

GUIDELINES FOR SITING PETROLEUM INFRASTRUCTURE

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ACRONYMS

EIA	- Environmental Impact Assessment
EIS	- Environmental Impact Statement
EPB	- Environmental Project Brief
ERB	- Energy Regulation Board
LPG	- Liquefied Petroleum Gas
OMC	- Oil Marketing Company
RDA	- Road Development Agency
ROW	- Right-of-Way
SGWG	- Siting Guidelines Working Group
ZABS	- Zambia Bureau of Standards
ZEMA	- Zambia Environmental Management Agency
ZS	- Zambian Standard

DEFINITIONS

For the purposes of these guidelines contained herein, the following definitions shall apply:

- Approved site** – A site for which the Energy Regulation Board has issued a valid Construction Permit. For bigger pieces of land than the prescribed minimums for specific petroleum infrastructure, a site shall refer only to the area that has been earmarked for installation of the said petroleum facility.
- Buffer** – A provision that reduces a shock or that forms a barrier between incompatible or antagonistic people or things.
- Bulk depot** – Premises (sometimes referred to as marketing installations or terminals) on which the capacity for the storage of flammable goods or combustible goods (or both) exceeds 200 m³, on which goods are normally received from a refinery or other bulk depot by road rail, sea or pipeline (or a combination of these), and from which such flammable goods or combustible goods (or both) are delivered.
- LPG Bulk Depot** – A Liquefied Petroleum Gas (LPG) facility having a total capacity of the storage vessel of 10 tonnes or more;
- LPG Consumer Facility** – A Liquefied Petroleum Gas (LPG) facility having a total capacity of the storage vessel less than 10 tonnes.
- Large consumer installation** – An installation where the storage capacity, in any one location, exceeds 1,500 litres in the case of a liquid fuel having a flash point not lower than 38° C and exceeds 5 000 litres in the case of liquid fuel having a flash point higher than 38° C.

- Petroleum pipeline** – A system/line of pipes equipped with storage(s), pump(s), and other control devices for moving petroleum products.
- Mineral Refinery Oil** – An industrial process plant where crude oil or feedstock is processed and refined into more useful petroleum products such as petroleum Naphtha, gasoline, diesel, asphalt base, heating oil, kerosene and liquefied petroleum gas.
- Bio-fuel Blending refinery** – An industrial process plant where bio fuels are blended into petroleum fuels in predetermined concentrations.
- Right of Way** – These are easements that must be agreed and signed upon by both the landowner and Pipeline Company, and permits pipeline operators to go forth with installing and maintaining pipelines on that land.
- Rural Filling Station** – A site that provides lubricants and fuel with a combined monthly average fuel throughput not exceeding 200 m³ (200, 000 l); and located in an un-serviced area outside a minimum radius of 25 km from the boundary of the nearest operating station.
- Sensitive area** – As defined in the Environmental Management Act No. 12 of 2011
- Un-serviced area** – An area in which facilities for lubricants and fuel are not provided for within a distance of 25km.
- Wayleave** – A swath of land or area of land appropriately cleared of vegetation under a power line or any such electrical infrastructure. The total width of the cleared area under the power line in line with the applicable regulations determines the boundaries of a Wayleave. A Wayleave is also called a Right-of-Way (ROW).

Wetland

- An area where the water covers the soil, or is present either at or near the surface of the soil all year or varying periods of time during the year, including during the growing season.¹

¹ Source: US Environmental Protection Agency

1.0 INTRODUCTION

In exercise of the powers conferred by Section 4 (f) and (i) of the Energy Regulation Act No. 12 of 2019, the Energy Regulation Board (ERB), hereby issues the following guidelines to lay down the siting of petroleum infrastructure in Zambia. These siting guidelines seek to provide potential developers and existing licensees guidelines on the technical and regulatory requirements for siting of key petroleum infrastructure in Zambia. These guidelines will be the basis upon which the ERB will review Environmental Impact Assessments (EIA) for proposed petroleum infrastructure in collaboration with the Zambia Environmental Management Agency (ZEMA). These guidelines shall be due for review as follows:

- 1.1 Five (05) years from the date of publication in the government gazette in line with best practice; and
- 1.2 As need arises to address emerging issues in the petroleum subsector.

