarios were calculated for the proposed installation.

### 5.4. Fires

Flammable liquids and gases may ignite and burn if ignited. This normally occurs as a result of a loss of containment and ignition. Fires include pool fires, jet fires and flash fires.

The consequence of a fire will be thermal radiation.

It is expected that an individual either in pain from a thermal dose received or suffering from first degree burns should escape rapidly as the injury should not be sufficient to impede movement, yet the pain will be too uncomfortable to bear standing still.

An individual with second degree burns will have even greater motivation to escape, commonly referred to as the fight or flight response. However, at this level of injury, any exposed skin will be very uncomfortable and difficult to use in contact with another surface. Simple tasks, such as turning door handles or dressing in survival equipment will take longer, if at all possible. Depending on the location and extent of injury, more difficult tasks such as operating control panels or turning valves may be impossible.

With third degree burns an individual will be in severe pain and will realise that they are in immediate danger of losing their life. Individual response is hard to predict. Fine control of injured extremities will be impossible and other functions will be severely impaired. Escape will probably incur further injury as skin may fall away from the wound. Individuals with third degree burns should be considered as casualties who cannot evacuate unaided.

Thermal radiation levels used in this report are as follows:

- 4.5 kW/m<sup>2</sup> is the radiation that would cause pain and second degree burns within 20 seconds (Yellow Contour).
- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds (Orange Contour).
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame (Red Contour).

#### 5.4.1. Thermal Radiation

The effect of thermal radiation is dependent on the type of fire and duration exposed to the thermal radiation. Codes such as API 520 and 2000 suggest the maximum heat absorbed on vessels for adequate relief designs to prevent the vessel from failure due to overpressure. Other codes such as API 510 and BS 5980 give guidelines for the maximum thermal radiation intensity as a guide to equipment layout.

The effect of thermal radiation on human health has been widely studied and it has been found that injuries developed due to the exposure and intensity of the radiation. Two values normally quoted are 1.5kW/m<sup>2</sup> or 'safe' value where people can be exposed for a long period of time and 5kW/m<sup>2</sup> for people performing an emergency operation for short periods of time.

#### Thermal Radiation Guidelines (BS 5980-1990)

Thermal Radiation Intensity (kW/m <sup>2</sup> )	Limit
1.5	Will cause no discomfort for long exposure
2.1	Sufficient to cause pain if unable to reach cover within 40 seconds
4.5	Sufficient to cause pain if unable to reach cover within 20 seconds
12.5	Minimum energy required for piloted ignition of wood and melting of plastic tubing
25	Minimum energy required to ignite wood at indefinitely long exposures
37.5	Sufficient to cause serious damage to process equipment

#### 5.4.2. Pool Fires

A loss of containment of gas does not normally result in the formation of a flammable pool. Pool fires were not modelled.

#### 5.4.3. Jet Fires

Jet fires occur when flammable material of a high exit velocity ignites. Ejection of flammable material from a vessel, pipe or pipe flange may give rise to a jet fire and in some instances the jet flame could have substantial 'reach'. Depending on wind speed, the flame may tilt and impinge on pipelines, equipment or structures. Thermal radiation from these fires may cause injury to people or damage equipment some distance from the source of the flame.

For this Assessment, jet fires from a 10mm leak in pipes, flanges, pumps and vessels were assumed for the installation, and for the road tanker a 10mm leak and 50mm hose rupture were assumed. For cylinders a 3.3mm leak was assumed. The worst-case scenario of the jet fire being horizontal and in the same direction of the wind was assumed in all cases.

The following mitigation will be implemented to deal with consequences of a jet fire at the proposed LPG installation:

- Installation will comply with SANS 10087;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;

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- Enclosures will be kept locked at all times and only trained personnel allowed access.

The consequences of a 3.3mm jet fire at the cylinder storage areas are as follows:

48kg LPG Cylinder				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
9.058	10m	11m	13m	11m

The consequences of a 10mm jet fire at the LPG bulk vessel are as follows

Bulk LPG Vessel				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
8.8	10m	11m	13m	12m

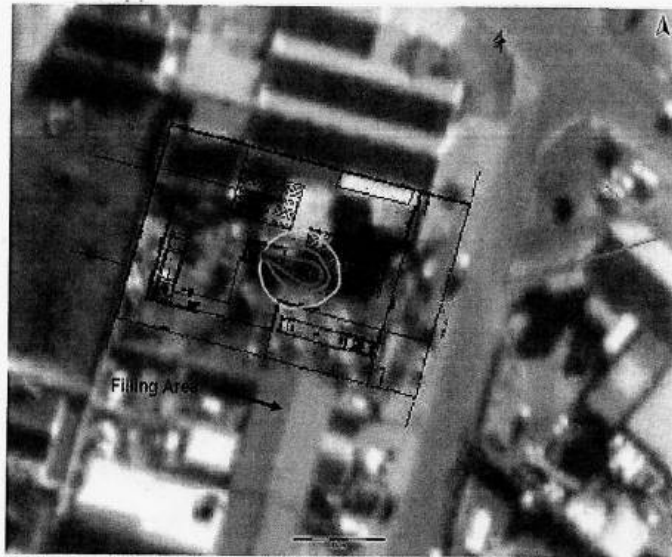
The consequences of a jet fire at the LPG road tanker are as follows:

LPG Road Tanker				
10mm Hose Leak				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
12.872	14m	16m	19m	17m
50mm Hose Rupture				
Flame Length	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
48.6	59m	66m	80m	70m

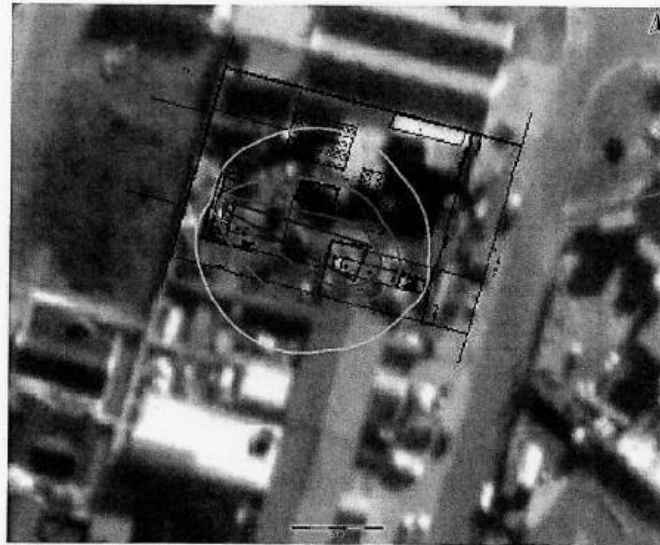
The effects from jet fires could extend beyond the site boundaries.

Thermal radiation from jet fires is shown below.

- 4.5 kW/m<sup>2</sup> is the radiation that would cause pain and second degree burns within 20 seconds. (Yellow Contour)
- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds. (Orange Contour)
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame. (Red Contour)
- 1% Lethality contour represents a 1% fatality for people exposed to the fire for 20 seconds. (Blue Contour)
- The flame is represented by the purple contour.



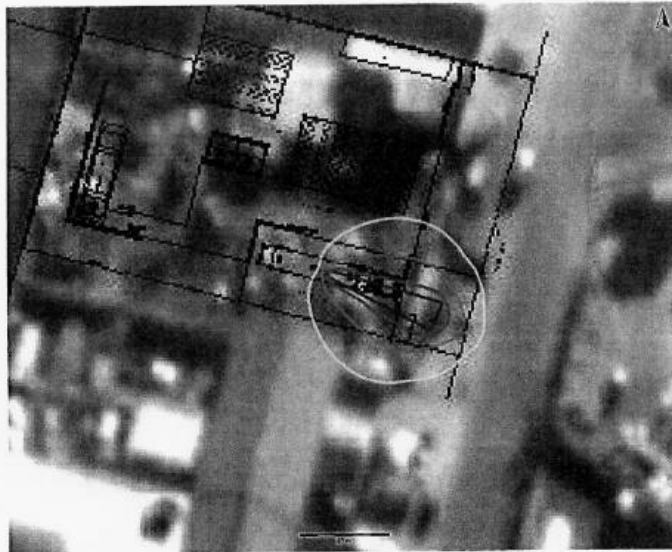
*3.3mm Jet Fire at the Proposed Cylinder Filling and Storage Area*



*10mm Jet Fire at the Proposed Bulk Vessel*



*Loading Hose Shear Jet Fire at the Proposed Truck Loading Area*



*Loading Hose 10mm Jet Fire at the Proposed Truck Loading Area*

#### 5.4.4. Flash Fires

A loss of containment of flammable materials if not immediately ignited, would mix with air and form a flammable cloud. This cloud could drift and if ignited could result in a flash fire or vapour cloud explosion.

The cloud of flammable material would be defined by the lower flammable limit (LFL) and the upper flammable limit (UFL). An ignition within a flammable cloud can result in an explosion if the front is propagated by pressure. If the front is propagated by heat, the fire moves across the flammable cloud at the flame velocity and is called a flash fire. In some instances, pockets of flammable clouds may extend beyond the LFL due to localised conditions. The ½ LFL endpoint assumes there are no isolated pockets, and that ignition would not occur beyond this point.

The following mitigation will be implemented to deal with consequences of a flash fire at the proposed LPG installation:

- Installation will comply with SANS 10087 part 7;
- Strict vessel filling procedures will be followed;
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced off with no ignition sources;
- Fire-fighting equipment will be installed;
- Enclosure will be kept locked at all times and only trained personnel allowed access.

The consequences of a flash fire at the LPG road tanker and bulk vessel are as follows:

LPG Road Tanker Loading Hose Rupture			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
22m	30m	22,5m	23m

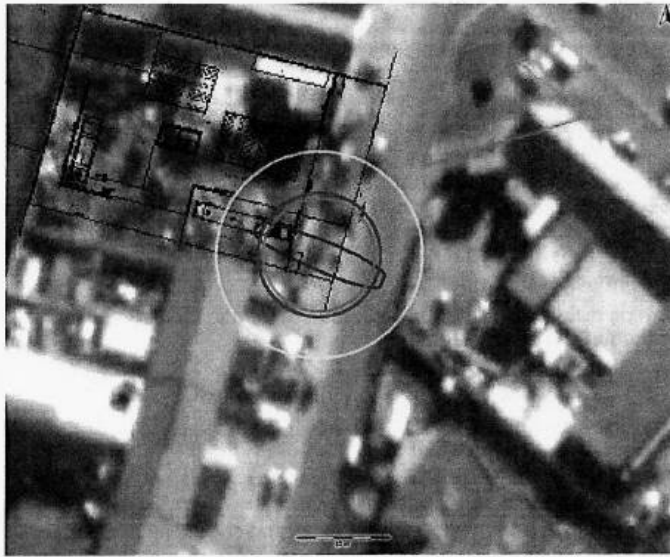
LPG Bulk Vessel Catastrophic Leak			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
131m	99m	115,2m	103m

A flash fire from a catastrophic leak from the LPG installation is shown below.

Flash fires could not impact beyond the property boundaries.

The figures below show the following contours:

- 14kPa overpressure yellow contour;
- 35kPa overpressure orange contour;
- 1% lethality blue contour;
- Flammable cloud purple contour.



*Flash Fire from a Hose Shear at the Proposed Tanker Point*



*Flash Fire from a Catastrophic Leak at the Bulk Vessel*

## 5.5. Explosions

An explosion is a rapid increase in volume and release of energy in an extreme manner, usually with the generation of high temperatures and the release of gases. Supersonic explosions created by high explosives are known as detonations and travel via supersonic shock waves. Subsonic explosions are created by low explosives through a slower burning process known as deflagration.

Explosions associated with flammable gas installations are vapour cloud explosions (subsonic explosions), confined vapour cloud explosions (supersonic explosions) and boiling liquid expanding vapour explosions (BLEVE).

### 5.5.1. Vapour Cloud Explosion Consequences

A vapour cloud is formed by the release and mixing of a flammable vapour, gas or spray from an installation. The concentration of the material mixture within the vapour cloud must be in the explosive range to ignite and cause an overpressure. The rate of acceleration of the flames within the vapour cloud will lead to significant overpressure. Should the rate of ignition in the vapour cloud be instantaneous an explosion will occur. The rate of ignition will be influenced by the confinement of the vapour cloud. This will lead to a higher concentration of the flammable mixture. The results of a vapour cloud can be extensive property damage and injury or loss of life.

### 5.5.2. Unconfined Gas Explosions

An unconfined gas explosion is a flammable gas cloud that detonates within an area that is uncluttered and the expanding gases can easily escape. The maximum overpressure from an unconfined gas explosion is much lower than that of a confined explosion and hence the overpressure distance to safety is lower.

### 5.5.3. Confined Gas Explosions

Vapour cloud explosions are one of the most devastating events which can occur in the process industries. It was recognised that a facility design should include limiting explosion damage. The determination of peak overpressures from gas explosions and development of design criteria for structural support become more complex due to high pressure inventories in congested areas.

There are four key factors in an explosion. These are related to the overpressure which is the pressure rise above normal atmospheric pressure, the positive phase duration which is the time during which the pressure is above atmospheric pressure, the degree of confinement of the flammable mixture which causes turbulence and acceleration of the flame front and influences the overpressure, and the impulse (area under the pressure-time profile).

It is well established that it is not the size of the vapour cloud that matters when it comes to blast strength, but the degree of confinement of the vapour cloud and congestion in the path of the flame front. The energy of ignition source (e.g. naked flame) plays a dominant role in determining the blast strength, although a well-designed facility with strict implementation of hazardous area classification requirements in terms of hardware and safety management system can reduce the strength of a potential ignition source significantly.

The Multi-Energy Model (MEM) for rapid assessment of explosion overpressure has been developed by TNO (1997). It is based on the concept that significant overpressures can

be generated by the ignition of a vapour cloud only in the presence of partial confinement or obstacles in the path of the flame front. This model, however, requires assumptions on the initial blast strength, which significantly influences the predictions. CFD models used in offshore modules have shown that rapid assessment models can underestimate the blast overpressures.

There are no confined areas at the site.

The figures below show the vapour cloud result of a cloud drifting across an ignition point (delayed ignition).

The 0.1bar (10kPa) overpressure contour in blue would typically severely damage 10% of buildings and a probability of death indoors equal to 0.025. No lethal effects are expected below 0.1 bar overpressure for people in the open.

The following mitigation will be implemented to deal with consequences of a vapour cloud explosion at the proposed LPG installation and LPG road tanker:

- Installation will comply with SANS 10087;
- Strict vessel filling procedure will be followed;
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced off with no ignition sources;
- Fire-fighting equipment will be installed;
- Cages will be kept locked at all times and only trained personnel allowed to remove and install LPG cylinders.

The consequences of a VCE fire at the LPG installation are as follows:

LPG Bulk Vessel			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
193m	121m	78,2m	130m
LPG 48kg Cylinder			
12m	7m	5m	8m

The consequences of a flash fire at the LPG road tanker are as follows:

LPG Road Tanker			
14kPa Over Pressure	35kPa Over Pressure	Flammable Cloud	1% Lethality Contour
142m	88m	117m	94m

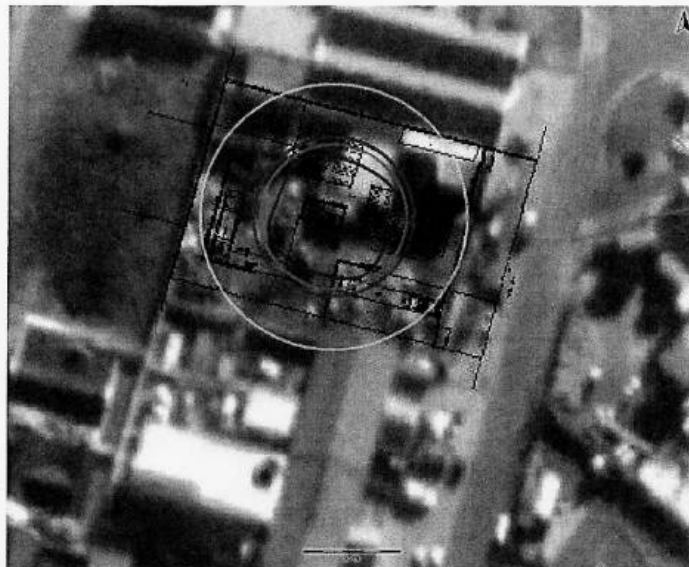
The effects from a flash fire could extend beyond the site boundaries.

The figures below show the following contours:

- 14kPa overpressure yellow contour;
- 35kPa overpressure orange contour;
- 1% lethality blue contour;
- Flammable cloud purple contour.



*VCE from a Catastrophic Failure of Bulk Vessel*



*VCE from a Catastrophic Failure of a 48kg LPG Cylinder at the Storage Area*



*VCE from a Catastrophic Failure of the Proposed LPG Tanker Area*

#### 5.5.4. Boiling Liquid Expanding Vapour Explosion (BLEVE)

Boiling liquid expanding vapor explosions (BLEVEs) are one of the most severe accidents that can occur in the process industry or in the transportation of hazardous materials. Strictly speaking, these explosions do not necessarily imply thermal effects. However, in most cases the substance involved is a fuel that causes a severe fireball after the explosion. Usually BLEVE refers to the combination of these two phenomena, BLEVE and fireball, i.e., to an accident simultaneously involving mechanical and thermal effects.

While the explosion of a tank containing a pressurised flammable liquid will almost always lead to a fireball, the explosion cannot always be considered strictly a BLEVE. To qualify as this type of explosion, the following conditions must be met:

- **Significant superheating of the liquid.** Most liquefied gases under fire attack (GAS, Ammonia, Sulphur Dioxide) fulfil this condition; it can also be fulfilled by other liquids contained in closed containers that undergo anomalous heating, for example due to a fire; and, as stated before, water can also be at this condition upon instantaneous depressurisation.
- **Instantaneous depressurisation.** This phenomenon is usually related to the type of failure of the vessel. The sudden pressure drop in the container upon failure causes the liquid superheat. If the liquid superheat is significant, the flashing may be explosive.

When these two conditions are met, a practically instantaneous evaporation of the contents takes place, with the formation of a large number of boiling nuclei in all the liquid mass (homogeneous nucleation). In these conditions the velocity at which the

volume increases are extraordinary, and the explosion is therefore very violent. Strictly speaking, this is the phenomenon associated with the BLEVE explosion.

When a BLEVE explosion involves a flammable substance, it is usually followed by a fireball, intense thermal radiation will be released and fragments from the shattered vessel. The thermal energy is released in a short time, usually less than 40 seconds (although this time is a function of the mass in the tank). The phenomenon is characterised from the first moments by strong radiation; this eliminates the possibility of escaping for the persons nearby (who also will have suffered the effects of the blast).

The following mitigation will be implemented to deal with consequences of a BLEVE at the proposed LPG installation:

- Installation will comply with SANS 10087;
- Strict vessel filling procedure will be followed;
- Bulk Vessel will be 'Pyro Coated';
- Regular maintenance will be done as per the manufacturer requirements and pressure vessel regulations;
- Installation will be fenced-off with no ignition sources;
- Fire-fighting equipment will be installed;
- Cages will be kept locked at all times and only trained personnel allowed to remove and install LPG cylinders;
- The area around the cages will be kept clear of any flammable materials.

The consequences of a BLEVE at the LPG vessel are as follows:

LPG Bulk Vessel				
Fire Ball	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
159,39m	121m	294m	516m	258
LPG 48kg Cylinder				
22,69m	N/A	33m	60m	14

The consequences of a BLEVE at the LPG road tanker are as follows:

LPG Road Tanker				
Fire Ball	Radiation Contour 37.5kW/m <sup>2</sup>	Radiation Contour 12kW/m <sup>2</sup>	Radiation Contour 4.5kW/m <sup>2</sup>	1% Lethality Contour
121.8m	87m	218m	386m	172m

A blast wave from a BLEVE is fairly localised but can cause significant damage to immediate equipment and buildings.