In both cases, the revised guidelines will be published in the government gazette in line with the Energy Regulation Act No. 12 of 2019.

2.0 BACKGROUND

In 2014 the ERB developed siting guidelines to provide criteria for review and approval of proposed location of filling stations which were last revised in June 2015. In 2019, the ERB embarked on the review of the existing siting guidelines:

- 2.1 To provide for emerging issues in the sector; and
- 2.2 To expand the scope to include other petroleum infrastructure that were not covered in the existing guidelines such as bulk fuel depots, LPG retail sites, petroleum pipelines and refineries in addition to filling stations.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Any person or undertaking intending to construct a new or rehabilitate an existing petroleum infrastructure shall submit to ZEMA, either an Environmental Impact Statement (EIS) or Environmental Project Brief (EPB) for approval in accordance with the provisions of the Environmental Impact Assessment Regulations as read with the Environmental Management Act No. 12 of 2011. As part of the decision making process, ZEMA consults other stakeholders including but not limited to local authorities and the ERB for comments on all proposed energy projects. For further guidance on the EIA process and requirements, developers should contact ZEMA.

It should be noted that an approval by the Zambia Environmental Management Agency (ZEMA) does not guarantee an approval for Construction Permit by the ERB. Therefore, it is incumbent upon the developers of proposed petroleum infrastructure to do the following:

- 3.1 Conduct own due diligence before committing resources to obtain pieces of land for location of the proposed petroleum infrastructure; and
- 3.2 Ensure that the project complies with all the relevant laws and not restrict to those highlighted in these guidelines.

4.0 CRITERIA FOR REVIEWING OF THE EIAs

In reviewing the EISs or EPBs, the ERB's primary concern is to establish whether the proposed development is in conformity with, but not limited to the Zambian Petroleum Infrastructure standards as listed in *Appendix 1* and the siting guidelines as detailed in section 5.0 below.

Prior to coming up with an institutional position on the proposed development, the ERB will:-

- 4.1 Review the submitted EIS or EPB document(s) to appreciate the scope of the project; and

4.2 Conduct an inspection of the proposed site to do the following:

4.2.1 Ascertain the consistency of the information provided in the EIS or EPB for the proposed site;

4.2.2 Assess its suitability for the intended purpose in accordance with the provisions of the relevant Zambian Standards; and

4.2.3 Verify absence of any incompatible activities within the vicinity.

Upon completion of the review of the EIS or EPB, the ERB will communicate the outcome of the review to ZEMA for consideration in the decision making process. Appeals against ZEMA's decision should be done in accordance with the provisions of the Environmental Impact Assessment Regulations as read with the Environmental Management Act.

Where ZEMA approves the proposed site, the developer shall be required to obtain a Construction Permit from the ERB prior to commencement of construction of the petroleum infrastructure. Refer to *Appendix 2* for details of the Construction Permit requirements. The ERB may request for additional requirements depending on the prevailing arrangements at some sites.

Appeals against the ERB's decisions should be in accordance with the provisions of the Energy Regulation Act.

5.0 SITING GUIDELINES FOR PETROLEUM INFRASTRUCTURE

The ERB will only approve construction of petroleum infrastructure that meets the siting criteria below:

5.1 URBAN RETAIL SITES

The following guidelines shall be applicable for siting of an urban filling station:

5.1.1 The minimum size of the plot and the length of the road frontage for the proposed site shall comply with the provisions of *ZS 385 PETROLEUM*

INDUSTRY CODE OF PRACTICE: Part 3: The installation of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations;

5.1.2 The distance between the proposed area for construction of a filling station and the nearest operating service station or a duly approved site shall not be less than 150 meters along the same road measured from the nearest boundary of the approved site layout to the nearest boundary of the proposed site in urban, built-up or residential areas unless it can be clearly demonstrated that the need exists for exceptions to be considered. Exceptions may include but are not limited to the following:

5.1.2.1 If the proposed filling station will be located on a one way road and the nearest existing site located on another road with traffic flowing in the opposite direction. However, the proposed site shall not be directly opposite to an existing/ operating or approved site and shall be located at a diagonal distance of at least 100 metres from the existing, operational or approved site;

5.1.2.2 If the road has an island between the lanes restricting direct access to the opposite side of an operating or approved site in urban or built up areas. However, the proposed site shall not be directly opposite to an existing/ operating or approved site and shall be located at a diagonal distance of at least 100 metres from the existing, operational or approved site;

5.1.2.3 If the proposed site will be located along a highway in an undeveloped area, but on the opposite side of an operating or approved site. However, the proposed site shall not be directly opposite to an existing/ operating or approved site and shall be located at a diagonal

distance of at least 100 metres from the existing, operational or approved site;

- 5.1.2.4 If the locality's security of supply among other things is considered to be vulnerable by the ERB; and

In all the above situations, Safety, Health, Product Quality or Environment will not be compromised.

- 5.1.3 The ERB will not approve a site is in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, wetlands and any other as may be prescribed by the ERB from time to time;
- 5.1.4 The proposed location of a tank farm shall not be within a radius of at least 50 meters from the boundary of any public institutions which are normally crowded such as but not restricted to schools, churches, markets, bus stops, public libraries, auditoriums, stadiums, hospitals, public playgrounds and any other place as may be prescribed by the ERB from time to time;
- 5.1.5 The proposed filling station shall not share a boundary with an existing bulk fuel depot. Unless there is a distance of at least 15 meters between the proposed filling station and the nearest hazardous zone of the Bulk fuel depot. Further, separate access roads shall be provided for entrance to depot for easy access and maneuvering of petroleum tankers without interfering with any traffic meant for the service station;
- 5.1.6 Where the service station is part of a shopping complex, the tank farm for the proposed site shall be located in an isolated part of the development at least 50 meters away from the foundation of nearest structure of the shopping complex;
- 5.1.7 Where the service station is to be built next to a residential dwelling:

- 5.1.7.1 The minimum distance from the tank farm shall be at least 40 metres from the boundary wall of the filling station; and
 - 5.1.7.2 A boundary fire wall between the service station and surroundings that conforms to the specifications of clause 4.3 of ZS 392: Part 2- THE STORAGE AND HANDLING OF LIQUID FUEL Code of Practice; and the requirements of the fire department of the Local Authority, prior to commission of the site.
- 5.1.8 The maximum volume of an individual tank installed at a filling station shall be 85,000 litres;
- 5.1.9 The maximum combined volume for all tanks installed at an operating filling station shall be 200,000 litres;
- 5.1.10 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's Way-leave Code of practice. In this regard, the developer will need to provide documentary proof from the Utility Company;
- 5.1.11 Where there is existing railway line infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the Railways Act CAP 453 of the Laws of Zambia;
- 5.1.12 The proposed site shall comply with the requirements as prescribed in the Public Roads Act No. 12 of 2002. With regards to road encroachment the approvals will be subject to an assessment of aspects as prescribed in the said Act such as but not restricted to:
- 5.1.12.1 The location of the site in relation to the road reserve (Permanent structures including underground tanks shall not be installed in the road reserve);
 - 5.1.12.2 Access road details; and
 - 5.1.12.3 Other safety considerations.

5.1.13 The proposed site shall not be located an area considered to be sensitive by ZEMA, as provided for in the Environmental Management Act of 2011. In this regard, the required distance may be decided appropriately by the relevant agency.