Thermal radiation from a BLEVE is shown below.

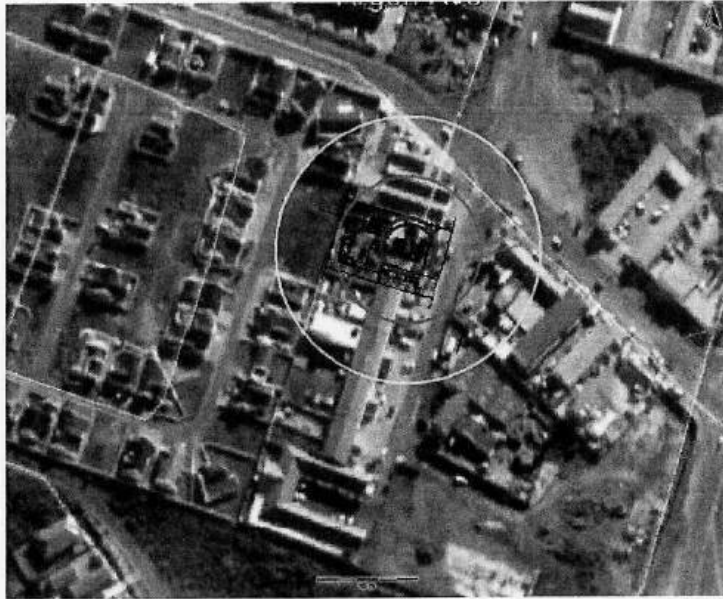
- 12.5 kW/m<sup>2</sup> represents a 1% fatality for people exposed to the fire for 20 seconds. (Orange Contour)
- 37.5 kW/m<sup>2</sup> indicates the lower limit of damage to steel equipment and represents a 100% fatality for people exposed to the flame. (Red Contour)
- 1% Lethality contour represents a 1% fatality for people exposed to the fire for 20 seconds. (Blue Contour)
- The fireball is represented by the purple contour



**LPG Bulk Vessel BLEVE**



**48kg LPG Cylinder BLEVE**



*LPG Tanker BLEVE*

#### **5.6. Potential Offsite and Onsite Domino Effects**

There are no other Major Hazard Installations around Gas Hub.

A fire or explosion at the bulk vessel, the filling installations and the road tanker will have domino effects on the LPG storage installation and vice versa. These domino effects have been included into the calculations.

## 6. FREQUENCY ANALYSES

### 6.1. Site Specific (Final) Frequencies

The frequencies indicated below are generic frequencies as specified in *BEVI*. Site specific frequencies are calculated utilising these generic frequencies as a base. The final frequency calculations are included in the Appendices.

### 6.2. Generic Equipment Failure Scenarios

The main hazard when storing toxics is the loss of containment. The toxic vapour cloud would move with the wind until the effects of dispersion dilute the cloud below the toxic concentration. A loss of containment of toxics may occur during delivery or during the operation of the refrigeration plant. The possible hazards are to be identified, together with the failure modes and the possible initiating events that may cause such a failure. Failure rates were obtained from '*RIVM - Reference Manual Bevi Risk Assessments*'.

### 6.3. Blocking Systems

Blocking systems are used to limit the released quantity following a loss of containment. A blocking system consists of a detection system, for example gas detection, combined with shut-off valves. The shut-off valves can be closed automatically or manually. The effectiveness of a blocking system is determined by various factors, such as the position of gas detection monitors and their distribution throughout the various wind directions. Furthermore, the detection limit and the response time of the system as well as the operator's intervention time are also relevant.

The following conditions must be met to include the operation of a blocking system in the risk analysis:

- An automatic detection system must be present that results in signalling within the control room, or automatic control of the blocking valves. An example of this is a gas detection system with sufficiently sensitive monitors and adequate detection points. In the case of signalling in the control room this room must be continuously staffed.
- The detection system and the shut-off valves must regularly be tested.

The default values specified here for three representative systems were used as a guideline:

#### 1. Automatic blocking system

An automatic blocking system is a system in which the detection of the leak and the closing of the blocking valves take place automatically. Action by an operator is not necessary.

#### 2. Semi-automatic blocking system

A semi-automatic blocking system is a system in which the detection of the leak takes place automatically and leads to an alarm signal in a continuously staffed control room. After validation of the signal the operator closes the blocking valves by actuating a switch in the control room. The probability of failure per operation is equal to 0.01, the time required for closing the blocking valves is equal to 10 minutes.

### 3. Non-automated blocking system

A non-automated blocking system is a system in which the detection of the leak takes place automatically and leads to an alarm signal in a continuously staffed control room. The operator does not have the facilities to shut off the blocking valves by actuating a switch in the control room but has to take action outside the control room. For such a system the time required to effectively perform the required actions is so long that there is no effect on the QRA, given the maximum duration of an outflow of 30 minutes that is generally applied.

All the installations were modelled as having a non-automated blocking system. This is discussed in Section 2 of the report.

### 6.4. Pressure Vessels

The scenarios considered under this category are partial failure and catastrophic failure. Factors that have been identified as having an effect on the integrity of cylinders are related to design, inspection, maintenance, and corrosion.

- A pressure cylinder is a storage vessel that contains a fluid under a design pressure equal to, or greater than 50kPa.

The failure frequencies are as follows:

	Frequency (per annum)
Instantaneous release of entire contents	5 x 1.0e-7
Release of entire contents in 10 minutes in a continuous and constant stream	5 x 1.0e-7
Continuous release of contents from a hole with an effective diameter of 10mm	1 x 1.0e-5

### 6.5. Valves

The failure frequency of valves is dependent on the valve and the leak size. The ratio of the leak size ( $d$ ) to the valve size ( $D$ ) should firstly be determined in order to determine the valve failure frequency per year, for example:

$d/D$	Leak Frequency (per valve per year)
0.1	1.4 x 1.0e-4
0.2	1.9 x 1.0e-4
0.5	2.5 x 1.0e-4
1.0	3.0 x 1.0e-4

## 6.6. Flanges

Pressure surge or significant deviations of pressure or temperature may cause a flanged joint to be over stressed, resulting in a small leak. Larger holes through to complete line fracture may conceivably result from mechanical impact or pressure surge. These events are likely to be detected more rapidly, resulting in a quicker isolation of the leak.

The flange failures per year vary greatly with the flange and gasket quality. A reasonable average based on current practices is summarised below:

Pipe Diameter (mm)	Equivalent Hole Size (mm)	Leak Frequency (per item per year)
100	5	1 x 1.0e-5
> 100	25	1 x 1.0e-6

## 6.7. Ignition Probability of Flammable Gases

### 6.7.1. Direct Ignition

The probability of direct ignition depends on the type of installation (stationary installation or transport unit), the substance category and the outflow quantity.

- Values for stationary installations are given in the table below;
- Values for transport units are given in the next table;
- Definition of the substance category is given in the third table.

Substance Category	Source Term Continuous	Source Term Instantaneous	Probability of Direct Ignition
Category 0 Average/High reactivity	<10 kg/s	<1000 kg	0.2
	10 – 100 kg/s	1000 – 10000 kg	0.5
	>100 kg/s	>10000 kg	0.7
Category 0 Low reactivity	<10 kg/s	<1000 kg	0.2
	10 – 100 kg/s	1000 – 10000 kg	0.4
	>100 kg/s	>10000 kg	0.9
Category 1	All flow rates	All quantities	0.065
Category 2	All flow rates	All quantities	0.01
Category 3, 4	All flow rates	All quantities	0

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Substance Category	Transport Unit	Scenario	Probability of Direct Ignition
Category 0	Road tanker	Continuous	0.1
	Road tanker	Instantaneous	0.4
	Tank wagon	Continuous	0.1
	Tank wagon	Instantaneous	0.8
	Ships – gas tankers	Continuous, 180m <sup>3</sup>	0.7
	Ships – gas tankers	Continuous, 90m <sup>3</sup>	0.5
	Ships – semi gas tankers	Continuous	0.7
Category 1	Road tanker, tank Ships	Continuous, instantaneous	0.065
Category 2	Road tanker, tank ships	Continuous, instantaneous	0.01
Category 3, 4	Road tanker, tank ships	Continuous, instantaneous	0

Category	WMS Category	Limits
Category 0	Extremely flammable	Liquid substances and preparations with a flash point lower than 0°C and a boiling point (or the start of a boiling range) less than or equal to 35°C. Gaseous substances and preparations which may ignite at normal temperature and pressure when exposed to air.
Category 1	Highly flammable	Liquid substances and preparations with a flash point below 21°C, which are not extremely flammable
Category 2	Flammable	Liquid substances and preparations with a flash point greater than or equal to 21°C and less than or equal to 55°C.
Category 4	Flammable	Liquid substances and preparations with a flash point greater than 55°C and less than or equal to 100°C.
Category 4	Flammable	Liquid substances and preparations with a flash point greater than 100°C.

### 6.7.2. Delayed Ignition

The probability of delayed ignition depends on the end point of the calculation. In the calculation of the location-specific risk only ignition sources on the site of the establishment are considered. Ignition sources outside the establishment are ignored; it is assumed that if the cloud does not ignite on site and a flammable cloud forms outside the establishment, ignition always occurs at the biggest cloud size. In the calculation of societal risk, all ignition sources are considered, including population. If ignition sources are absent, it is possible in the societal risk calculation that the flammable cloud does not ignite (see the table below).

Substance Category	Probability of Delayed Ignition for the Biggest Cloud Size, PRm	Probability of Delayed Ignition, GR
Category 0	1 – Pdirect ignition	Ignition sources
Category 1	1 – Pdirect ignition	Ignition sources
Category 2	0	0
Category 3	0	0
Category 4	0	0

## 7. RISK CALCULATIONS

Consequence analysis has been the main focus of the report up to now while the consideration of probability has not been discussed. Risk is defined as consequence times probability.

Probability is defined as the risk of an event occurring and impacting on the individual and society at large.

### 7.1. Location Specific Individual Risk Levels

The likelihood that a person in some fixed relation to a hazard (e.g. at a particular location, level of vulnerability, protection and escape) might sustain a specific level of harm.

The frequency at which an individual may be expected to sustain a given level of harm from the realisation of specified hazards. For example, there may be an individual risk of one-in-a-million that a particular person would be killed by an explosion at a major hazard near their home for every year that a person lives at that address. [*HSE Societal Risk: Initial briefing to Societal Risk Technical Advisory Group: p60*].

### 7.1. Employee Risk

Scenarios considered regarding risk to employees are toxic vapour clouds from Ammonia plant failures. Employees and the public are indoors and outdoors during the day and major events associated with these installations would occur outside of the building in the vicinity of the installation areas. When exposed to hazards such as toxic clouds, people who are indoors (sheltered) will generally be less vulnerable than those outdoors (unsheltered). The risks should not be more than one-in-a-thousand ( $1.0e-3$  per year).

### 7.2. Individual Risk

This Risk Assessment has modelled the effects of the proposed LPG installation.

The results are low, with the  $1.0e-6$  (one-in-a-million) contour mainly confined to the property and only extending over the western boundary by 20m.

The  $3.0e-7$  (one-in-thirty million) green contour, extends for a maximum of 120m over the boundaries of the site.

The contours do not reach any sensitive populations or installations.

As can be seen from the above results, the risks are relatively low and acceptable for this industrial area.

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*Individual Risk for the Proposed Installation*

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**7.3. Risk Levels and Ranking**

Individual risk levels at several important points around the proposed installation:

**At Northern Neighbour**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	85,4	3,93E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	14,6	6,71E-08
3.	Hose Shear (LPG Road Tanker)	0,0225	1,04E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000191	8,79E-13

**At Southern Neighbour**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	48	3,95E-07
2.	Small Leak (LPG 45m3 Vessel)	35,4	2,91E-07
3.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	16,4	1,35E-07
4.	Hose Shear (LPG Road Tanker)	0,2	1,65E-09
5.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000107	8,80E-13

**At Western Neighbour**

	Scenario	Contribution %	Risk Value
1.	Small Leak (LPG 45m3 Vessel)	73,2	1,75E-06
2.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	16,6	3,95E-07
3.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	10,2	2,44E-07
4.	Hose Shear (LPG Road Tanker)	0,0192	4,59E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	3,61E-5	8,62E-13

**At Office**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	83,5	3,81E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	16,5	7,53E-08
3.	Hose Shear (LPG Road Tanker)	0,0159	7,24E-11
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000193	8,80E-13

**On Road**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	75,8	3,40E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	24,2	1,08E-07
3.	Hose Shear (LPG Road Tanker)	0,0491	2,20E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000196	8,80E-13

**Risk Ranking**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m <sup>3</sup> Vessel)	74,6	6,75E-05
2.	Catastrophic Vessel Leak (LPG 45m <sup>3</sup> Vessel)	8,13	7,35E-06
3.	Catastrophic Failure BLEVE (Storage Area 1)	5,16	4,66E-06
4.	Small Leak (LPG 45m <sup>3</sup> Vessel)	3,22	2,91E-06
5.	Catastrophic Failure BLEVE (Main Cylinder Storage)	3,05	2,76E-06
6.	3.3mm Leak (Storage Area 1)	2,76	2,50E-06
7.	3.3mm Leak (Main Cylinder Storage)	2,76	2,50E-06
8.	3.3mm Leak (Filling Area)	0,166	1,50E-07
9.	Catastrophic Failure BLEVE (Filling Area)	0,152	1,38E-07
10.	Hose Shear (LPG Road Tanker)	0,0113	1,02E-08
11.	Small Leak (LPG Road Tanker)	0,00182	1,65E-09
12.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000127	1,15E-10

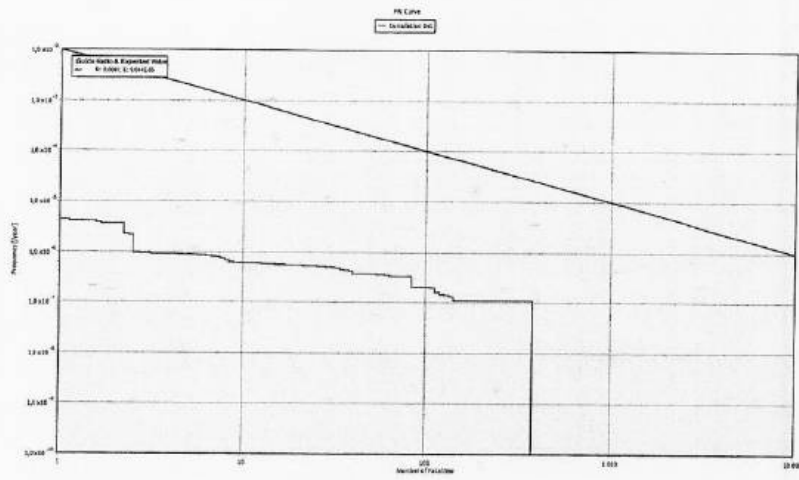
**7.4. Societal Risk**

Societal risk is defined as the relationship between frequency and the number of people suffering from a specified level of harm in a given population from the realisation of specified hazards [Jones, 1985]. Societal risk evaluation is concerned with estimation of the chances of more than one individual being harmed simultaneously by an incident. The likelihood of the primary event (an accident at a major hazard installation) is still a factor, but the consequences are assessed in terms of level of harm and the numbers affected (severity), to provide an idea of the scale of an accident in terms of numbers killed or harmed.

Societal risk is dependent on the risks from the substances and processes located on a major hazard installation. A key factor in estimating societal risk is the population around the site, in particular its location and density. For example, the more (occupied) buildings in any particular area, the more people could be harmed by a flammable gas cloud passing through that area. For an installation with a population located in a specific compass direction, the chance of a flammable gas release would depend on the probability of drift in that direction.

Scenarios to be included in a risk assessment can be characterised as having a frequency ( $F$ ) and a consequence ( $N$ , number of casualties).  $F$  is used to denote the sum of the frequencies of all the individual events that could lead to  $N$  or more fatalities (hence the reference to  $FN$  curves).

Societal risk can be represented by  $FN$  curves, which are plots of the cumulative frequency ( $F$ ) of various accident scenarios against the number ( $N$ ) of casualties associated with the modelled incidents. The plot is cumulative in the sense that, for each frequency,  $N$  is the number of casualties that could be equalled or exceeded. Often 'casualties' are defined in a risk assessment as fatal injuries, in which case  $N$  is the number of people that could be killed by the incident.



**FN Curves for Proposed Installation**

As seen on the graph above, the societal risk is less than  $1.e-06$  of one fatality, which is acceptable.

## 8. RISK JUDGEMENT

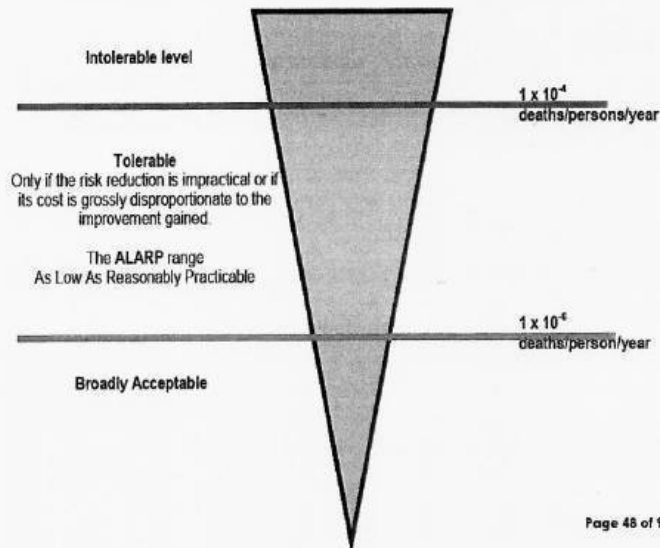
### 8.1. Risk Judgement Criteria

This Assessment indicates in a clear statement whether the risks or aspects of the risks are intolerably high, tolerable provided ALARP or broadly acceptable, both in terms of location specific, individual risk and societal risk.

The risk evaluation criteria are set out as follows:

- A risk of death for members of the public greater than  $1.0 \times 10^{-4}$  (one-in-ten thousand) per year is considered intolerable.
- A risk of death below  $1.0 \times 10^{-6}$  (one-in-a-million) per year for members of the public is considered broadly acceptable provided sensitive or vulnerable receptors in the vicinity have been considered.
- Risks between  $1.0 \times 10^{-6}$  per year and  $1.0 \times 10^{-4}$  per year for members of the public can be considered tolerable, provided the risks have been reduced so far as is reasonably practicable, i.e. this is referred to as the ALARP region.

Figure 1 - The public ALARP risk decision making framework



The individual risks at the Gas Hub site are 'Broadly Acceptable', as they fall within the ALARP range. The risks off site are 'Broadly Acceptable'.

## **9. RISK TREATMENT**

### **9.1. Major Hazard Installation**

The scenario contributing the most towards the total risk at the facility is a catastrophic failure of the bulk LPG vessel.

The risks posed by the installations were found to be acceptable for the commercial area in which they are located.

### **9.2. Risk Reduction**

The recommendations are as follows:

- Good housekeeping always needs to be observed on site;
- An Emergency Plan must be drafted for the site and must include all the risks identified in this report;
- The Emergency Plan must comply with the MHI Regulations;
- Onsite Emergency Plan must comply with SANS 1514;
- All work must be done by qualified companies;
- Installation must comply to Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- Fire Department must witness a pressure test prior to issuing flammable substance certificate.

### **9.3. ALARP Conclusions**

If the LPG installation is maintained as per the relevant SANS codes, the necessary safety equipment and procedures are in place and the personnel are trained to deal with emergencies, risks imposed by the installations will always be acceptable.