5.1.14 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.2 RURAL FILLING STATIONS

The following guidelines shall be applicable for siting of a rural filling station:

5.2.1 The minimum size of the plot and the length of the road frontage for the proposed site shall comply with the provisions of *ZS 703: Rural Filling Station – Code of Practice*;

5.2.2 The distance between the proposed rural site and an operating filling station or a duly approved site with a valid decision letter issued by ZEMA shall not be less than a radius of 25 Kilometers measured from the nearest boundary of the approved site layout to the nearest boundary of the proposed site in rural areas. Exceptions will be considered in the following cases:-

5.2.2.1 If the new filling station will be located on a one way road and the nearest existing site located on another road with traffic flowing in the opposite direction. However, the proposed site shall not be directly opposite to an existing/ operating or approved site and shall be located at a diagonal distance of at least 100 metres from the existing, operational or approved site;

5.2.2.2 If the road has an island between the lanes restricting direct access to the opposite side of an operating or approved site in built up areas. However, the proposed site shall not be directly opposite to an existing/ operating or approved site and shall be located at a diagonal distance of at least 100 metres from the existing, operational or approved site;

- 5.2.2.1 If the proposed site will be located along a highway in an undeveloped area, but on the opposite side of an operating or approved site. However, the proposed site shall not be directly opposite to an existing/operating or approved site and shall be located at a diagonal distance of at least 100 metres from the existing, operational or approved site;
- 5.2.2.2 If the locality's security of supply is considered to be vulnerable by the ERB.

In all the above situations, Safety, Health, Product Quality or Environment shall not be compromised.

- 5.2.3 The ERB will not approve a site is in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, wetlands and any other as may be prescribed by the ERB from time to time;
- 5.2.4 All new sites within the radius of 25Km of an operational rural filling station shall comply with the provisions of section 5.1 of these guidelines from outset. Upon commissioning of the new site, the rural filling station shall be expected to upgrade to full compliance with *ZS 385 Part 3* within the time frame as approved by the ERB;
- 5.2.5 The proposed tank farm shall not be within a radius of 50 meters from the boundary of any public institutions which are normally crowded such as but not restricted to schools, churches, markets, bus stops, public libraries, auditoriums, hospitals, public playgrounds and any other place as may be prescribed by the ERB;
- 5.2.6 The proposed filling station shall not share a boundary with an existing bulk fuel depot. Unless there is a distance of at least 15 meters between the proposed filling station and the nearest hazardous zone of the Bulk fuel depot. Further, separate access roads shall be provided for entrance to depot for easy access and maneuvering of petroleum tankers without interfering with any traffic meant for the service station;
- 5.2.7 Where the service station is part of a shopping complex, the proposed site shall be located in the isolated part of the development 50 meters away from the foundation of nearest structure of the shopping complex;
- 5.2.8 Where the service station is to be built next to a residential dwelling:

- 5.2.8.1 The minimum distance from the tank farm shall be at least 40 metres from the boundary wall of the filling station; and
 - 5.2.8.2 A boundary fire wall between the service station and surroundings that conforms to the specifications of clause 4.3 of ZS 392: Part 2- THE STORAGE AND HANDLING OF LIQUID FUEL Code of Practice; and the requirements of the fire department of the Local Authority, prior to commission of the site.
- 5.2.9 The maximum volume of an individual tank installed at a filling station shall be 85,000 litres;
- 5.2.10 The maximum combined volume for all tanks installed at an operating filling station shall be 200,000 litres;
- 5.2.11 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's way-leave code of practice;
- 5.2.12 Where there is existing railway line infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the Railways Act CAP 453 of the Laws of Zambia;
- 5.2.13 The proposed site shall comply with the requirements as prescribed in the Public Roads Act No. 12 of 2002; and
- 5.2.14 The proposed site shall not be located within an area considered to be sensitive by ZEMA, as provided for in the Environmental Management Act of 2011. In this regard, the required distance may be decided appropriately by the relevant agency.
- 5.2.15 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.3 BULK FUEL DEPOTS

The following guidelines shall be applicable for siting a bulk fuel storage depot:

- 5.3.1 Proposed sites for bulk fuel storage depot will only be approved for installation in designated industrial areas and shall comply with siting requirements as prescribed in *Zambian Standard ZS 385: THE PETROLEUM INDUSTRY CODE OF PRACTICE; Part 1: Storage and Distribution of Petroleum Products in Above-Ground Bulk Installations;*
- 5.3.2 The ERB will not approve installation of a depot in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time;
- 5.3.3 The siting of a bulk fuel storage depot shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services is provided;
- 5.3.4 The minimum distance from the storage tanks to the boundary of the property that is or can be built on, including the far side of the public road shall be as prescribed in *Zambian Standard ZS 385: THE PETROLEUM INDUSTRY CODE OF PRACTICE; Part 1: Storage and Distribution of Petroleum Products in Above - Ground Bulk Installations;*
- 5.3.5 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's way-leave code of practice;
- 5.3.6 Where there is existing railway line infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the Railways Act CAP 453 of the Laws of Zambia;

5.3.7 The proposed site shall comply with the requirements as prescribed in the Public Roads Act No. 12 of 2002; and

5.3.8 The proposed site shall not be located within an area considered to be sensitive by ZEMA, as provided for in the Environmental Management Act of 2011. In this regard, the required distance may be decided appropriately by the relevant agency.

5.3.9 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.4 LARGE CONSUMER INSTALLATIONS

The following guidelines shall be applicable for siting a Large Consumer installation:

5.4.1 Proposed Large consumer installation will only be approved in designated commercial, agricultural and industrial premises;

5.4.2 The ERB will not approve installation of a Large Consumer facility in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time;

5.4.3 The minimum distance from the storage tanks to the boundary of the property that is or can be built on, including the far side of the public road shall be as prescribed in *ZS 385: THE PETROLEUM INDUSTRY CODE OF PRACTICE; Part 1: Storage and Distribution of Petroleum Products in Above-Ground Bulk Installations;*

5.4.4 The siting of the large consumer installation shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services is provided;

- 5.4.5 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB’s way-leave code of practice;
- 5.4.6 Where there is existing railway line infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the Railways Act CAP 453 of the Laws of Zambia; and
- 5.4.7 The proposed site shall comply with the requirements as prescribed in the Public Roads Act No. 12 of 2002; and
- 5.4.8 The proposed site shall not be located within an area considered to be sensitive by ZEMA, as provided for in the Environmental Management Act of 2011. In this regard, the required distance may be decided appropriately by the relevant agency.
- 5.4.9 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.5 PETROLEUM (MINERAL CRUDE) REFINERIES

The following guidelines shall be applicable for siting of a Petroleum refinery:

- 5.5.1 Proposed sites for a refinery will only be approved for installation in designated heavy industrial areas;
- 5.5.2 The siting of the refinery shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services is provided;
- 5.5.3 The area of the proposed location for a refinery shall be at least 225 hectares and shall include at least 500 metres buffer of land to accommodate the

development of other distribution depots and Petrochemical plants as well as providing adequate buffer from other conflicting land uses which shall include but not restricted to mineral processing activities, and other activities that may introduce sources of ignition. The said buffer shall be under the management of the refinery;

- 5.5.4 The boundary of a proposed refinery shall be located at least 500 meters from a main Highway or Railway line;
- 5.5.5 The proposed Location for a refinery shall be located such that there will be adequate access to sources of Electricity and water supply;
- 5.5.6 The proposed refinery shall be at least 5 kilometers from the projected boundary of a major settlement estimated over a ten year period;
- 5.5.7 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's way-leave code of practice; and
- 5.5.8 The proposed site shall be located at least 5 kilometers from an area considered to be ecologically and/or otherwise sensitive by ZEMA as provided for in the Environmental Management Act of 2011.
- 5.5.9 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.6 BIO FUEL BLENDING REFINERIES

The following guidelines shall be applicable for siting of a Biofuel blending refinery:

- 5.6.1 Proposed sites for a biofuel blending refinery will only be approved for installation in designated heavy industrial areas;