## 10. LAND USE PLANNING

Where a site near to a major hazard chemical installation or pipeline is being developed, the City Council's Planning Authority has a statutory duty to refer to this Risk Assessment. This report will help the Planning Authority to 'Advise Against' or 'Don't Advise Against' the granting of planning permission on health and safety grounds that arise from the possible consequences of a major accident at the hazardous installation.

This report is designed to help planners, developers and others who want to work out for themselves about a planning proposal. In some cases, it may be that working through the report will allow one to modify the size, layout or location of a proposed development.

This report was compiled as per SANS 1461:2018 Codes of Practice. Land use planning is based on the United Kingdom's Health and Safety Executive HSEs *Planning Advice for Developments near Hazardous Installations (PADHI)*.

### 10.1. The Principles Behind Land Use Planning Methodology

- The risk considered is the residual risk which remains after all reasonably practicable preventative measures have been taken to ensure compliance with the requirements of the Major Hazard Regulations.
- Advice takes account of risk as well as hazard, that is the likelihood of an accident as well as its consequences.
- Account is taken of the size and nature of the proposed development, the inherent vulnerability of the exposed population and the ease of evacuation or other emergency procedures for the type of development proposed. Some categories of development (e.g. schools and hospitals) are regarded as more sensitive than others (e.g. light industrial) and advice is weighted accordingly.
- Consideration of the risk of serious injury, including that of fatality, attaching weight to the risk where a proposed development might result in a large number of casualties in the event of an accident.

### 10.2. Introduction to PADHI

The Risk Assessor sets a consultation distance (CD) around major hazard sites and pipelines after assessing the risks and likely effects of major accidents at the installation or pipeline.

Major hazards comprise a wide range of chemical process sites, fuel and chemical storage sites, and pipelines. The CDs are based on scientific knowledge using quantitative risk assessments.

PADHI uses two inputs to a decision matrix to generate the CDs or 'Restricted Development Distances'

- The zone in which the development is located of the three zones (that make up the CD);
- The 'sensitivity level' of the proposed development (see 'Development type tables').

### 10.3. Zone Mapping

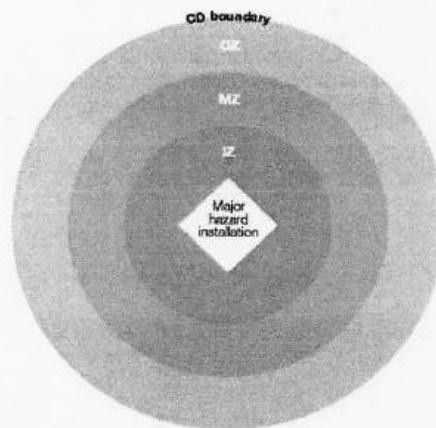
PADHI uses a 'three-zone' system. ('inner' (IZ), 'middle' (MZ) and 'outer' (OZ);) The zones are determined by a detailed assessment of the risks of the installation or pipeline which takes the following factors into account:

- The hazard ranges and consequences of the toxic and/or flammable substances present;
- The volume of those substances for which the site has consent;
- The method of storage. The risks and hazards from the major hazard are greatest in the inner zone, so the restrictions on development are strictest. The CD is all the land enclosed by all the zones and the installation itself.

Inner zone includes all areas where risk is > 10 chances per million per annum. (Red Contour)

Middle zone > 1 chance per million per annum. (Orange Contour)

Outer zone > 0.3 chances per million per annum. (Yellow Contour)

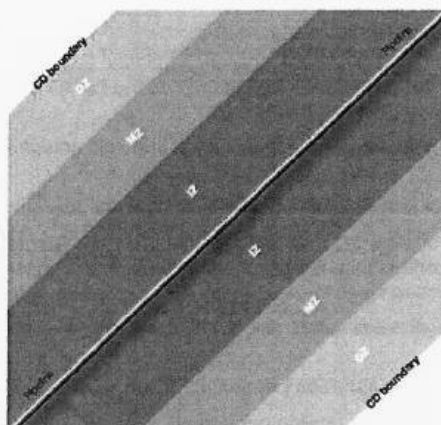


**Three Zone Map**

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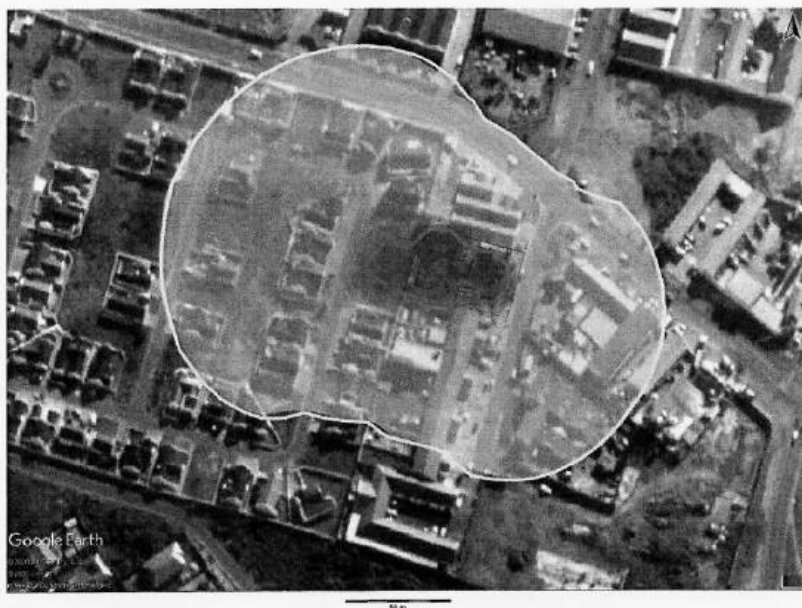
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**Three Zone Pipeline Map**

The development zones for the proposed installation are indicated on the map below. There are no inner and middle zones. The outer zone (yellow) extends to the north and east of the installation but does not reach the road boundaries.



**Proposed Installations Development Zone Map**

#### 10.4. Development 'Sensitivity Levels'

The sensitivity levels are based on a clear rationale to allow progressively more severe restrictions to be imposed as the sensitivity of the proposed development increases. There are four sensitivity levels:

- Level 1 – Based on normal working population;
- Level 2 – Based on the general public – at home and involved in normal activities;
- Level 3 – Based on vulnerable members of the public (children, those with mobility difficulties or those unable to recognise physical danger);
- Level 4 – Large examples of Level 3 and very large outdoor examples of Level 2.

The tables in the Appendices expand on the four basic development types.

#### 10.5. Decision Matrix

Having determined which risk zone, the surrounding developments fall into and the sensitivity level of these developments, the matrix below can be utilised to decide whether one should advise for or against a specific development. Beyond the outer risk zone there are no specified restrictions on developments.

Level of Sensitivity	Development in inner zone	Development in middle zone	Development in outer zone
Level 1	Do not Advise Against (DAA)	Do not Advise Against (DAA)	Do not Advise Against (DAA)
Level 2	Advise Against (AA)	Do not Advise Against (DAA)	Do not Advise Against (DAA)
Level 3	Advise Against (AA)	Advise Against (AA)	Advise Against (AA)
Level 4	Advise Against (AA)	Advise Against (AA)	Advise Against (AA)

*Decision Matrix*

#### 10.6. Site Specific Zoning

The area surrounding the site is commercial area. All the existing developments are Level 1. The existing zoning around Gas Hub is correct.

#### 10.7. Land Use Conflicts

There are no land use conflicts at the site.

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**11. EMERGENCY RESPONSE DATA****11.1. Emergency Plan**

<b>Document Name</b>	Non-Available
<b>Date of Document</b>	N/A
<b>Fire Fighting Addressed</b>	N/A
<b>Emergency Evacuation Addressed</b>	N/A
<b>Statutory Requirements</b>	N/A

## 12. CONCLUSION

### 12.1. Major Hazard Installation

This Assessment established that an incident involving the proposed LPG installation on the premises of Gas Hub in Hermanus could impact past the boundaries. The risks associated with this MHI were found to be low.

A site is deemed to be an MHI if more than the prescribed quantity is stored as per the General Machinery Act or if a product is stored, handled or produced which has the potential to cause a major incident as per the Operational Health and Safety Act.

### 12.2. 1% Consequence Lethality Distances

Component	Scenarios	1% Fatality Distance
<b>LPG installations</b>		
48kg LPG Cylinder	Catastrophic Vessel Failure BLEVE	14m
48kg LPG Cylinder	Catastrophic Vessel Failure VCE	14m
48kg LPG Cylinder	Vessel Leak-Jet Fire	12m
Bulk Vessel	Vessel Leak-VCE	14m
Bulk Vessel	Vessel Leak-Jet Fire	32m
Bulk Vessel	Vessel Catastrophic BLEVE	259m
LPG Road Tanker	Loading Hose Leak-Jet Fire	17m
LPG Road Tanker	Loading Hose Rupture-Jet Fire	70m
LPG Road Tanker	Road Tanker Failure-Flash Fire	27m
LPG Road Tanker	Road Tanker Failure-BLEVE	172m
LPG Road Tanker	Road Tanker Catastrophic Leak-VCE	94m

### 12.3. Risk Level Posed to Various Populations

Individual risk levels at several important points around the proposed installation:

#### At Northern Neighbour

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	85,4	3,93E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	14,6	6,71E-08
3.	Hose Shear (LPG Road Tanker)	0,0225	1,04E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000191	8,79E-13

#### At Southern Neighbour

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	48	3,95E-07
2.	Small Leak (LPG 45m3 Vessel)	35,4	2,91E-07
3.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	16,4	1,35E-07
4.	Hose Shear (LPG Road Tanker)	0,2	1,65E-09
5.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000107	8,80E-13

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**At Western Neighbour**

	Scenario	Contribution %	Risk Value
1.	Small Leak (LPG 45m3 Vessel)	73,2	1,75E-06
2.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	16,6	3,95E-07
3.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	10,2	2,44E-07
4.	Hose Shear (LPG Road Tanker)	0,0192	4,59E-10
5.	Catastrophic Vessel Failure (LPG Road Tanker)	3,61E-5	8,62E-13

**At Office**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	83,5	3,81E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	16,5	7,53E-08
3.	Hose Shear (LPG Road Tanker)	0,0159	7,24E-11
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000193	8,80E-13

**On Road**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	75,8	3,40E-07
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	24,2	1,08E-07
3.	Hose Shear (LPG Road Tanker)	0,0491	2,20E-10
4.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000196	8,80E-13

**Risk Ranking**

	Scenario	Contribution %	Risk Value
1.	Catastrophic Vessel Failure (LPG 45m3 Vessel)	74,6	6,75E-05
2.	Catastrophic Vessel Leak (LPG 45m3 Vessel)	8,13	7,35E-06
3.	Catastrophic Failure BLEVE (Storage Area 1)	5,16	4,66E-06
4.	Small Leak (LPG 45m3 Vessel)	3,22	2,91E-06
5.	Catastrophic Failure BLEVE (Main Cylinder Storage)	3,05	2,76E-06
6.	3.3mm Leak (Storage Area 1)	2,76	2,50E-06
7.	3.3mm Leak (Main Cylinder Storage)	2,76	2,50E-06
8.	3.3mm Leak (Filling Area)	0,166	1,50E-07
9.	Catastrophic Failure BLEVE (Filling Area)	0,152	1,38E-07
10.	Hose Shear (LPG Road Tanker)	0,0113	1,02E-08
11.	Small Leak (LPG Road Tanker)	0,00182	1,65E-09
12.	Catastrophic Vessel Failure (LPG Road Tanker)	0,000127	1,15E-10

**12.4. Risk Reduction Recommendations**

The following is recommended in order to reduce the risks associated with the installation:

- Good housekeeping always needs to be observed on site;
- All work must be done by qualified companies;

- Installation must comply to Local By-laws and applicable SANS 10087 part 7;
- Plans must be approved by the Local Council;
- This MHI report must be distributed to Local, Provincial and National Government as per MHI Regulations;
- The Fire Department must witness a pressure test prior to issuing flammable substance certificate.

#### 12.5. Emergency Plan

There is no Emergency Plan for the site. It is recommended that an Emergency Plan be drafted, and the following is recommended:

- The Emergency Plan must comply SANS 1514;
- The Emergency Plan must comply to the MHI Regulations;
- The Emergency Plan must be accepted and signed by management and the Local Authority.

#### 12.6. Review of Risk Assessment

This Risk Assessment is valid for the duration of 5 years from the above date unless:

- Changes have been made to the plant that can alter the risks on the facility;
- The Emergency Plan was invoked or there was a near miss;
- The changing neighbourhood could result in offsite risks;
- There is reason to suspect that the current Assessment is no longer valid.

#### 12.7. Risk Reduction Programmes

Risk reduction programmes should continually be investigated to reduce the impact from accidental fires and explosions on surrounding communities.

#### 12.8. Surrounding Land Development

The development of land surrounding the site should be done with caution as not to pose unnecessary risks onto the surrounding communities. This caution is aimed at ensuring the adjacent developments are suitable for the risk imposed.

#### 12.9. MHI Notification

In the event of the installation being deemed to be a Major Hazard Installation (MHI), the following levels of Government need to be notified:

- Local Authority;
- Provincial Government;
- National Government.

The process is as follows:

- Copy of this report, along with a cover letter notifying the fire department/ emergency services (Local Authority). A proof of receipt needs to be obtained from the Local Authority;
- Copy of the report, along with a cover letter notifying the Provincial Director from the Provincial Department of Labour. A proof of receipt needs to be obtained from the Provincial Department of Labour;
- An advert needs to be placed in a local newspaper informing the public about the MHI. The information that needs to be included in the advert is as follows:

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- Physical address of the MHI;
- Maximum quantity of the substance that resulted in the installation being classified as an MHI;
- Contact person where more information can be obtained;
- Notifying the public that they can comment/ object to the installation with the Department of Labour or the Local Authority;
- Expiry date of the 60-day commenting period;
- Copy of the report, along with a cover letter notifying the Chief Inspector from the National Department of Labour. Copies of the proof of receipts and a copy of the advert must be included.

13. PROOF OF COMPETENCY

**labour**Department:  
Labour  
REPUBLIC OF SOUTH AFRICANational Department of Labour  
Republic of South Africa**APPROVED INSPECTION AUTHORITY**

*Registered in accordance with the provisions of the Occupational Health and Safety Act, Act 85 of 1993, as amended and the Major Hazard Installation Regulations.*


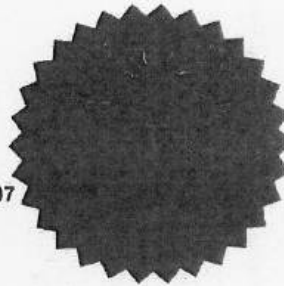
This is to certify that:

**MAJOR HAZARD RISK CONSULTANTS CC**

*has been registered by the Department of Labour as an Approved Inspection Authority: Type A, to conduct Major Hazard Installation Risk Assessment, in terms of Regulation 5(5)(a), of the Major Hazard Installation Regulations.*

**CONDITIONS OF REGISTRATION:**

- o The AIA must at all time comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993, as amended.
- o This registration certificate is not transferable.
- o This registration will lapse if there is a name change of the AIA or change in ownership.

  
**CHIEF INSPECTOR**Valid from: 21 January 2017  
Expires: 20 January 2021  
Certificate Number: CI MHI 0007

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## CERTIFICATE OF ACCREDITATION

*In terms of section 22(2)(b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-*

### MAJOR HAZARD RISK CONSULTANTS CC

Co. Reg. No.: 2007/079078/23

CAPE TOWN

Facility Accreditation Number: **MHI0017**

is a South African National Accreditation System accredited Inspection Body to undertake **TYPE A** Inspection provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation, Annexure "A", bearing the above accreditation number for

### THE ASSESSMENT OF RISK ON MAJOR HAZARD INSTALLATIONS


The facility is accredited in accordance with the recognised International Standard

**ISO/IEC 17020:2012**

The accreditation demonstrates technical competency for a defined scope and the operation of a management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates



  
Mr R Josias  
Chief Executive Officer

Effective Date: 21 January 2017  
Certificate Expires: 20 January 2021

This certificate does not on its own confer authority to act as an Approved Inspection Authority as contemplated in the Major Hazard Installation Regulations. Approval to inspect within the regulatory domain is granted by the Department of Labour.

**14. REFERENCES**

- Ale B J M (1991).** 'Risk Analysis and Risk Policy in the Netherlands and the EEC', J. Loss. Prev. Process Ind., 4(1), 58
- CPR 12 E (1997).** 'Methods for Determining and Processing Probabilities' ("Red Book") First Edition, TNO, Apeldoorn
- CPR 14 E (1997).** 'Methods for the Calculation of Physical Effects' ("Yellow Book"), Third Edition, TNO, Apeldoorn.
- CPR 16 E (1992).** 'Methods for the Determination of Possible Damage' ("Green Book"), First Edition, TNO, Apeldoorn.
- CPR 18 E (1999).** 'Guidelines for Quantitative Risk Assessment. ("Purple Book")', First Edition, TNO, Apeldoorn.
- EPA (1993).** 'Offsite Consequence Analysis: Risk Management Programme Guidance', May 1996.
- HSE (1989).** 'Risk Criteria for Land Use Planning in the Vicinity of Major Hazards', Health and Safety Executive, HMSO
- Schulze (1986).** 'Climate of South Africa: Climate Statistics up to 1984', WB 40, South African Weather Bureau, Pretoria, 474 pp.
- 'Reference Manual Bevi Risk Assessments Version 3.2'*
- SANS 1461:2018**
- HSE "Planning advice for developments near hazardous installations (PADHI)"**
- JRC Technical Reports (2017).** 'Handbook of Scenarios for Assessing Major Chemical Accident Risks', Gyenes., Wood M-H, Struckl M.
- RIVM Report 620100003/2005.** 'Distance Table Ammonia Refrigeration' PAM Uijt the Hague

15. APPENDICES

**15.1. Emergency Plan**  
*(Non-Available)*

**15.2. Material Safety Data Sheets**

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## SAFETY DATA SHEET

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## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** LPG (Liquid Petroleum Gas)

**Product Code:** LPG

**Product Use:** LPG is used as a domestic, commercial, industrial and automotive fuel, a feedstock in chemical processes and as propellant in pressurised aerosol containers.

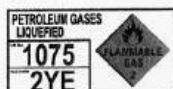
**Company Name:** Oryx Oil South Africa (Pty) Limited

**Address:** Ground Floor - Block A, Hobart Square Office Park, 10 Hobart Road, Bryanston, Republic of South Africa

**Telephone / Fax Number:** Tel: +27 (0) 10 045-0800 Fax: +27 (0) 10 045-0850

**Other Names:** Name: Product Code:  
Customer Contact Centre: +27 (0) 82 847 5198 Hazchem 1075

## 2. HAZARDS IDENTIFICATION



Classified as a Dangerous Good according to **NATIONAL ROAD TRAFFIC ACT, 1996 (ACT No 93 OF 199)**

Extremely flammable compressed gas or liquid.  
Explosive air / vapour mixtures may form at ambient temperature.  
Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, in basements, etcetera).  
Will cause cold burns and frostbite if skin contact with liquid occurs. Will present a risk of frostbite and serious damage to eye if contact occurs with the liquid.  
Abuse involving willful inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness or might prove fatal.

## 3. COMPOSITION / INFORMATION OF INGREDIENTS

**Information on Composition:** Chemical Composition  
Hydrocarbon mixture of propane and butane with propene (propylene) and butane (butylene). A small quantity (typically up to 50 ppm) of ethyl mercaptan (strenching agent) is commonly added to assist in leak detection.

LPG components: Typically	CAS No:	Proportion Vol%
Propane	74-98-6	55%
N-Butane	106-97-8	17%
Iso-Butane	75-28-5	26%
Ethane	74-84-0	2%
Ethyl mercaptan	75-08-1	< 50 ppm

**Other Information:** LPG varies slightly in composition and physical properties depending on source. It is possible that imported LPG could contain up to 5% of propene.

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## 4. FIRST AID MEASURES

<b>Inhalation:</b>	If exposure to vapour causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If symptoms persist, obtain medical advice. Unconscious patients must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth-to-mouth method (expired air resuscitation).
<b>Ingestion:</b>	Ingestion of product is unlikely.
<b>Skin:</b>	If cold burns are present, drench with water and obtain immediate medical advice. Keep clothes away from ignition sources.
<b>Eye:</b>	Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain <b>IMMEDIATE</b> medical advice.
<b>Advice to Doctor:</b>	Treatment should in general be symptomatic and directed to relieving effects. Monitor for cardiac dysrhythmias.
<b>Ingestion:</b>	No known effect

## 5. FIRE FIGHTING MEASURES

This material is delivered, stored and used at a temperature above its flash point and at pressure above normal atmospheric pressure.

For major fires, call the Fire Brigade immediately.

Ensure an escape path is always available from any fire.

There is a risk of flashback if sparks or hot surfaces ignite vapour.

Wear Self-Contained Breathing Apparatus (S.C.B.A.) and full protective clothing to minimise skin exposure.

If gas has ignited, do not attempt to extinguish but stop the flow of gas, if safe to do so, and allow to burn out. Water may be used to cool nearby heat exposed containers, and to protect surrounding areas and personnel effecting shut-off.

Every precaution must be taken to keep containers cool to avoid the possibility of a boiling liquid expanding vapour explosion (BLEVE).

Pressurised containers are liable to explode violently when subjected to high temperatures.

**Hazardous Combustion Products:**

See Stability and Reactivity, Section 10 of this Safety Data Sheet.

## 6. ACCIDENTAL RELEASE MEASURES

As the product has a very low flash point, any spillage or leak is a severe fire and/or explosion hazard.

Small quantities of spilled liquid may be allowed to evaporate. Vapour should be dispersed by effective ventilation.

If leak has not ignited, stop the flow of gas, if safe to do so and isolate sources of ignition. Evacuate all non-essential personnel from the immediate area.

Isolate the spillage from all ignition sources including road traffic.

Ensure good ventilation.

Liquid leaks generate large volumes of flammable vapour, which is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems). Wear protective equipment. (See Exposure Controls/Personal protection, Section 8 of this Safety Data Sheet for details).

If spillage/leakage has occurred in a confined space, ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry. Do not enter a vapour cloud. Control and remedy of large leaks should be effected by specialist personnel.

Protect drains from potential spills to minimise contamination.

In the event of a leak, contact the appropriate authorities.

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## 7. HANDLING AND STORAGE

<b>Handling:</b>	<p>Ensure good ventilation and avoid, as far as reasonably practicable, the inhalation and contact with vapours which may be generated during use. If vapour is generated, its concentration in the workplace air should be controlled to the lowest reasonably practicable level.</p> <p>Avoid contact with liquid and cold storage containers. Wear gloves and suitable overalls to prevent cold burns and frostbite. In cylinder filling operations, wear protective clothing including impervious themally insulated gloves, safety goggles and face shields. If there is a risk of high vapour concentrations, respiratory protection/breathing apparatus should be worn.</p> <p>When handling cylinders, wear protective footwear.</p> <p>Liquefied petroleum gas spill on clothing may give rise to delayed evaporation and subsequent fire hazard.</p> <p>Whilst using, do not eat, drink or smoke. Wash hands thoroughly after contact.</p>
<b>Storage:</b>	<p>Store and dispense only in well-ventilated areas away from heat and sources of ignition. Store and use only in equipment/containers designed for use with the product.</p> <p>Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated, and the tank atmosphere has been shown to contain hydrocarbon vapour concentrations below 1% of the lower flammability limit and an oxygen concentration of at least 20% by volume.</p> <p>Always have enough personnel standing by outside the tank with appropriate breathing apparatus and equipment to effect a quick rescue. Containers must be properly labelled and kept closed when not in use. Do not remove warning labels from containers.</p>
<b>Other information:</b>	<p>Fire prevention.</p> <p>Explosive air / vapour mixtures may form at ambient temperature.</p> <p>Ensure equipment used is properly earthed or bonded to the tank structure to prevent static accumulation.</p> <p>Exposure of storage vessels to excessive heat may cause relief valves to discharge vapour, or in extreme cases can lead to a boiling liquid expanding vapour explosion (BLEVE).</p> <p>If fuel encounters hot surfaces, or leaks occur from pressurised fuel pipes, the vapour or mists will create a flammability or explosion hazard. Do not weld, heat or drill the contained. Do not introduce an ignition source.</p> <p>Heating may cause an explosion.</p>

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>National Exposure Standards:</b>	<p>Ensure good ventilation. Avoid, as far as reasonably practicable, inhalation of vapour generated during handling. The vapour is an asphyxiant at high concentrations.</p> <p>If vapour is generated, its concentration in the workplace air should be controlled to the lowest reasonably practicable level.</p> <p>The Department of Labour recommends a Workplace Exposure Standard for an 8-hour time-weighted average exposure (TWA) of <b>1800 mg/m<sup>3</sup></b> for liquefied petroleum gas.</p>
<b>Respiratory Protection:</b>	<p>If operations are such that exposure to vapour may be anticipated, then suitable approved respiratory equipment should be worn.</p> <p>The use of respiratory equipment must be strictly in accordance with the manufacturers' instructions and any statutory requirements governing its selection and use.</p>
<b>Body Protection:</b>	<p>Wear suitable gloves and overalls to prevent cold burns and frostbite. In cylinder filling operations, wear protective clothing including impervious gloves, safety goggles or face shield.</p>

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Odour:</b>	Strong, mercaptan-like
<b>Boiling Point:</b>	-45°C to -0.5°C
<b>Vapour Pressure :</b>	500 kPa @ 15°C (400 kPa gauge)
<b>Vapour Density: (Air=1)</b>	1.75
<b>Physical State:</b>	Gas/Liquid
<b>Colour:</b>	Colourless
<b>Density:</b>	0.537 kg/L @ 15°C (liquid)
<b>Flash Point:</b>	-105°C (PMC) ASTM D 93
<b>Auto - Ignition temperature</b>	>450° C
<b>Flammable Limits :</b>	2.2%
<b>LEL</b>	
<b>Flammable Limits :</b>	9.5%
<b>UEL</b>	

## 10. STABILITY AND REACTIVITY

<b>Hazardous Polymerisation:</b>	Hazardous polymerisation reactions will not occur. This material is extremely flammable.
<b>Materials to Avoid:</b>	Avoid contact with strong oxidizing agents.
<b>Hazardous Decomposition Products:</b>	Incomplete combustion / thermal decomposition will generate smoke, carbon dioxide and hazardous gases, which will include carbon monoxide.
<b>Conditions to Avoid:</b>	Products of this type are stable and unlikely to react in a hazardous manner under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

<b>Inhalation:</b>	Likely to be irritating to the respiratory tract if high concentrations of vapour are inhaled. Low vapour concentrations may cause nausea, dizziness, headaches and drowsiness. May have a narcotic effect if high concentrations of vapour are inhaled. High vapour concentrations may produce symptoms of oxygen deficiency which, coupled with central nervous system depression, may lead to rapid loss of consciousness.
<b>Abuse:</b>	Under normal conditions of use, the product is not hazardous; however, abuse involving deliberate inhalation of very high concentrations of vapour, even for short periods, can produce unconsciousness and/or result in sudden fatality.
<b>Skin:</b>	Will cause cold burns and frostbite if skin contact with liquid occurs.
<b>Eye:</b>	Will present a risk of frostbite and serious damage to eye if contact occurs with the liquid.
<b>Sensitization:</b>	Not classified as causing skin or respiratory sensitisation.
<b>Mutagenicity</b>	Not classified as a mutagen.
<b>Carcinogenicity</b>	Not classified as a carcinogen.
<b>Reproductive toxicity</b>	Not classified as a reproductive toxin.

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## 12. ECOLOGICAL INFORMATION

<b>Mobility:</b>	Spillages are unlikely to penetrate the soil causing ground water contamination.
<b>Persistence / Degradability:</b>	This product is inherently biodegradable.
<b>Bioaccumulation:</b>	This is not expected to bio accumulate.
<b>Acute Toxicity - Other Organisms</b>	Unlikely to cause long term effects in the aquatic environment.
<b>Eco Toxicity</b>	Not toxic for flora, fauna or soil organisms. Will not cause long term adverse effect in environment and is not dangerous to the ozone layer.

## 13. DISPOSAL CONSIDERATIONS

Do not dispose of any LPG container. Return all cylinders / vessels to your supplier or Cylinder Test Station.  
 Empty containers may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty containers and should not be removed.  
 Empty containers represent a fire hazard as they may contain flammable product residues and vapour. Do not weld, heat or drill the container. Heating may cause an explosion.  
 Small quantities of LPG may be allowed to vaporise, but the vapour must be dispersed by efficient ventilation.

**Given the nature and uses of this product, the need for disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment must be under the supervision of qualified Technician. If this is not possible, contact the supplier.**

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## 14. TRANSPORT INFORMATION (National Road Traffic Act, 1996 (ACT No, 93 of 1996))

This material is classified as a Class 2.1 - Flammable Gas according to **Hazardous Substance (Classification) Regulations 2001**

Must not be loaded in the same freight container or on the same vehicle with:

- (Class 1) Explosives
- (Class 2.3) Toxic gases
- (Class 3) Flammable liquids
- (Class 4.2) Spontaneously combustible substances
- (Class 4.3) Dangerous when wet substances
- (Class 5.1) Oxidising substances
- (Class 5.2) Organic peroxides
- (Class 7) Radioactive materials unless specifically exempted.

Must not be loaded with in the same freight container, and on the same vehicle must be separated horizontally by at least 3 metres unless all but one is packed in separate freight containers with:

- (Class 4.1) Flammable solids.

**U.N. Number:** 1075

**Proper Shipping Name:** PETROLEUM GASES, LIQUEFIED

**DG Class:** 2.1

**Hazchem Code:** 2WE

**Packaging Method:** 5.9.2RT2

**Packing Group:** 2.1 Packing Group not Applicable

**Storage and Transport:** Marine Transport  
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods (IMDG) Code for transport by sea.

1075  
2.1 Flammable Gas  
2.1 Packing Group not Applicable  
PETROLEUM GASES, LIQUEFIED

**EmS:** 2-07  
**Stowage and Segregation Category:** E, Clear of living quarters

Air Transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

1075  
2.1 Flammable Gas  
2.1 Packing Group not Applicable  
PETROLEUM GASES, LIQUEFIED

Road Transport

Classified as a Dangerous Good according to NATIONAL ROAD TRAFFIC ACT, 1996 (ACT No 93 OF 199)

**UN-NO:** 1075  
**Class:** 2.1 Flammable Gas  
**Packing group:** 2.1 Packing Group not Applicable  
**Proper Shipping Name:** PETROLEUM GASES, LIQUEFIED

**EPG Number:** 2.1.001

**IERG Number:** 04

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## SAFETY DATA SHEET

SA-MS-PR-012-V01-E

6 March 2020

## 15. REGULATORY INFORMATION (Hazardous Substances (Classification) Regulations 2001)

This product is classified as a 2.1.1A - Flammable Gas; High Hazard, according to the Hazardous Substances (Classification) Regulations 2001.

## 16. OTHER INFORMATION

## Contact Person/Point:

This data sheet and the health, safety and environmental information it contains, is considered accurate as of the date specified above. We have reviewed any information contained herein which we received from sources outside Oryx Oil South Africa (Pty) Limited. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the data and information contained in this data sheet.

Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission, recommendation or authorisation given or implied to practise any patented invention without a valid licence. Oryx Oil South Africa (Pty) Limited shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of material.

\*\*\*\*\* End of SDS\*\*\*\*\*

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15.3. Drawings





**15.5. Frequency Analyses**

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<b>Flammable Installations</b>
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**PROJECT:** Gas Hub December 2020

**Vessels and Tanks (BEVI)**

Equipment Description	Scenario	Base Frequency	Reasons for Adjustment	Adjustment	Final Frequency
45m <sup>3</sup> Vessel	Pressure Vessel A/G Instant Release	5,00E-07	Typical Average System 1	1	5,00E-07
	Pressure Vessel A/G 30 Minute Release	5,00E-07	Typical Average System 1	1	5,00E-07
	Pressure Vessel A/G 10mm Leak	1,00E-05	Typical Average System 1	1	1,00E-05

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**Loading (BEVI)**

	Frequency of Use Per Annum	Sensor/le	Base Frequency	Conversion from /hr to /pa	Reasons for Adjustment	Final Frequency
UPC Road Tanker		312 Rapture Loading / Unload	4,50E-06	1,42666E-07	Typical Activity	1 1,42E-07
		312 Leak in Loading / Unload	4,50E-05	1,42666E-06	Typical Activity	1 1,42E-06
		312 Road Tank Pressure Vesse	5,80E-10	2,0675E-11	Typical Activity	1 2,07E-11

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**Cylinders**

Description	Amount of Cylinders Stored	Scenario	Base Frequency	Failure Frequency	Reasons for Adjustment	Final Frequency
Filling Area	10	Cylinder BLEVE	1.0E-07	1.0E-16	Typical Averaging	1 1.00E-06
	10	Cylinder Flash Fire	4.0E-07	4.00E-06	Typical Averaging	1 4.00E-05
	10	Cylinder Leak	8.0E-07	8.00E-06	Typical Averaging	1 5.00E-05
Storage Area	200	Cylinder BLEVE	N/A	N/A	N/A	N/A
	200	Cylinder Flash Fire	2.0E-07	2.00E-05	Typical Averaging	1 2.00E-05
	200	Cylinder Leak	4.0E-07	8.00E-05	Typical Averaging	1 8.00E-05
Storage Area	200	Cylinder BLEVE	N/A	N/A	N/A	N/A
	200	Cylinder Flash Fire	1.0E-07	2.00E-05	Typical Averaging	1 2.00E-05
	200	Cylinder Leak	5.0E-07	1.00E-04	Typical Averaging	1 1.00E-04

**15.6. HSE Development Sensitivity Tables**

**Table 1** Development type: People at work, parking**DT1.1** – Workplaces**DT1.2** – Parking area

Development type	Examples	Development detail and size	Justification
<b>DT1.1 – Workplaces</b>	Offices, factories, warehouses, haulage depots, farm buildings, non-retail markets, builder's yards	Workplaces (predominantly non-retail), providing for less than 100 occupants in each building and less than 3 occupied storeys – <b>Level 1</b>	Places where the occupants will be fit and healthy, and could be organised easily for emergency action. Members of the public will not be present or will be present in very small numbers and for a short time
	<b>Exclusions</b>		
		<b>DT1.1 x1</b> Workplaces (predominantly non-retail) providing for 100 or more occupants in any building or 3 or more occupied storeys in height – <b>Level 2</b> (except where the development is at the major hazard site itself, where it remains <b>Level 1</b> )	Substantial increase in numbers at risk with no direct benefit from exposure to the risk
	Sheltered workshops, Femploy	<b>DT1.1 x2</b> Workplaces (predominantly non-retail) specifically for people with disabilities – <b>Level 3</b>	Those at risk may be especially vulnerable to injury from hazardous events and/or they may not be able to be organised easily for emergency action
<b>DT1.2 – Parking areas</b>	Car parks, truck parks, lock-up garages	Parking areas with no other associated facilities (other than toilets) – <b>Level 1</b>	
	<b>Exclusions</b>		
	Car parks with picnic areas, or at a retail or leisure development, or serving a park and ride interchange	<b>DT1.2 x1</b> Where parking areas are associated with other facilities and developments the sensitivity level and the decision will be based on the facility or development	

**Table 2** Development type: Developments for use by the general public

**DT2.1** – Housing  
**DT2.2** – Hotel/hostel/holiday accommodation  
**DT2.3** – Transport links  
**DT2.4** – Indoor use by public  
**DT2.5** – Outdoor use by public

Development type	Examples	Development detail and size	Justification
<b>DT2.1 – Housing</b>	Houses, flats, retirement flats/ bungalows, residential caravans, mobile homes	Developments up to and including 30 dwelling units <b>and</b> at a density of no more than 40 per hectare – <b>Level 2</b>	Development where people live or are temporarily resident. It may be difficult to organise people in the event of an emergency
	<b>Exclusions</b>		
	Infill, backland development	<b>DT2.1 x1</b> Developments of 1 or 2 dwelling units – <b>Level 1</b>	Minimal increase in numbers at risk
	Larger housing developments	<b>DT2.1 x2</b> Larger developments for more than 30 dwelling units – <b>Level 3</b>	Substantial increase in numbers at risk
		<b>DT2.1 x3</b> Any developments (for more than 2 dwelling units) at a density of more than 40 dwelling units per hectare – <b>Level 3</b>	High-density developments
<b>DT2.2 – Hotel/hostel/holiday accommodation</b>	Hotels, motels, guest houses, hostels, youth hostels, holiday camps, holiday homes, halls of residence, dormitories, accommodation centres, holiday caravan sites, camping sites	Accommodation up to 100 beds or 33 caravan/ tent pitches – <b>Level 2</b>	Development where people are temporarily resident. It may be difficult to organise people in the event of an emergency

**Table 2** Development type: Developments for use by the general public (continued)

<b>DT2.2 – Hotel/ hostel/holiday accommodation</b>	<b>Exclusions</b>		
	Smaller – guest houses, hostels, youth hostels, holiday homes, halls of residence, dormitories, holiday caravan sites, camping sites	<b>DT2.2 x1</b> Accommodation of less than 10 beds or 3 caravan/tent pitches – <b>Level 1</b>	Minimal increase in numbers at risk
	Larger – hotels, motels, hostels, youth hostels, holiday camps, holiday homes, halls of residence, dormitories, holiday caravan sites, camping sites	<b>DT2.2 x2</b> Accommodation of more than 100 beds or 33 caravan/tent pitches – <b>Level 3</b>	Substantial increase in numbers at risk
<b>DT2.3 – Transport links</b>	Motorway, dual carriageway	Major transport links in their own right, ie not as an integral part of other developments – <b>Level 2</b>	Prime purpose is as a transport link. Potentially large numbers exposed to risk, but exposure of an individual is only for a short period
	<b>Exclusions</b>		
	Estate roads, access roads	<b>DT2.3 x1</b> Single carriageway roads – <b>Level 1</b>	Minimal numbers present and mostly a small period of time exposed to risk. Associated with other development
	Any railway or tram track	<b>DT2.3 x2</b> Railways – <b>Level 1</b>	Transient population, small period of time exposed to risk. Periods of time with no population present

**Table 2** Development type: Developments for use by the general public (continued)

<b>DT2.4 – Indoor use by public</b>	<p><b>Food &amp; drink:</b> Restaurants, cafes, drive-through fast food, pubs</p> <p><b>Retail:</b> Shops, petrol filling station (total floor space based on shop area not forecourt), vehicle dealers (total floor space based on showroom/sales building not outside display areas), retail warehouses, super-stores, small shopping centres, markets, financial and professional services to the public</p> <p><b>Community &amp; adult education:</b> Libraries, art galleries, museums, exhibition halls, day surgeries, health centres, religious buildings, community centres, Adult education, 6th-form college, college of FE</p> <p><b>Assembly &amp; leisure:</b> Coach/bus/railway stations, ferry terminals, airports, Cinemas, concert/ bingo/dance halls, Conference centres, Sports/leisure centres, sports halls, Facilities associated with golf courses, flying clubs (eg changing rooms, club house), indoor go-kart tracks</p>	Developments for use by the general public where total floor space is from 250 m <sup>2</sup> up to 5000 m <sup>2</sup> – <b>Level 2</b>	Developments where members of the public will be present (but not resident). Emergency action may be difficult to co-ordinate
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**Table 2** Development type: Developments for use by the general public (continued)

<b>DT2.4 – Indoor use by public</b>	<b>Exclusions</b>		
		<b>DT2.4 x1</b> Development with less than 250 m <sup>2</sup> total floor space – <b>Level 1</b>	Minimal increase in numbers at risk
		<b>DT2.4 x2</b> Development with more than 5000 m <sup>2</sup> total floor space – <b>Level 3</b>	Substantial increase in numbers at risk
<b>DT2.5 – Outdoor use by public</b>	<p><b>Food &amp; drink:</b> Food festivals, picnic areas</p> <p><b>Retail:</b> Outdoor markets, car boot sales</p> <p><b>Community &amp; adult education:</b> Open-air theatres and exhibitions</p> <p><b>Assembly &amp; leisure:</b> Coach/bus/railway stations, park &amp; ride interchange, ferry terminals. Sports stadia, sports fields/pitches, funfairs, theme parks, viewing stands. Marinas, playing fields, children's play areas, BMX/go-kart tracks. Country parks, nature reserves, picnic sites, marquees</p>	Principally an outdoor development for use by the general public, ie developments where people will predominantly be outdoors and not more than 100 people will gather at the facility at any one time – <b>Level 2</b>	Developments where members of the public will be present (but not resident) either indoors or outdoors. Emergency action may be difficult to co-ordinate
	<b>Exclusions</b>		
	Outdoor markets, car boot sales, funfairs. Picnic area, park & ride interchange, viewing stands, marquees	<b>DT2.5 x1</b> Predominantly open-air developments likely to attract the general public in numbers greater than 100 people but up to 1000 at any one time – <b>Level 3</b>	Substantial increase in numbers at risk and more vulnerable due to being outside

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Exclusions (continued)			
<b>DT2.5 – Outdoor use by public</b>	Theme parks, funfairs, large sports stadia and events, open-air markets, outdoor concerts, pop festivals	<b>DT2.5 x2</b> Predominantly open-air developments likely to attract the general public in numbers greater than 1000 people at any one time – <b>Level 4</b>	Very substantial increase in numbers at risk, more vulnerable due to being outside and emergency action may be difficult to co-ordinate

**Table 3** Development type: Developments for use by vulnerable people**DT3.1** – Institutional accommodation and education**DT3.2** – Prisons

Development type	Examples	Development detail and size	Justification
<b>DT3.1 – Institutional accommodation and education</b>	Hospitals, convalescent homes, nursing homes, Old people's homes with warden on site or 'on call', sheltered housing, Nurseries, crèches, Schools and academies for children up to school leaving age	Institutional, educational and special accommodation for vulnerable people, or that provides a protective environment – <b>Level 3</b>	Places providing an element of care or protection. Because of age, infirmity or state of health the occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult
	<b>Exclusions</b>		
	Hospitals, convalescent homes, nursing homes, old people's homes, sheltered housing	<b>DT3.1 x1</b> 24-hour care where the site on the planning application being developed is larger than 0.25 hectares – <b>Level 4</b>	Substantial increase in numbers of vulnerable people at risk
	Nurseries, crèches, schools for children up to school leaving age	<b>DT3.1 x2</b> Day care where the site on the planning application being developed is larger than 1.4 hectares – <b>Level 4</b>	Substantial increase in numbers of vulnerable people at risk
<b>DT3.2 – Prisons</b>	Prisons, remand centres	Secure accommodation for those sentenced by court, or awaiting trial etc – <b>Level 3</b>	Places providing detention. Emergency action and evacuation may be very difficult

**Table 4** Development type: Very large and sensitive developments**DT4.1** – Institutional accommodation**DT4.2** – Very large outdoor use by public

(Note: All Level 4 developments are by exception from Level 2 or 3. They are reproduced in this table for convenient reference)

Development type	Examples	Development detail and size	Justification
<b>DT4.1 – Institutional accommodation</b>	Hospitals, convalescent homes, nursing homes, old people's homes, sheltered housing	Large developments of institutional and special accommodation for vulnerable people (or that provide a protective environment) where 24-hour care is provided and where the site on the planning application being developed is larger than 0.25 hectare – <b>Level 4</b>	Places providing an element of care or protection. Because of age or state of health, occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult. The risk to an individual may be small but there is a larger societal concern
	Nurseries, crèches. Schools for children up to school leaving age	Large developments of institutional and special accommodation for vulnerable people (or that provide a protective environment) where day care (not 24-hour care) is provided and where the site on the planning application being developed is larger than 1.4 hectare – <b>Level 4</b>	Places providing an element of care or protection. Because of age the occupants may be especially vulnerable to injury from hazardous events. Emergency action and evacuation may be very difficult. The risk to an individual may be small but there is a larger societal concern
<b>DT4.2 – Very large outdoor use by public</b>	Theme parks, large sports stadia and events, open air markets, outdoor concerts, and pop festivals	Predominantly open air developments where there could be more than 1000 people present at any one time – <b>Level 4</b>	People in the open air may be more exposed to toxic fumes and thermal radiation than if they were in buildings. Large numbers make emergency action and evacuation difficult. The risk to an individual may be small but there is a larger societal concern

## Decision matrix

47 Having determined which zone the development falls into and also the sensitivity level of the development, the following matrix is used to decide the type of advice.

Level of sensitivity	Development in inner zone	Development in middle zone	Development in outer zone
1	DAA	DAA	DAA
2	AA	DAA	DAA
3	AA	AA	DAA
4	AA	AA	AA

DAA = Don't Advise Against development  
AA = Advise Against development

48 If all developments result in DAA, then DAA is the final HSE advice.

49 If any one development gives an AA result then the interim result for the consultation is AA. Each AA result is always subjected to an additional rule check (Rule 4) to determine if it will remain AA or change to a DAA. If any one development is still AA after application of this rule then the final advice will be AA.

## How the rules are applied

### Overview of the rules

50 The rules have been developed to allow consideration of the more complex planning consultations. More detail on each of the rules is given after this overview.

51 There are five main rules to consider for each development:

- **Rule 1 – Straddling developments.** When the site area of the proposed development lies across a zone boundary you need to use this rule to decide which zone will be used in the decision matrix. The CD is considered a zone boundary in this context.
- **Rule 2 – Multiple major hazards.** For each major hazard, you need to determine which zone the development is in, after applying the straddling rule if necessary. The final advice is decided on the basis of the most onerous of the zones that the development is in.
- **Rule 3 – Multiple-use developments.** You need to use this rule when the planning consultation is for a multiple use development (eg a mix of housing, indoor use by the public and a workplace). You need to identify the separate parts of the proposal according to the development types. You then need to group together all facilities of the same development type before proceeding (for example before going on to use the straddling rule – Rule 1).
- **Rule 4 – Developments which involve a small extension to an existing facility.** This rule is concerned with Advise Against responses and taking any

existing development on the site into account, if the proposed development is a **small** extension to the existing development, before deciding on the final advice. It is only concerned with 'extensions' to existing developments, not to new developments, or change of use, on sites which may have an existing use.

■ **Rule 5 – Temporary/time-limited planning permissions.**

**The rules in detail**

**Rule 1 – Straddling developments**

52 Use this rule set (1a, then 1b if applicable) when the site area of the proposed development lies across a zone boundary.

53 Rule 1a: Developments that 'straddle' zone boundaries will normally be considered as being in the innermost zone to the major hazard unless either of the two following conditions applies. The development is in the **outermost** of the zones if:

- less than 10% of the site area marked on the application for that development type is inside that boundary; or
- it is only car parking, landscaping (including gardens of housing), parks and open spaces, golf greens and fairways, or access roads etc, associated with the development that are in the inner of the zones.

54 Rule 1b: For the special case where the development straddles the CD boundary, follow the rule above, then:

- If, after using the rules, the development is 'considered' to be outside the CD, then there is no need to categorise further; a DAA response is appropriate.
- If, after using the rules, the development is 'considered' to be within the CD then look at all the facilities that make up the development proposal. Any that are **entirely outside** the CD should be discounted when coming to a decision about the sensitivity level. All the facilities that are **completely and/or partly inside** the CD are then considered together for the purpose of determining the sensitivity level. (If appropriate, apply the 'multiple-use developments' rule – Rule 3.)

*(NB: Rules 1a and 1b do not apply where the development type is a [sensitivity level 2] transport link. Even though this type of development is likely to 'straddle' zone boundaries, it must always be considered as being in the innermost of the zones to the major hazard that it straddles.)*

**Rule 2 – Multiple major hazards**

55 Where the development is in the CD of more than one hazardous installation and/or pipeline, it is necessary to determine which zone the development is in for each major hazard (after applying the straddling rule (Rule 1) if necessary). The overall advice is decided on the basis of the most onerous of any of the zones the development is in (inner zone more onerous than middle zone, middle zone more onerous than outer zone).

56 In some cases HSE has provided a composite three-zone map for complexes of adjacent major hazards and has merged the zones. In this case the assessment is simplified, as only the one three-zone map needs to be considered.

**Rule 3 – Multiple-use developments**

57 This rule set is used when the planning consultation is for multiple-use developments (eg a mix of housing, indoor use by the public and a workplace).

- First identify the separate parts of the proposal according to the development types, as in column 1 of Tables 1–4. Group together all facilities of the same development type and determine the sensitivity level of each of the groups. The only exception, where facilities are not grouped together, are sensitivity level 4 examples of 'Outdoor use by the public' and 'Institutional accommodation and education' development types. These should be considered separately to other (sensitivity level 3 and below) facilities of the same development type, but as part of the same consultation record.
- Determine which zone each development is in, if necessary using the straddling rule (Rule 1) for each development type.
- Determine the appropriate AA or DAA response from the decision matrix for each development.
- Apply Rule 4a.

**Rule 4 – Developments which involve a small extension to an existing facility**

58 Many proposed developments are not on 'green field' sites. They may involve extension to an existing development.

59 Rule 4a. First **consider the development in the application on its own merit** according to the normal procedure and rules. There are two outcome options:

- a DAA outcome, in which case there is no need to apply Rule 4b. (For 'multiple-use developments', if the application of Rule 3 results in all outcomes from the matrix being DAA, then that is the final advice. In which case there is no need to apply Rule 4b); or
- an AA outcome, then Rule 4b should be applied if appropriate. (For 'multiple-use developments', if the application of Rule 3 results in one or more AA outcomes from the matrix, then apply Rule 4b individually to every one of the development type groups resulting in these AA outcomes.)

*NB only the details supplied with the planning application or pre-planning enquiry are used to determine if, and how, Rule 4b applies.*

56 Rule 4b. Extensions (**including minor modifications, alterations, or additions**):

If...	Then...
<p>the proposal is for an extension to an existing development, and the proposed extension is of the same development type as the existing development that is going to be extended.</p> <p><b>And</b> the population at the development will not increase by more than 10% (or, if the population data is not readily available, the total floor area will not increase by more than 10%).</p>	<p>the consultation should be treated as though the proposed extension had a sensitivity level one less than the sensitivity level of the existing (ie not that of the proposed) development.</p> <p>If this reduced sensitivity level, combined with the zone that the extension is in, produces a DAA response, then this will replace the initial AA response.</p>
<p>For 'multiple-use developments', if the application of Rule 4b changes ALL of the AA outcomes to DAA.</p>	<p>this will replace the initial AA response.</p> <p>If at least one outcome remains AA, then an AA response is the final advice. Any remaining AA from 4b dominates for 'multiple-use developments' and an AA response is the final advice.</p>

**Rule 5 – Temporary/time-limited planning permissions**

57 HSE treats proposals for these the same way as any other planning permission consultations; no allowance is given for the time restriction. Existing temporary/time limited permissions are not taken into account when applying Rule 4, however.

## Glossary

**beds** the number of residents/visits for which sleeping accommodation is provided.

**consultation** the enquiry that comes to HSE (normally from a PA) for HSE's comment on a proposed change to land usage within a CD. The consultation will consist of at least one 'development'.

**development** to consider any planning proposal using the PADHI system, all proposed new buildings (or extension, change of use of land etc) need to be categorised into a PADHI 'development type'. A proportion of planning proposals will consist of more than one development type. Having identified all development types, each is subsequently assessed using the decision matrix. An Advise Against decision for any single development will dominate the final PADHI advice for the proposal.

**development type** (see the first column in the development type tables) term used to group together developments (and/or facilities) that are considered to be of the same sensitivity level.

**DPZ** development proximity zone.

**dwelling units** mean the smallest individual unit of accommodation, eg house, apartment, caravan.

**extension** clarification on what constitutes an extension is provided on the relevant PADHI+ Help screen, which can be accessed by clicking on the 'Help' button on the screen which asks if the proposed development is an extension to an existing development. If you do not have access to PADHI+, then contact the PA or HSE if you need further information.

**facilities** buildings and other provisions (eg picnic area, children's play area, park-and-ride bus stop) where people may congregate.

**'green field' site** site to be developed where the current use generally involves minimal buildings and also does not attract people to it in significant numbers. Typically agricultural land, but can also be parkland or other open spaces of a similar nature.

**hectare** unit of area equal to 10 000 square metres (m<sup>2</sup>) in any shape (eg rectangles 10 m x 1000 m or 25 m x 400 m; square 100 m x 100 m; or other regular and irregular shapes).

**LUP** land use planning.

**multiple-use development** see 'development'.

**PA** planning authority.

**PADHI** planning advice for developments near hazardous installations.

**pre-planning enquiry (PPE)** an informal, non-statutory LUP consultation made by a developer (or a PA) to determine what HSE's advice is likely to be before submitting a formal planning permission application to the PA.

**protective environment** there is provision of some element of supervision or care, eg by a warden being available on site or on call.

**school leaving age** the minimum age at which a young person can leave school – currently 16.

**sensitivity level** the scale used in the PADHI system to define the vulnerability of a development population to major accident hazards. It is based on pragmatic criteria; the type of development, likely numbers present and whether any vulnerable people will be present. The scale ascends from Level 1 to Level 4; the more vulnerable the population, the higher the sensitivity level.

**total floor space** – the area of buildings enclosed by the exterior walls multiplied by the number of floors (units are m<sup>2</sup>).

**use class** – the way different types of development are described by planners. They are not identical to HSE's development types or sensitivity levels.

**vulnerable people** – people who by virtue of age (children and elderly) and/or ill health may be particularly susceptible to the effects of a major accident.

## Annex 1

### HSE's land use planning advice provision

1 HSE's land use planning (LUP) advice is based on the recommendations of the Advisory Committee on Major Hazards (ACMH) enshrined in Government-agreed principles and framework; see for example Planning Circular 04/2000. These principles remain valid today. A failure to adopt them can only lead to non-compliance with Article 12 of the Seveso Directive. Indeed the principles and objectives HSE uses in giving its advice received strong support in a public consultation in 2007 (CD211 *Proposals for revised policies for HSE advice on development control around large-scale petrol storage sites*).

2 It is currently delivered promptly and transparently through the PADHI (planning advice for developments near hazardous installations) scheme, which is a codification of that given by HSE over the last 30 years or more. Pre-PADHI, HSE staff in local offices used a codified matrix from which the majority of consultations could be quickly turned around with either an 'allow' or 'refuse' decision. However, the system still required a significant number of consultations to be forwarded to a central HSE team of specialist risk assessors. The need for this risk assessment work resulted in a lengthy turnaround time on these consultations and was extremely resource intensive for HSE. Following a review of its position on land use planning around hazardous installations HSE developed a comprehensive, codified methodology, PADHI, which allowed all consultations to be dealt with at a local level, significantly speeding up the provision of advice to PAs.

3 Under Section 16 of the Town and Country Planning (Development Management Procedure) (England) Order 2010 (the 'DMPO'), Article 10 of the Town and Country Planning (General Development Procedure) Order 1995 as

amended (the 'GDPO') in Wales, and section 25 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008, decision-makers are required to consult HSE on certain planning proposals around major hazard establishments and major hazard pipelines and to take into account HSE's representations when determining associated applications. This is to ensure that the UK complies with Article 12 of the Seveso II Directive which has the specific objective of controlling certain new development to maintain adequate separation, including residential areas, buildings and areas of public use around major hazards when the development is such as to increase the risk or consequences of a major accident. In essence, decision-makers should ensure that new development does not significantly worsen the situation should a major accident occur.

4 In some instances there may already be existing development which is closer to a potentially hazardous installation. In these cases HSE has recognised the views of the ACMH as expressed in paragraphs 108 and 109 of their Second Report which read as follows:

*'108... The HSE is also frequently asked to comment on proposals to develop or to redevelop land in the neighbourhood of an existing hazardous undertaking where there may already be other land users which are closer and possibly incompatible. In these cases, HSE tells us that it takes the view, which we fully endorse, that the existence of intervening developments should not in any way affect the advice that it gives about the possible effects of that activity on proposed developments which may appear to be less at risk than the existing ones.'*

*'109... The overall objective should always be to reduce the number of people at risk, and in the case of people who unavoidably remain at risk, to reduce the likelihood and the extent of harm if loss of containment occurs...'*

5 HSE's approach balances the principle of stabilising and not increasing the numbers at risk with a pragmatic awareness of the limited land available for development in the UK. An HSE discussion document in 1989 (*Risk criteria for land-use planning in the vicinity of major industrial hazards* ISBN 978 0 1188 5491 7, available from HSE Books) sets out the basis of HSE's approach at that time.

6 The Government committee of experts, ACMH, which originally proposed HSE's role in the LUP system, did recognise *'the remote possibility that in some instances a local planning authority may not feel inclined, for a variety of reasons, to follow the advice of the Executive on particular applications for potentially hazardous developments or other developments in their vicinity.'* As a consequence, arrangements were set up so that in this rare circumstance, a planning authority is required by Planning Circular 04/2000 (England and Wales) or Circular 3/2009 (Scotland) to formally notify HSE of its intention to grant against HSE's advice. This is so that HSE can decide whether or not to request the Secretary of State to call-in the application for his own determination. There have been recent changes to procedures in Scotland. Part 3 of the Planning etc. (Scotland) Act 2006 introduced changes to the way in which the planning system will operate in Scotland. See Scottish planning circular 6/2009 *Planning Appeals*, and planning circular 7/2009 *Schemes of Delegation and Local Reviews*. These circulars accompany the Town and Country Planning (Schemes of Delegation and Local Review Procedure) (Scotland) Regulations 2008.

7 HSE's consideration of call-in should not be confused with its LUP advice delivered through PADHI; it is the latter which is provided to enable LUP decision-makers to comply with the objectives of Seveso II, Article 12. In line with Government policy, HSE normally requests call-in only in cases of exceptional concern (there have been only four such requests over the last 30 years in England

and Wales). However if HSE decides not to make such a request this does not mean that it has withdrawn its advice against permission, which remains on file and is likely to be published on the HSE website. **A decision not to request call-in does not disregard HSE's LUP advice.**

8 HSE's role in the LUP process is to provide independent advice on the residual risks from major accidents to people at certain proposed new developments. This is delivered through PADHI+ and planning authorities must 'seriously consider' it in accordance with Planning Circular 04/2000, which advises decision-makers that:

*'A5. In view of their acknowledged expertise in assessing the off-site risks presented by the use of hazardous substances, any advice from HSE that planning permission should be refused for development for, at or near a hazardous installation or pipeline, ..., should not be overridden without the most careful consideration.'*

Furthermore the Courts (Regina v Tandridge District Council, Ex parte Al Fayed, Times Law Report 28 January 1999) have decided that on technical issues, local authorities, while not bound to follow the advice of statutory bodies such as HSE, 'should nevertheless give great weight to their advice' when determining planning applications.

A published external review, *Analysis of planning appeal decision reports CRR262/2000*, concluded 'It is clear the HSE's risk policies have largely been upheld at planning appeals. It is viewed as a competent and expert body, and its advice provides considerable support to PA decisions.'

## Annex 2

**Types of development on which to consult HSE under the Town and Country Planning (Development Management Procedure) (England) Order 2010, the Town and Country Planning (General Development Procedure) Order 1995 (as amended) in Wales, and the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008**

The following circulars provide further guidance on when HSE is a statutory consultee:

DCLG Circular 04/2000  
SOEnD Circular 5/1993 (This document is not available on the internet)  
National Assembly for Wales Circular 20/01

They identify the following developments:

1 Within the Consultation Distance (CD) of major hazard installations/complexes and pipelines, HSE should only be consulted on developments involving:

- residential accommodation;
- more than 250 square metres of retail floor space;
- more than 500 square metres of office floor space;
- more than 750 square metres of floor space to be used for an industrial process;
- transport links (railways, major roads etc);
- a material increase in the number of persons working within, or visiting, a CD;
- and then only if the development is within the CD.

- 2 For licensed explosive sites the criteria are the same as above, but only if within the explosive site's safeguarding zone.
- 3 The Office for Nuclear Regulation (ONR) is a non-statutory consultee for certain developments near licensed nuclear sites. The criteria are:
- any development involving more than 50 people (or 20 people if previously advised of this figure by ONR) within the detailed emergency planning zone;
  - any development of more than 500 people within the outer zone (only applies on sites which have an outer zone).
- 4 HSE will also:
- advise hazardous substances authorities prior to them determining a hazardous substances consent application;
  - comment on planning developments involving quarries.
- 5 HSE does not give retrospective advice on planning applications where the decision has already been made by the planning authority.

## Annex 3

### Information needed when using PADHI

To properly apply the PADHI methodology to a planning proposal you will require the following information:

- 1 Sufficient details of the location of the proposed development to relate it to the consultation distance and the zones of all the relevant hazardous installations, complexes and pipelines.
- 2 Sufficient details of the proposed development, and those people likely to be there, to enable you to categorise the development within its 'sensitivity levels'. (If the proposal involves the extension of an existing facility then, to be able to take account of that when formulating the final advice, it is necessary to have similar information for that existing use.) These details should include:
  - Principal purpose of the proposed development.
  - The area (hectare or m<sup>2</sup>) of the development site.
  - Certain building sizes:

Development type	Indication
predominantly workplaces (ie not retail, community, leisure, accommodation etc) – the number of normally occupied storeys. Or at the very least an indication that:	<ul style="list-style-type: none"> <li>■ all buildings have less than 3 occupied storeys; or</li> <li>■ at least one building has at least 3 occupied storeys.</li> </ul>
for retail, community, assembly or leisure etc use – the total floor area (m <sup>2</sup> ). Or at the very least an indication if this total is:	<ul style="list-style-type: none"> <li>■ less than 250 m<sup>2</sup>; or</li> <li>■ between 250 m<sup>2</sup> and 5000 m<sup>2</sup>; or</li> <li>■ more than 5000 m<sup>2</sup>.</li> </ul>

Development type	Indication
<b>institutional accommodation and educational facilities</b> where day-care is provided – the total site area (hectares). Or at the very least an indication if this is:	<ul style="list-style-type: none"> <li>■ 1.4 hectares or less; or</li> <li>■ more than 1.4 hectares.</li> </ul>
<b>institutional accommodation and educational facilities</b> where 24-hour care is provided – the total site area (hectares). Or at the very least an indication if this is:	<ul style="list-style-type: none"> <li>■ 0.25 hectares or less; or</li> <li>■ more than 0.25 hectares.</li> </ul>

- For certain developments it is essential that there is an indication of the maximum number of people likely to be at the development at any one time. These may be actual numbers or best estimates/guesses. This can be in the form of:

Development type	Indication
<b>predominantly workplaces</b> (ie not retail, community, leisure, accommodation etc) – the number of people and the number of normally occupied buildings. Or at the very least an indication:	<ul style="list-style-type: none"> <li>■ that no building is likely to contain more than 100 people; or</li> <li>■ if any building is likely to contain more than 100 people.</li> </ul>
for <b>houses, flats, residential caravans</b> etc – the actual number of 'dwelling units'. Or at the very least an indication if it is for:	<ul style="list-style-type: none"> <li>■ less than 3 dwelling units; or</li> <li>■ between 3 and 30 dwelling units; or</li> <li>■ more than 30 dwelling units.</li> </ul>
for <b>hotels, hostels, campsites, caravan sites</b> etc – the actual number of beds. Or at the very least an indication if it is for:	<ul style="list-style-type: none"> <li>■ less than 10 beds, or less than 3 caravan/tent pitches; or</li> <li>■ between 10 and 100 beds, or between 3 and 33 caravan/tent pitches; or</li> <li>■ more than 100 beds, or more than 33 caravan/tent pitches.</li> </ul>
for <b>predominantly outdoor events</b> and outdoor facilities – the number of people anticipated. Or at the very least an indication if the event will attract a peak attendance of:	<ul style="list-style-type: none"> <li>■ less than 100 people; or</li> <li>■ between 100 and 1000 people; or</li> <li>■ more than 1000 people.</li> </ul>

## Annex 4

## HSE office addresses

Only HSE offices that deal with land-use planning are listed. Please address any correspondence to Health and Safety Executive, Hazardous Installations Directorate, Chemical Industries Division at the addresses below.

Offices	Geographical coverage
<b>SCOTLAND AND NORTH EAST</b>	
Belford House 59 Belford Road Edinburgh EH4 3UE	Scotland
BP6301 Benton Park View Newcastle-upon-Tyne NE98 1YX	Cleveland, Durham, Tyne & Wear, Northumberland, North Yorkshire (except Salby District Council)
Marshall House Ringway Preston PR1 2HS	Cumbria, Greater Manchester, Lancashire
<b>WALES &amp; WESTERN ENGLAND</b>	
Redgrave Court (HID C12) Merton Road Bootle Merseyside L20 7HS	Merseyside, Conwy, Gwynedd, Isle of Anglesey, Denbighshire, Flintshire, Wrexham, Shropshire, Staffordshire, Cheshire
1 Hagley Road Birmingham B16 8HS	West Midlands, Powys, Worcestershire, Gloucestershire, South Gloucestershire, Bristol
Government Buildings Ty Glas Llanishen Cardiff CF14 5SH	Cardiganshire, Pembrokeshire, Carmarthenshire, Swansea, Neath and Port Talbot, Bridgend, Rhondda Cynon, Taff, Blaenau Gwent, Merthyr Tydfil, Vale of Glamorgan, Cardiff, Caerphilly, Torfaen, Newport, Monmouthshire, North West Somerset, Bath and North East Somerset, Somerset, Devon, Cornwall, Isle of Scilly

GHH001

03 December 2020  
Health and Safety  
Executive

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SOUTH & EAST ENGLAND	
Foundry House 3 Millsands Riverside Exchange Sheffield S3 8NH	South Yorkshire, Humberside, Derbyshire, Nottinghamshire, Lincolnshire
The Lateral 8 City Walk Leeds LS11 9AT	West Yorkshire, Selby District Council
Wren House Hedgerows Business Park Colchester Road Springfield Chelmsford Essex CM2 5PF	Essex, Norfolk, Suffolk
900 Pavilion Drive Northampton Business Park Northampton NN4 7RG	Leicestershire, Northamptonshire, Oxfordshire, Bedfordshire, Buckinghamshire, Cambridgeshire, Warwickshire, Hertfordshire, London boroughs north of the Thames
Priestley House Priestley Road Basingstoke RG24 9NS	Berkshire, Dorset, Hampshire, Wiltshire, Isle of Wight, East & West Sussex, London boroughs south of the Thames, Surrey
Phoenix House 23-25 Cantelupe Road East Grinstead West Sussex RH19 3BE	Kent

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**H Boshoff**

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**From:** Havenga Makelaars <malita@telkomsa.net>  
**Sent:** Thursday, 12 August 2021 13:32  
**To:** H Boshoff  
**Cc:** 'Shaun Smith'; 'Koos Roelofse'; 'Charles Taylor'; 'Hennie Henn'; 'Pieter Grove'; zetschoeman@hotmail.com; hermanustoyota@mweb.co.za; 'Neil Wessels | Hamilton Russell Vineyards'; eddie@burmar.co.za  
**Subject:** ~~APPLICATION FOR DEPARTURE ERF 1787~~

Helgaard

We refer to your correspondence.

Last year we received a similar application on a neighbouring erf for the erection of a cellphone tower. This application was rejected by David Shakeshaeft our Approval Element Officer for Hermanus Property Owners Association. Rejections were also received from owners of neighbouring erf's.

As mr Shakeshaeft resigned in July 2021 there is currently no scrutineering architect appointed. However we have also received objections from owners of neighbouring erf's.

Furthermore we were informed that the neighbouring owners did not received the written notice regarding the above application from the Overstrand Municipality.

In view of the above the Hermanus Business Park Property Owners Association herewith decline the application for departure on erf 1787.

Regards

Malita Nigrini  
Managing Agents

1. **PLANS APPROVAL**

- 1.1 No building may be erected or altered without prior approval from the Architectural Consultant for the aesthetic design of the proposed work. This applies only to external proposals. All plans for such proposed construction work must be then submitted by the owner, or his representative, to the municipality for their formal approvals. Such plans not prepared for the owner by the Architectural Consultant shall be submitted to him for approval prior to submission to the Local Authority, for which he will be entitled to a plan scrutiny fee.
- 1.2 Where there are existing buildings on adjacent sites these must be considered in the design of the building. Site walling must be co-ordinated with the adjacent erf.
- 1.3 When the client makes use of the pre-purchased services of the Architectural Consultant in terms of the deed of sale then concept drawings must be prepared by the Architectural Consultant prior to the preparation of final working drawings which must bear the signature of the Architectural Consultant when submitted to the local authority.
- 1.4 Should any provision of this design manual be regarded as contrary to the National Building regulations then the National Building Regulations shall prevail.
- 1.5 The developers may approve waivers of any mandatory specifications under special circumstances where such waivers are recommended by the Architectural Consultant.

2. **THE SITE**

- 2.1 The building lines are set by the local authority, and as modified by the Architectural Consultant
- 2.1.1 Along Trunk Road 28 : 5.0 metres set back from site boundary.
- 2.1.2 Along Schulphoek Road : 6.0 metres set back from site boundary.
- 2.1.3 All internal access roads : 6.0 metres set back from site boundary.
- 2.1.4 All side and rear boundaries for the industrial erven require nil set back provided that council may require set back building lines in the interest of public health or in order to enforce any law or right.

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- 5.10.6 The right to sue and to defend actions in the name of the Association and to appoint legal representatives for this purpose, in particular and without derogating in terms of the Constitution;
- 5.10.7 The performance of such acts as are required to ensure the security of persons and property in the Development;
- 5.10.8 The management of such rights as may exist in favour of the Association;
- 5.10.9 The appointment of an Architectural Consultant to assist Management in exercising its powers in terms of this Constitution;
- 5.10.10 Assess and impose a scrutiny fee payable in order to implement clause 9;
- 5.10.11 The prescription in accordance with the Design Guide Document (Annexure "A") of the architectural style and the materials to be used in respect of any buildings to be erected or in respect of any alterations or additions to be carried out to existing buildings and in particular to control the exterior design of such buildings and the materials and colours used so as to ensure an attractive, aesthetic and pleasing character to the buildings in the Development;
- 5.10.12 The provisions of 5.10.11 shall apply mutatis mutandis to other site works on a member's property, including but not limited to, fences, pergolas, boundary walls and pavings;
- 5.10.13 The appointment of an auditor or a person qualified to act as financial officer of a Close Corporation to do an annual audit of the Association's financial records.
- 5.11 Members of Management shall not be entitled to any fees or salaries in respect of the performance of their duties as members of Management, but shall be entitled to reimbursement of all bona fide expenses incurred including travelling and subsistence expenses occasioned in the course of the exercise of the duties and such remuneration as the Annual General Meeting (AGM) may approve.
- 5.12 No member of Management shall be liable to the Association or to any member thereof, or to any other person whomsoever for any act or omission by himself, by the Association or by its servants or agents. A Management member shall be indemnified by the Association against any loss or damage suffered by him in consequence of any purported liability, provided that such member has, upon the basis of information known to him, or which should reasonably have been known to him, acted in good faith and without gross negligence.

6.

**GENERAL MEETINGS :**

- 6.1 An Annual General Meeting of members shall be held during March of every year at such time and place as may be determined by Management and the matters that will be dealt with at the AGM shall include, but not limited to :
  - 6.1.1 the receipt of a report on the affairs of the Association;
  - 6.1.2 the election of members to Management
  - 6.1.3 the adoption of the minutes of the previous Annual General Meeting;
  - 6.1.4 the adoption of the balance sheet and accounts;
  - 6.1.5 the consideration of any resolutions concerning the affairs of the Association of which due notice has been given;
  - 6.1.6 the determination of the monthly levy to be charged out against all members of the Association to give proper effect to the carrying out of the objects of the Association for the ensuing year;
  - 6.1.7 the approval of rules made in terms of paragraph 5 and of rules concerning the use of facilities and conduct of members and access to facilities; and
  - 6.1.8 any other business.
- 6.2 Additional ordinary general meetings of members may be called by Management when deemed necessary.
- 6.3 Extra-ordinary general meetings of members may also be convened upon the written request of not less than fifty percent of members, which request must be directed to the Chairman of Management.

**CONSTITUTION OF  
HERMANUS BUSINESS PARK  
PROPERTY OWNERS ASSOCIATION**

**INDEX**

**CONSTITUTION OF HERMANUS BUSINESS PARK PROPERTY  
OWNERS ASSOCIATION**

**ANNEXURE A**  
**DESIGN GUIDE DOCUMENT**

**CONSTITUTION OF**  
**HERMANUS BUSINESS PARK**  
**PROPERTY OWNER'S ASSOCIATION**

**CONSTITUTION OF THE HERMANUS BUSINESS PARK PROPERTY OWNERS' ASSOCIATION**

1.

**NAME :**

The name of the association is : Hermanus Business Park Property Owners' Association, which is an association established in terms of the provisions of Section 29 of the Land Use Planning Ordinance, Cape Ordinance No. 15 of 1985, as amended.

2.

**DEFINITIONS :**

In this constitution unless the context indicates the contrary :

- 2.1 "the Association" shall mean : Hermanus Business Park Property Owners' Association.
- 2.2 "the Developer" shall mean Cape Coastal Developments (Pty) Ltd or its successors-in-title, in respect of Erf 1484 Sandbaai and Sandbaai Development Trust or its successors-in-title, in respect of Portion 353 of the farm Onrus River no: 581.
- 2.3 "the Development" shall mean the entire scheme of development undertaken by the Developer and comprising the land and improvements thereon, or any sub-division thereof, of Erf 1484 Sandbaai., situate in the area of the Greater Hermanus Transitional Local Council, division of Caledon and Portion 353 of the farm Onrus River no: 581.
- 2.4 "person" shall include a Company, Close Corporation, Partnership, Trustees for the time being of a Trust, Club or other Association of persons entitled by law to hold title to immovable property;
- 2.5 "unit" means a portion of land registered or capable of being registered in a Deeds Registry;
- 2.6 "member" shall mean a member as designated in clause 4 hereof;
- 2.7 "owner" means, the person in whose name an unit, or in whose favour and interest in, an unit is registered; and
- 2.8 words importing the singular number shall include the plural and the converse shall also apply; the masculine gender shall include the feminine and neuter genders and the neuter gender shall include the masculine and feminine genders.

3.

**OBJECTIVES AND DUTIES OF THE ASSOCIATION :**

The objectives and duties of the Association are:

- 3.1 the promotion, advancement and protection of the Communal Interests of the members.
- 3.2 the promotion and enforcement of standards for businesses conducted and persons living on the property in such a way that members may derive the maximum collective benefit therefrom;
- 3.3 the promotion and maintenance of acceptable aesthetic, environmental and architectural styles and design criteria for the Development;
- 3.4 To ensure that members satisfactorily maintain their erven in the development and the buildings thereon;
- 3.5 In general to do everything necessary to promote the well being of all residents of the development; and
- 3.6 the Association shall have the powers to do such as are necessary to accomplish these objectives.

4.

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**MEMBERS :**

- 4.1 The Association shall be constituted without capital, and membership thereof shall be evidence by registered ownership in the Deeds Registry in Cape Town of one or more units on the property. Upon registration of ownership of a unit, membership of the Association shall be automatic and members shall be obliged to comply with the provisions of this Constitution. No person shall be entitled to cease to be a member of the Association while remaining the registered owner of a unit on the property.
- 4.2 Notwithstanding anything to the contrary herein or elsewhere contained, the Developer shall be a member in respect of each unit not registered in the name of a member as envisaged in sub para 4.1.
- 4.3 Each member shall be entitled to one vote for each unit owned on the property.
- 4.4 Where two or more persons own one unit, the registered owners of that unit shall be deemed jointly and severally to be one member of the Association.
- 4.5 Membership shall be transferred by the registration of a deed of transfer in the Deeds Registry at Cape Town, passing transfer of one or more units on the property from the previous member to the new member. The following condition being imposed in the Deed of Transfer in favour of the Hermanus Business Park Property Owners Association, " subject to a condition imposed in favour of the Hermanus Business Park Property Owners Association (the association) that the property being transferred may not be transferred without the written consent of the Association first being obtained which consent may only be withheld if;
- a) The transferee is in breach of any terms of the constitution or rules of the Association and has not remedied the breach; and / or
  - b) The transferee has failed to pay the levy owing to the Association up to the date of transfer or has failed to make adequate provision for the payment of the aforesaid levies up to the date of transfer of the property as sold; and / or
  - c) The proposed new owner of the property has failed to sign an application for membership of the Association as provided for by the Association in which such proposed new owner has undertaken to comply with all the terms and provisions of the constitution and rules.
- 4.6 Should the registered owner or his successor in title sell, donate or in any manner alienate or transfer his property, the contract in respect of such sale, donation, alienation or transfer of the unit shall be subject to the approval of Management, (as defined in sub para 5.1) which approval shall not be unreasonably withheld. The cession of a members interest in a Close Corporation or a change in the controlling interest in the shareholding in a Company will be deemed to be a transfer of property for the purposes of this clause.
- 4.7 Every member shall pay a monthly levy to the Association, which levy shall be determined by the Association during a general meeting. The liability for the payment of levies shall commence on the Member taking transfer of one or more units and shall be payable monthly in advance.

5.

**MANAGEMENT :**

- 5.1 The affairs of the Association shall be managed by the Management Committee ("Management") as herein later described and shall consist of three persons who are elected by members of the Association annually at the Annual General Meeting.
- 5.2 Management may fill any vacancy in their number or co-opt any additional member(s), provided that the number of management members shall not exceed five persons. Any management member so appointed or co-opted shall hold office until the next Annual General Meeting when he shall retire.

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- 5.3 Members of Management shall cease to hold office as such if by notice in writing to Management he resigns his office, or becomes of unsound mind, or surrenders his estate as insolvent or his estate is sequestrated, or he is convicted of an offence which involves dishonesty, or he absents himself from three consecutive meetings of Management without special leave of absence, or he is removed from office by resolution of a General Meeting of the Association.
- 5.4 Management shall meet at such time and place as determined by Management from time to time, provided that the first meeting shall be held within fourteen days of the Annual General Meeting. Special meetings may be called by the Chairman. Three members of Management may also at any time convene a meeting by giving to the other members no less than ten days written notice of the proposed meeting, which notice shall specify the reason for calling such a meeting, provided that in cases of emergency such shorter notice as is reasonable in the circumstances may be given.
- 5.5 Two members of Management shall form a quorum at any meeting and if a quorum is not present within ten minutes of the appointed time of a meeting, such meeting shall stand adjourned to the same day of the following week at the same time.
- 5.6 If the number of Management members falls below the number necessary to form quorum, the remaining members may continue to act but only for the purposes of convening a general meeting of members.
- 5.7 Management shall keep minutes of meetings held and decisions taken, which minutes shall be tabled at the following Management meeting and a full annual report will be submitted by Management to the Annual General Meeting.
- 5.8 At the commencement of the first meeting of Management after each Annual General Meeting, Management shall elect from its members a Chairman, a Secretary and a Treasurer who shall ipso facto be Chairman, Secretary and Treasurer of the Association. The Office Bearers so elected shall hold office as such until the end of the next ensuing Annual General Meeting.
- 5.9 All matters at any meeting of Management shall be determined by a majority of those present. In the event of an equality of votes, the Chairman of any meeting shall have the casting vote.
- 5.9.1 Until such time that all the units in the Development shall have been sold and transferred from the Developer to third parties, the Developer shall :
- a) Be represented on the Management Committee by one of its shareholders or a person duly nominated by the Developer at any annual general meeting, special general meetings and any Management meetings;
  - b) Have the right to veto all resolutions taken by an annual general meeting, a special general meeting and any Management meeting; and
  - c) Clause a) and b) above are for the sole benefit of the Developers and can be waived by the Developers at any time.
- 5.10 The Management and administration of the Association shall vest in Management, and Management may exercise all such powers of the Association and execute on behalf of the Association, all such acts as may be executed by the Association itself and as are not by this Constitution required to be exercised or executed by the Association at its general meeting.
- Without in any way limiting the generality of the foregoing, such powers shall include but not limit the performance of such acts as are necessary to accomplish the objects expressed or implied herein :
- 5.10.1 The investment and re-investment of monies of the Association not immediately required in such manner as may from time to time be determined;
  - 5.10.2 The operation of a banking account with all powers required for such operation;
  - 5.10.3 The making of, entering into and carrying out of contracts or agreements for any of the purposes of the Association;
  - 5.10.4 The employment and payment of agents, managers, employees, maintenance staff and servants and any other persons;
  - 5.10.5 The making, amendment and repeal of rules and regulations which shall be binding on members as if they form part of this Constitution;

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- 5.10.6 The right to sue and to defend actions in the name of the Association and to appoint legal representatives for this purpose, in particular and without derogating in terms of the Constitution;
- 5.10.7 The performance of such acts as are required to ensure the security of persons and property in the Development;
- 5.10.8 The management of such rights as may exist in favour of the Association;
- 5.10.9 The appointment of an Architectural Consultant to assist Management in exercising its powers in terms of this Constitution;
- 5.10.10 Assess and impose a scrutiny fee payable in order to implement clause 9;
- 5.10.11 The prescription in accordance with the Design Guide Document (Annexure "A") of the architectural style and the materials to be used in respect of any buildings to be erected or in respect of any alterations or additions to be carried out to existing buildings and in particular to control the exterior design of such buildings and the materials and colours used so as to ensure an attractive, aesthetic and pleasing character to the buildings in the Development;
- 5.10.12 The provisions of 5.10.11 shall apply mutatis mutandis to other site works on a member's property, including but not limited to, fences, pergolas, boundary walls and pavings;
- 5.10.13 The appointment of an auditor or a person qualified to act as financial officer of a Close Corporation to do an annual audit of the Association's financial records.
- 5.11 Members of Management shall not be entitled to any fees or salaries in respect of the performance of their duties as members of Management, but shall be entitled to reimbursement of all bona fide expenses incurred including travelling and subsistence expenses occasioned in the course of the exercise of the duties and such remuneration as the Annual General Meeting (AGM) may approve.
- 5.12 No member of Management shall be liable to the Association or to any member thereof, or to any other person whomsoever for any act or omission by himself, by the Association or by its servants or agents. A Management member shall be indemnified by the Association against any loss or damage suffered by him in consequence of any purported liability, provided that such member has, upon the basis of information known to him, or which should reasonably have been known to him, acted in good faith and without gross negligence.

6.

**GENERAL MEETINGS :**

- 6.1 An Annual General Meeting of members shall be held during March of every year at such time and place as may be determined by Management and the matters that will be dealt with at the AGM shall include, but not limited to :
  - 6.1.1 the receipt of a report on the affairs of the Association;
  - 6.1.2 the election of members to Management
  - 6.1.3 the adoption of the minutes of the previous Annual General Meeting;
  - 6.1.4 the adoption of the balance sheet and accounts;
  - 6.1.5 the consideration of any resolutions concerning the affairs of the Association of which due notice has been given;
  - 6.1.6 the determination of the monthly levy to be charged out against all members of the Association to give proper effect to the carrying out of the objects of the Association for the ensuing year;
  - 6.1.7 the approval of rules made in terms of paragraph 5 and of rules concerning the use of facilities and conduct of members and access to facilities; and
  - 6.1.8 any other business.
- 6.2 Additional ordinary general meetings of members may be called by Management when deemed necessary.
- 6.3 Extra-ordinary general meetings of members may also be convened upon the written request of not less than fifty percent of members, which request must be directed to the Chairman of Management.

-5-

- 6.4 The Annual General Meeting shall be convened on not less than 21 days' notice in writing, but ordinary and extra-ordinary general meetings shall be called by not less than 14 days' notice in writing. The notices of a meeting shall include the day on which it is given and shall specify the place, the day and the hour of the meeting and the general nature of the matters to be discussed, provided that any meeting shall, notwithstanding that it is convened by shorter notice than that specified, be deemed to have been correctly convened if it is so agreed by ninety percent of the members present.
- 6.5 No matter shall be discussed at any meeting unless a quorum is present when the meeting commences. For this purpose, the quorum shall be members present in person or by proxy and being not less than 75 (seventy five) percent of the members of the Association.
- 6.6 If a quorum is not present within half an hour from the time on which a meeting was supposed to commence, such meeting shall be dissolved to the same day in the next week at the same time and place and if at such adjourned meeting a quorum is not present within half an hour from the time appointed for the commencement of the meeting, the members present shall be a quorum. All members of the Association shall be given notice of such adjourned meeting.
- 6.7 The Chairman of Management shall preside at every general meeting, but if there be no such Chairman, the members present shall choose a Chairman from the members of management, or if no such members are present, they shall choose some person present to be Chairman of the meeting.
- 6.8 Any matter requiring a vote at any meeting shall be decided by a show of hands except when electing a new Management member, which shall be by secret ballot.
- Each member, whether present in person or by proxy, shall have one vote for every unit registered in his name, and all resolutions taken shall be by simple majority. A declaration by the Chairman of the result of the voting and the entry thereof in the minute book of the Association shall be conclusive evidence of that fact.
- Votes may be given either personally or by proxy and the instrument of appointing a proxy shall be in writing in any form approved by Management.
- 6.9 Any Company, Close Corporation or Trust which is a member of the Association may, by resolution of its directors or other governing body, authorise such person as it thinks fit to act as representative at any meeting of the Association and the person so authorised shall be entitled to exercise the same powers on behalf of the Company, Close Corporation or Trust which he represents as if it were an individual member of the Association.

7.

**LEGAL STATUS :**

The Association shall be an Association :

- 7.1 with legal personality, capable of suing and being sued in its own name; and
- 7.2 none of whose members in their personal capacities shall have any right, title or interest to or in the property, funds or assets of the Association, which shall vest in and be controlled by the Management in terms hereof; and
- 7.3 not for profit, but for the benefit of the owners of units situate in the Development; and
- 7.4 with the right to acquire, hold, lease and alienate property, both movable and immovable.

8.

-6-

**LEVIES :**

- 8.1 The Association shall be entitled to levy contributions from members as may be determined by Management for the purpose of meeting all the expenses the Association has incurred, or to which Management reasonably anticipate the Association will have to incur and in general to fulfil its obligations as envisaged in Clause 3 above. Such levies may be fixed annually but shall be collected monthly in advance.
- 8.2 Within 14 (Fourteen) days after the first Annual General Meeting the levy payable per unit shall be determined by Management and such levies shall be retrospective from the date of registration of a unit in the name of a member.
- 8.3 If a monthly payment due in advance on account of the annual levy is not paid within 7 (Seven) days of due date, the Association may institute legal proceedings against the member for the recovery of the full annual levy. The costs of such proceedings shall be paid by such member on the scale as between attorney and own client and shall be added to the levy. Interest will be charged at prime plus three percent from the date until the full amount outstanding has been paid in full.
- 8.4 A member whose levy is not paid on the due date shall not be entitled to vote at any general meeting, nominate candidates for election to Management, or to serve on Management whilst any payment is outstanding.
- 8.5 The levy payable by a member shall bear the same proportion to the total levy imposed on members, as the area of the unit registered in the name of that member bears to the aggregate area of all the units.
- 8.6 Management shall cause proper books of accounts of the administration and finance of the Association to be kept at the domicile of the Association or such other place or places as it may think fit.
- 8.7 All net income howsoever derived shall be capitalised to the levy fund of the Association and may only be applied for the common benefit of the Association in such manner as may be approved by the Annual General Meeting.

9.

**SUBMISSION OF PLANS :**

Members other than the Developer shall be obliged to submit any building plan, whether such plan is for new construction, renovations, alterations or additions, to the Management for examination and approval, prior to the submission of such plan to the local authority for approval. (Refer Design Guide Document - Annexure "A")

10.

**DOMICILLIUM :**

- 10.1 For all purposes including the giving of notices and the serving of legal process, the Association and each member chooses the domicilium citandi et executandi as follows :
- 10.1.1 The Association - 334 Main Road, Hermanus
- 10.1.2 Each Member - at the unit registered in his name whether or not such unit is vacant land,

provided that the Association or any Member may at any time by written notice change his domicilium citandi et executandi to some other address which new address shall be in the Republic of South Africa and shall not be a post office box or post restante, and provided further that such change shall become effective only fourteen (14) days after receipt of the notice in question.

11.

-7-

**NOTICES :**

Any notice which may be required to be given in terms of this Constitution, may be given by the despatch of such notice in writing by prepaid post in which event such notice shall be deemed to have been received seven days after the posting thereof from any post office within the Republic of South Africa.

The chosen address for the purpose of notice to a member shall ipso facto be the chosen domicilium citandi et executandi of that member.

12.

**AMENDMENTS TO CONSTITUTION :**

This constitution shall not be altered or amended in any way save with the consent of 70 % (seventy) of the members of the Association present at a Special and /or Annual General Meeting subject to the provisions of clause 5.9.1. and always, also the consent of the Greater Hermanus Transitional Local Council, it's successors or assigns, as responsible Authority, only in respect of changes to the Design Guide Document.

13.

**WINDING UP :**

- 13.1 The Association may be wound up by a Resolution of the Members in general meeting provided that :
- 13.1.1 NINETY PERCENT (90%) of the members present or represented at the meeting, duly convened, vote in favour thereof; and
  - 13.1.2 The Developer consents thereto, and
  - 13.1.3 The Local Authority consents thereto.
- 13.2 In the event of such winding up, it shall be the duty of Management, or a receiver to be appointed by it, to convert the Association's assets into cash, pay all the liabilities of the Association and thereafter distribute the rest to all the members in accordance with the number of units registered in the name of each member. If, within a period of TWELVE (12) months from such distribution, the Management or the receiver is unable to find, locate or trace any Member, such Members share shall then be paid to the Guardian's Fund.

14.

**PERSONAL LIABILITY OF MEMBERS . INTERPRETATION / DISPUTES**

- 14.1 No member of the Association shall incur any personal liability on or on behalf of the Association for any reason whatsoever.
- 14.2 Every member of the Management and all other officers or servants of the Association shall be indemnified by it against all losses, costs or damages arising out of occupation of office whilst acting reasonably within the scope of his/her authority.
- 14.3 While clause 5.9.1 hereof is in force, the Developers interpretation of this Constitution and any rules and regulations of the Association shall be binding on the member.

- 8-
- 14.4 Any other dispute whatsoever between members, including a dispute as to interpretation of this Constitution which arises after clause 5.9.1 hereof no longer applies, shall subject to the provisions of clause 14.7, be referred for decision to a practicing Advocate of the Cape Bar of not less than ten (10) years standing, or in the event of a dispute in the case of clause 5.10.11 and 5.10.12 to an Architect of not less than five (5) years standing, agreed upon by the parties to the dispute, who shall then, acting as an expert and not as an Arbitrator, determine the dispute and his decision shall be final and binding upon the parties and capable of being enforced in a Court of Law.
- 14.5 In the event of the parties being unable to agree upon the Advocate who should be appointed to determine the dispute, then he shall be nominated by the President of the Cape Bar Council.
- 14.6 In the event of the parties being unable to agree upon the Architect who should be appointed, he shall be nominated by the President of the Cape Provincial Institute of Architects.
- 14.7 Notwithstanding anything to the contrary herein contained, Management shall at its sole option be entitled to Institute proceedings in the Court having jurisdiction for any relief to which it is entitled under the provisions of this Constitution including the recovery of arrears levies

15

**GENERAL**

- 15.1 The registered owner shall not make any alterations, additions or demolitions to the exterior of the property including boundary walls, fences, landscaping etc , nor shall he be permitted to paint or change the colour scheme of the outside or exterior of any wall or structure whatsoever without the written consent of the Association.
- 15.2 The registered owner and his successor in title shall permit access to the property by the Association, for the purpose of maintaining, cleaning, renovating, repairing, renewing, altering and adding to any property of the Association or any improvement thereon of any nature, and shall not do anything which will prevent or hinder any such access or work from being done. The cost incurred in the aforementioned regard shall be covered by the levy fund referred to in clause 8 herein above.
- 15.3 No member shall be entitled to dump waste or other material or matter within the development, or on any unit, and shall be liable for payment of the cost of rectifying the damage or removal of material or goods.
- 15.4 No member shall be allowed to display any advertisement or sign on his unit nor do or suffer to be done on the same anything which in the opinion of Management can be noisome, injurious, objectionable, or detrimental, or a public nuisance, or a source of damage, or disturbance to any other owner, tenant or occupier of a unit in the development.
- 15.5 Every member shall observe and comply with all laws, ordinances, by-laws and regulations or rules imposed by any statutory or other authority.
- 15.6 Funds available for investment may only be invested with registered Financial Institutions as defined in Section 1 of the Financial Institutions (Investment of Funds) Act, 1984 and in shares listed on a licensed Stock Exchange as defined in the Stock Exchange Control Act, 1985 (Act No1 of 1985).

**ANNEXURE A**  
**DESIGN GUIDE DOCUMENT**



Design Guide Document



## Hermanus Business Park

### Design Guide Document

In order to ensure that this development retains a uniform character, and that conflicting styles of Architecture do not vie with one another to the detriment of the environment as a whole and the investment value, the developers have adopted an architectural concept to establish and maintain a character for the project.

The implementation and maintenance of a unified character is a condition of purchase of the site. The design criteria set out herein are in addition to the building and town planning regulations imposed by the local authority.

The rationale behind this approach is to permit considerable diversity but through restrictions on certain materials and design parameters to ensure that there is a sufficiently unified design thread running through all of the buildings such that the township is an harmonious whole.

The character chosen for the architectural Design Concept is a traditional Cape gable style incorporating green corrugated roofs, white painted walls and windows of essentially vertical proportion. Although it is envisaged that the structures will be primarily for industrial use with small office components the scale and design is to reflect a domestic character. Residential and office structures will follow this character more naturally.

Decoration is limited to plaster or timber mouldings and surrounds to the various gable and opening elements which are to be simple and traditional.

Internal design, character and materials are not restricted in any way, nor is there any minimum size or value of building prescribed provided the design criteria are met.

Hermanus Business Park

It is desirable that the consistency in the architectural controls is sufficient to establish and maintain an aesthetic theme, albeit with a certain degree of variation. For this reason other "styles" of architecture are expressly excluded.

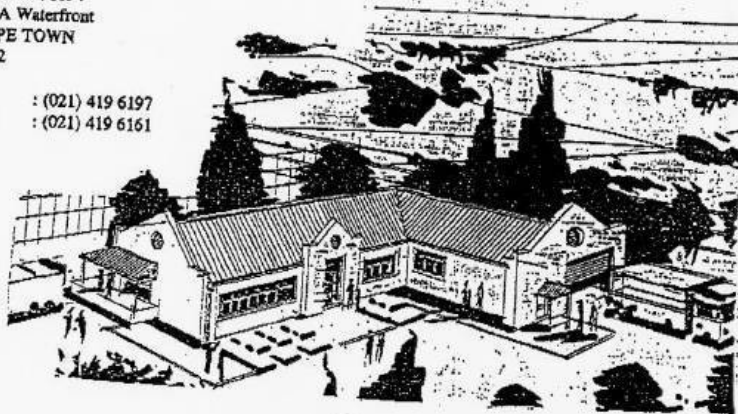
This document forms part of the deed of sale and will be administered and applied by the developers and their architectural consultants. The developers and their architectural consultants reserve the right to make an additions or alterations to these design standards that, in their opinion, may be needed to preserve the integrity of the architectural style.

The decision as to what is considered acceptable within the framework of the architectural concept is delegated to the developers architectural consultants. The decision of the Architectural Consultants as to whether a design is acceptable in the proposed aesthetic may not be vetoed on technical or professional grounds. The developer retains the right to enforce the uniformity of the development in terms of clause 1.

The appointed Architectural Consultants are: (refer clause 5.10.9 of the Constitution of the Hermanus Business Park Property Owners Association)

The Shakeshaft Partnership  
P.O Box 51894  
V&A Waterfront  
CAPE TOWN  
8002

Tel : (021) 419 6197  
Fax : (021) 419 6161



## 1. PLANS APPROVAL

- 1.1 No building may be erected or altered without prior approval from the Architectural Consultant for the aesthetic design of the proposed work. This applies only to external proposals. All plans for such proposed construction work must be then submitted by the owner, or his representative, to the municipality for their formal approvals. Such plans not prepared for the owner by the Architectural Consultant shall be submitted to him for approval prior to submission to the Local Authority, for which he will be entitled to a plan scrutiny fee.
- 1.2 Where there are existing buildings on adjacent sites these must be considered in the design of the building. Site walling must be co-ordinated with the adjacent erf.
- 1.3 When the client makes use of the pre-purchased services of the Architectural Consultant in terms of the deed of sale then concept drawings must be prepared by the Architectural Consultant prior to the preparation of final working drawings which must bear the signature of the Architectural Consultant when submitted to the local authority.
- 1.4 Should any provision of this design manual be regarded as contrary to the National Building regulations then the National Building Regulations shall prevail.
- 1.5 The developers may approve waivers of any mandatory specifications under special circumstances where such waivers are recommended by the Architectural Consultant.

## 2. THE SITE

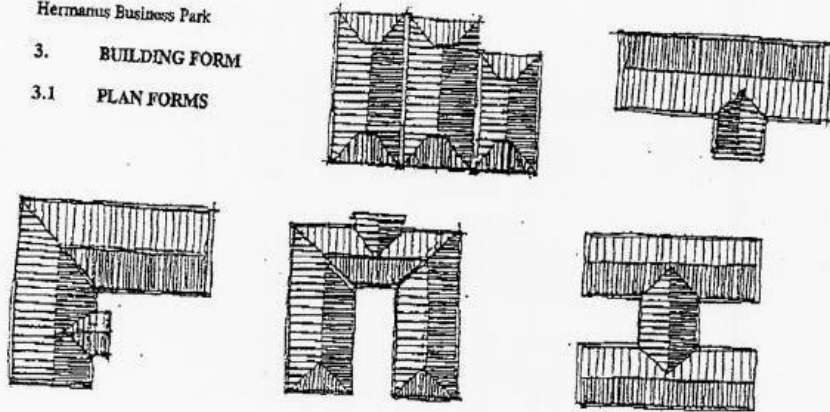
- 2.1 The building lines are set by the local authority, and as modified by the Architectural Consultant.
  - 2.1.1 Along Trunk Road 28 : 5.0 metres set back from site boundary.
  - 2.1.2 Along Schulphoek Road : 6.0 metres set back from site boundary.
  - 2.1.3 All internal access roads : 6.0 metres set back from site boundary.
  - 2.1.4 All side and rear boundaries for the industrial erven require nil set back provided that council may require set back building lines in the interest of public health or in order to enforce any law or right.

Hermanus Business Park

Hermanus Business Park

### 3. BUILDING FORM

#### 3.1 PLAN FORMS

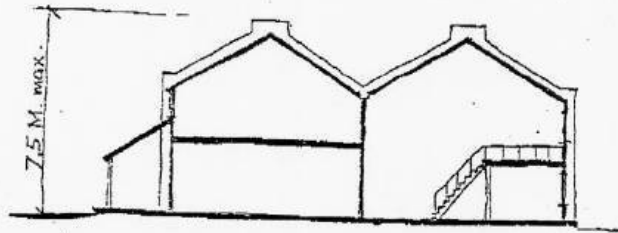


3.1.1 Plan forms must be rectangular, or composed of rectangular or square forms.

#### 3.2 HEIGHT

3.2.1 No building shall exceed two storeys in height at any point. Attic type accommodation in the roof is acceptable.

3.2.2 The maximum height of the roofs shall not exceed 7,5 metres above ground.



3.2.3 The siting of buildings, and their height, must not unreasonably affect the sight lines and amenities of adjacent properties. The Architectural Consultants decision in this regard will be binding on all concerned.

## Herznanus Business Park

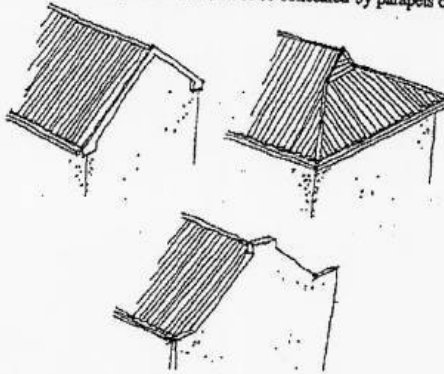
## 3.3 LEVELS

- 3.3.1 No elevation of the ground floor of any building (above the ground) on columns, piers, walls or such like where there is a void below the building, will be permitted.
- 3.3.2 The ground floor shall not be more than 500mm above actual ground on average.

## 4. CONSTRUCTION AND MATERIALS

## 4.1 ROOFS

- 4.1.1 All visible roof structures must be pitches and shall be within a pitch angle range of 30 - 45 degrees.  
Flat roofs defined as 5 degrees or less, must be concealed by parapets or the like on all sides.



- 4.1.3 Gables, when used must be simple. No curved or decorative gables will be allowed.
- 4.1.4 Overhangs should be restricted to 300mm maximum.
- 4.1.5 Roofs shall be green in colour. To match Chromadek standard "Traffic Green" or approved similar.
- 4.1.6 The following roof materials are permitted:  
Traditional pattern corrugated iron or aluminium  
Victoria pattern corrugated asbestos
- 4.1.7 All roofing on any one property shall be of the same type, unless approval of the Architectural Consultants.

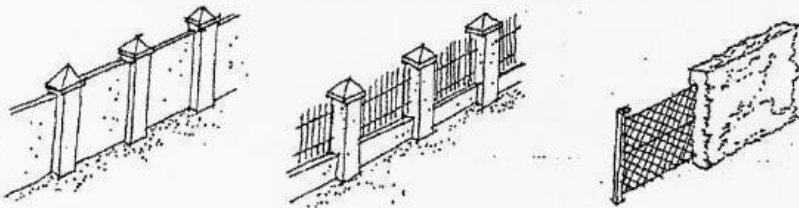
## Hermanus Business Park

**4.2 WALLS**

- 4.2.1 External walls shall be smooth plastered with large clear areas.
- 4.2.2 Face brick of any colour and painted fairfaced brickwork is not permitted.
- 4.2.3 Plaster quoins will be permitted.
- 4.2.4 All external walls shall be white painted. To match Plascon E32-1 Polar Bear white or approved similar. The Architectural Consultants decision with respect to colours will be final.

**4.3 SITE WALLS**

- 4.3.1 Site walls shall be white painted, plastered brick or block work with a weathered coating. Steel panel inserts of vertical members, or finials, shall be galvanised and painted black or green. All such walls or fences to be set back (refer 7.1.1) from the site boundary.

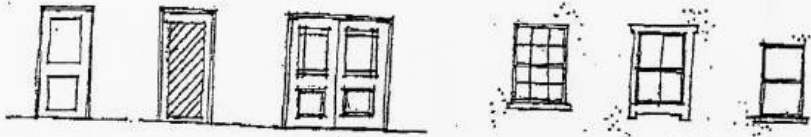


- 4.3.2 No prefabricated walling systems, vibracrete, unplastered blocks, face brick or corrugated sheet fences will be permitted.
  - 4.3.3 Wire mesh fencing may be used with specific approval and shall be planted up as a hedge. Razor wire, electrified fencing and other security means may be considered only if aesthetic standards are met. The Architectural consultant's decision will be final.
- 4.4 FENESTRATION AND DOORS**
- 4.4.1 Windows must be of timber powder coated aluminium, or galvanised steel frames, painted white or approved green in colour and should be of the SWADA Residential or Industrial Styles. Anodised aluminium or stained timber, frames will not be permitted.
  - 4.4.2 The proportion of all windows shall be such that there is always a larger vertical proportion.
  - 4.4.3 Large horizontal glazed doors and windows may be used where they occur beneath verandah, pergolas and overhangs in excess of 900mm, but must be of the small pane style to match (4.4.1). Shopfronts where relevant and approved conform to items (4.4.1 and 4.4.2)
  - 4.4.4 External burglar bars will not be permitted.
  - 4.4.5 Boarded or louvered shutters are recommended to external windows.

## Hermanus Business Park

## 4.4 FENESTRATION AND DOORS / cont'd

- 4.4.6 Doors shall be of traditional proportions and of painted timber.
- 4.4.7 Doors must be painted white, green, black. Bright colours not permitted.
- 4.4.8 Roller shutter doors are permitted in the industrial components, but must be galvanised steel and painted white or approved green.



## 4.5 SOIL AND WASTE PIPES

- 4.5.1 Whenever possible soil and waste pipes must all be concealed, unless located in closed courtyards not visible from beyond the site.

## 4.6 CHIMNEYS

- 4.6.1 Chimneys to residential units must be constructed of masonry and plaster, as walls, with simple detailing. Cowls as manufactured by Jetmaster may be incorporate

## 4.7 PERGOLAS AND COVERED TERRACES

- 4.7.1 Pergolas and external timber work to be painted white or green.
- 4.7.2 Pergolas may be constructed with steel pole supports or other steel sections, painted white or green.
- 4.7.3 Pergolas may not be covered with opaque or translucent plastic sheeting unless completely concealed by fascias.
- 4.7.4 Columns to pergolas and verandah should be of light simple timber sections with traditional decorative balustrades and trim or masonry or concrete columns with plaster capping and base.
- 4.7.5 Shadecloth type covered parking structures must have the fabric in white or green colour to approval of the Architectural Consultant.

## 5. SIGNAGE

- 5.1.1 No flashing signs will be permitted. All signage must be approved by the Architectural Consultant, the developers and the relevant Local Authority.

**6. PARKING**

- 6.1.1 Sufficient parking on the site, for use by employees, visitors or clients, must be provided by the registered owner of the property to comply fully with municipal requirements.


**7. BUILDING LINES**

- 7.1.1 To all road frontages, or to the larger of corner frontages, no construction boundary walls or property is to be nearer than 6m from the erf boundary.

**8. ZONING**

- 8.1.1 Erven 1752-1755, 1764-1767, 1769-1773 are to include a single residential component of not less than 80 sqm living area, excluding patio's / verandahs and outbuildings, as per section 8 of Town Planning Scheme which must occupy the western aspect of the erf. No industrial components will be allowed to that side. The residential component must be constructed either before or simultaneously with the industrial component.

end

H Boshoff  COMMENT FROM LEGAL SERVICES REGARDING  
 A DIFFERENT APPLICATION WITHIN THE BUSINESS PARK,  
 BUT HAS DIRECT RELATION TO THE APPLICATION UNDER  
 DISCUSSION.

From: A Olivier  
 Sent: Monday, 06 December 2021 12:25  
 To: H Boshoff  
 Subject: RE: URGENT PLEASE: Erf 1787, Sandbaai Erection of 18m mast Hermanus Business Park

More Bossie,

Nav jou terugvoer is dit duidelik dat die bestuur per se van die Park wanfunksioneel is daarin dat daar nie aan die grondwet voldoen word nie.

1. Ek is nie seker of daar n werkende Property Owners Association (POA) is of nie is nie ten spite van die feit dat dit ingevolge hulle grondwet tot stand gekom het toe die eerste eiendom oorgedra is aan n nuwe eienaar, maar nietemin die POA het / moes die Management Committee (MC) aangestel het wat moet bestaan uit 3 x lede waar 2 x lede n quorum vorm;
2. Die Management Committee is bekleed met die bestuur en administrasie van die POA(?) – artikel 5.5;
3. Die MC bestaan tans uit 2 lede en kan dus nie n besluit neem nie en is n nuwe 3e lid nog nie verkies nie, so vir alle praktiese doeleindes is daar nie n grondwetlik gekonstateerde MC nie;
4. Die POA moes al lankal ingegryp het om seker te maak dat hulle MC ten volle funksioneel is, maar hulle het tot nou toe lyk my vesuim om dit te doen en blyk dit n geval te wees van gods-water-oor-gods-akker...?
5. Die beswaar / besware wat julle ontvang het kom dus nie van die MC af nie maar van individuele lede en is dit ongeldig in die lig van artikel 5.1 en 5.10 van die grondwet maar al was n beswaar gemaak deur n volle MC word geen redes vir die beswaar gegee nie wat ook beteken dat dit van nul en gener waarde is. Om beskou te word as n besluit van die MC moes daar 3 lede gewees het en moes 2 lede of instemmend of beswarend gestem het met redes – die grondwet maak geen voorsiening vir n MC bestaande uit 3 lede in hulle individuele hoedanighede nie want dit sal absurd wees. Verder kan lede in hulle individuele hoedanighede nie die MC se briefhoof gebruik nie want dit is nie die MC wat die besluit geneem het nie.
6. Ek weet nie waar die grondeienaar inpas en of hy n lid van die POA is of nie, maar is hy beslis nie n lid van die MC nie, maar as lid van die POA moet hy sekerlik stappe kan doen om die POA sover te kry om n Spesiale Vergadering te bele om n funksionele MC te verkies?
7. Ek aanvaar ook dat julle geen kommunikasie met die POA het of gehad het nie?
8. Artikel 32 van die by-law maak voorsiening daarvoor dat ons die POA mag aanse om dit te herorden ingevolge die CSOS wet, maar of dit enigsins gewig dra is te betwyfel – net CSOS self het die gesag om die bepalinge van hulle wet aft e dwing op lede.
9. Ons gaan ook beslis nie optree ingevolge artikels 32(1)(b) en (c) nie want dit sal n massiewe presedent skep – uiteraard. Ons gaan in dieselfde asem nie n klagte le by die CSOS omdat die POA / MC nie hulle werk doen nie.
10. Artikel 43 van die by-law is nie van toepassing nie aangesien dit nie voor die deur van die applicant gele kan word indien die POA of die MC nie hulle pligte nakom nie – hy kan immers nie die liggame dwing om te handle ingevolge hulle grondwet nie, maar die probleem is dat julle wel die inligting benodig om n regtens verdedigbare besluit te neem.

11. Ek deel daarom julle siening dat julle nie die aansoek wil oorweeg nie en kano ns ons besluit verdedig nav die by-law. Die applicant is geregtig om CSOS te nader met n klagte teen die POA / MC.
12. Laaste vraag – hoe het julle soortgelyke gevalle in die verlede hanteer waar die applicant die onskuldige party is?

Groete

Andre Olivier

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**From:** H Boshoff <hboshoff@overstrand.gov.za>  
**Sent:** Friday, 03 December 2021 12:31  
**To:** A Olivier <aolivier@overstrand.gov.za>  
**Subject:** RE: URGENT PLEASE: Erf 1787, Sandbaai Erection of 18m mast Hermanus Business Park

Hallo André

Dankie vir jou kommentaar.

Die applikant is 'n privaat konsultant namens Sonic met toestemming van die grondeienaar.

Soos ek genoem het het hul kommentaar gelewer maar lank na die sluitingsdatum terwyl daar tans nie 'n wettige bestuurskomitee is nie. Daar moet min 3 lede op die komitee dien en tans is daar net twee en het hul individueel op die briefhoof van die POA hul beswaar aangteken sonder stawende redes (die 3de lid het geruime tyd reeds bedank). In terme van ons By-Law het 'n party 30 dae tyd om kommentaar te lewer, met stawende redes. Dit is so in die notice aangetoon om te voldoen aan die vereistes van advertering. Hul het dus nie nagekom wat in die By-Law vereis word nie en voel ek tegnies mag ek nie hul besware oorweeg nie. Ek sal egter die item voorlê, maar die vraag is of hul dan namens die POA mag appelleer of as individue (ons js ten gunste van die aansoek). Na mening het hul onregmatig opgetree om op die briefhoof van die POA beswaar aan te teken wat op bedrog neerkom inaggenome die bepalinge van hul grondwet. Daar is niks in ons By-Law wat vereis dat 'n HEV of POA kommentaar moet lewer nie. In die algemeen gee ons nie appelreg aan laat besware nie maar stel hul net in kennis van ons besluit.

Wat stel jy voor m.b.t. ??

(Ek sal baie waardeer as jy op Erf 11171, Hemel&Aarde aansoek ook kommentaar sal lewer.)

Groete en sterkte

Helgaardt Boshoff  
 Town Planner, Town & Spatial Planning Department  
 Overstrand Municipality  
 A: 16 Paterson Street, Hermanus, 7200 P: P O Box 20  
 T: 028 313 8900 | F: 028 313 2093 | E: [hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)

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**From:** A Olivier <aolivier@overstrand.gov.za>  
**Sent:** Friday, 03 December 2021 11:36  
**To:** H Boshoff <hboshoff@overstrand.gov.za>  
**Cc:** J Wilkinson <jwilkinson@overstrand.gov.za>  
**Subject:** RE: URGENT PLEASE: Erf 1787, Sandbaai Erection of 18m mast Hermanus Business Park

Hi Bossie – wie is die Applikant vd toring?

Hoe dit ookal sy, die CSOS is die aangewese liggaam waar die applicant n klagte kan le weens n bewering dat die POA nie sy werk wil doen nie. Ons gaan nie in n dispuut betrokke raak namens die Applikant nie – die CSOS wet bepaal dat slegs een van die Partye tot n dispuut direk verbonde moet wees aan die POA / HOA ens, so a klaer hoof dus nie enige verbintenis met die POA en die skema wat dit verteenwoordig te he nie.

Die tersaaklike artikel in die CSOS wet is 39(7) – General and Other Issues en dan 39(7)(b) ingevolge waarvan die Chlef Ombud n bevel kan maak nadat die aangeleentheid aangemeld en ondersoek is.

Ons moet substantiewe terugvoer vanaf die POA kry in die vorm van of toestemming met of sonder voorgestelde voorwaardes, of weiering met redes – bloot net n beswaar sonder redes betegn niks nie.

Jy sal die applicant dienooreenkomstig moet inlig da tons nie by magte is om bloot n besluit te neem sonder die insette van die regtens gekose POA nie.

Groete

Andre

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**From:** H Boshoff <[hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)>  
**Sent:** Thursday, 25 November 2021 11:05  
**To:** A Olivier <[aolivier@overstrand.gov.za](mailto:aolivier@overstrand.gov.za)>  
**Subject:** FW: URGENT PLEASE: Erf 1787, Sandbaai

Hi Andre

Hier is een van die items wat ons more bespreek.

Ek stuur ander ook aan.

Helgaardt Boshoff  
 Town Planner, Town & Spatial Planning Department  
 Overstrand Municipality  
 A: 16 Paterson Street, Hermanus, 7200 P: P O Box 20  
 T: 028 313 8900 | F: 028 313 2093 | E: [hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)

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**From:** H Boshoff  
**Sent:** Wednesday, 18 August 2021 12:24  
**To:** A Olivier <[aolivier@overstrand.gov.za](mailto:aolivier@overstrand.gov.za)>  
**Cc:** A Conradie <[alida@overstrand.gov.za](mailto:alida@overstrand.gov.za)>  
**Subject:** URGENT PLEASE: Erf 1787, Sandbaai

Hallo André

Ek het dringend jou hulp nodig en weet jy is erg oorlaai. Voor ek begin wil ek net noem dat ek reeds 'n konsep opinie in e-pos formaat opgestel het om tyd vir jou te spaar.

Erf 1787, Sandbaai is 'n industriële erf en val onder die Hermanus Business Park Owners Association se beheer wat 'n goedgekeurde grondwet het. In terme van hul grondwet moet hul 'n Management Committee hê wat uit 3 lede moet bestaan.

**H Boshoff**

**From:** A Olivier  
**Sent:** Monday, 06 December 2021 14:40  
**To:** H Boshoff  
**Subject:** RE: URGENT PLEASE: Erf 1787, Sandbaai Erection of 18m mast Hermanus Business Park

Hi Bossie,

Julle neem in el'geval n besluit – approve or not.

Omdat die planne volgens hulle grondwet eers deur hulle goedgekeur moet word alvorens dit na ons toe kom en hulle duidelik dit nie wil doen of: weens interne struwelinge nie kan doen nie le die Applikant se remedie by CSOS. Dit is nie ons plig om n Applikant soos die onderhawige een se "fight" te "fight" nie. Wat ons nie mag doen nie is om hulle grondwet te ignoreer en dan n besluit te neem – dit sal neerkom op n onwettige administratiewe handeling deur die munisipaliteit wat **PAJA moontlik** sal kan trigger met alles wat daarmee gepaard gaan. Die Applikant sal welliswaar kan appelleer teen ons besluit as ons besluit nie in sy guns is nie, maar ek weet nie hoe Sonic verby die feite gaan kom nie, ie, dat die POA en die MC geheel en al disfunksioneel is.

Wat die 2 trustees betref en soos wat dit duidelik blyk het hulle nie in hulle hoedanighede as lede van die MC ageer nie maar in hulle individuele hoedanighede of: op een of ander wyse in naam van die POA, welke hulle besware negatiewe, want hulle kan nie lede van die POA wees nie – hulle is nie Property Owners nie. Ek weet nie waarom hulle nie bloot ingevolge hulle mandate ageer het nie. Buiten die voorafgaande was hulle "besware" nog buite tyd ook.

Groete

Andre Olivier

**From:** H Boshoff <hboshoff@overstrand.gov.za>  
**Sent:** Monday, 06 December 2021 14:10  
**To:** A Olivier <aolivier@overstrand.gov.za>  
**Subject:** RE: URGENT PLEASE: Erf 1787, Sandbaai Erection of 18m mast Hermanus Business Park

Hi Andre

M.a.w ons kan 'n besluit neem – interpreteer ek jou opinie reg, en indien die MC nie planne wil endosseer nie kan die applikant CSOS nader.  
 Ek aanvaar dus die twee trustees mag ook nie appelreg kry nie omrede hul besware baie laat was.  
 Ek vermoed daar is 2 ander gevalle met dieselfde MC.

Groete en dankie.

Helgaardt Boshoff  
 Town Planner, Town & Spatial Planning Department  
 Overstrand Municipality  
 A: 16 Paterson Street, Hermanus, 7200 P: P O Box 20  
 T: 028 313 8900 | F: 028 313 2093 | E: [hboshoff@overstrand.gov.za](mailto:hboshoff@overstrand.gov.za)

**From:** A Olivier <aolivier@overstrand.gov.za>  
**Sent:** Monday, 06 December 2021 12:25