- 5.6.2 The siting of a biofuel blending refinery shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services is provided;
- 5.6.3 The area of the proposed location for a biofuel blending refinery shall be at least 100 hectares and shall include at least 500 metres buffer of land to accommodate the development of other distribution depots and Petrochemical plants as well as providing adequate buffer from other conflicting land uses which shall include but not restricted to mineral processing activities, and other activities that may introduce sources of ignition. The said buffer shall be under the management of the refinery;
- 5.6.4 The boundary of a proposed biofuel blending refinery shall be located at least 500 meters from a main Highway or Railway line;
- 5.6.5 The proposed Location for a biofuel blending refinery shall be located such that there will be adequate access to sources of Electricity and water supply;
- 5.6.6 The proposed refinery shall be at least 5 kilometers from the projected boundary of a major settlement estimated over a ten year period;
- 5.6.7 Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's way-leave code of practice; and
- 5.6.8 The proposed site shall be located at least 5 kilometers from an area considered to be ecologically and/or otherwise sensitive by ZEMA as provided for in the Environmental Management Act of 2011.
- 5.6.9 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.7 PETROLEUM PIPELINES

The following guidelines shall be applicable for Petroleum pipeline siting:

- 5.7.1 The proposed route for a Petroleum pipeline shall be such that adequate land can be secured for the right of way to meet the requirements of a *Zambian Standard ZS 704: Transportation Pipeline systems for liquid hydrocarbons – Code of Practice*;
- 5.7.2 The proposed route for a petroleum pipeline shall be such that the pipeline shall be interred throughout with exception of service points and inaccessible to unauthorized human intrusion;
- 5.7.3 The proposed route for a Petroleum pipeline shall be such that the pipeline does not pass through settlements;
- 5.7.4 Where there is existing electricity infrastructure, the proposed pipeline shall comply with the requirements for safety distances as prescribed in the ERB's Way-leave Code of practice; and
- 5.7.5 The preferred route shall be such that the pipeline does not pass through an area considered to be ecologically and/or otherwise sensitive unless approved by ZEMA as provided for in the Environmental Management Act of 2011.
- 5.7.6 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.8 LPG RETAIL SITES

The following guidelines shall be applicable for siting of a Liquefied Petroleum Gas (LPG) retail facility:

- 5.8.1 The minimum distance for a new proposed LPG retail site (Non-Bulk) from the boundary of an operating petroleum retail facility (whether LPG or other products) shall meet the minimum safety distances as prescribed in the *Zambian Standard ZS 429: THE HANDLING, STORAGE AND DISTRIBUTION OF LIQUEFIED PETROLEUM GAS IN DOMESTIC, COMMERCIAL AND INDUSTRIAL INSTALLATIONS - CODE OF PRACTICE; Part 1: Liquefied petroleum gas installations involving gas storage containers of individual water capacity not exceeding 500 Litres and a combined water capacity not exceeding 3000 Litres per installation;*
- 5.8.2 Where an LPG retail site is proposed to be retrofitted to an existing filling station, the size of the existing filling station shall allow enough room for the proposed LPG retail facilities to meet the minimum safety distances as prescribed in the *Zambian Standard ZS 429 Part 1;* and
- 5.8.3 LPG retail facilities (Non-bulk) with filling component will be at a minimum of 30 meters from the nearest boundary of residential areas, schools, markets or other normally crowded places. Exceptions will be considered in the following cases:-
- 5.8.3.1 Where the security of supply of LPG in the area is considered to be vulnerable by the ERB on a case by case basis; and
- 5.8.3.2 Where the minimum safety distances as prescribed in the *ZS 429 Part 1* are met to the satisfaction of the ERB.
- 5.8.4 The proposed facility shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.9 LPG BULK DEPOTS

The following guidelines shall be applicable for siting of a LPG Bulk depot:

- 5.9.1 A proposed LPG depot shall only be approved for installation in a designated industrial area. Notwithstanding, the ERB will not approve installation of a LPG depot in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time ;
- 5.9.2 The siting of a LPG bulk depot shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services is provided;
- 5.9.3 A proposed LPG depot shall be sited on open ground and situated in a well ventilated area and which, so far as can be reasonably foreseen, will remain so, even on subsequent development of adjacent sites;
- 5.9.4 The ERB will not approve installation of a LPG Bulk depot in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time;
- 5.9.5 The minimum distance from the LPG storage tanks to the boundary of the property that is or can be built on, shall be as prescribed in ZS 429 part 2: Liquefied petroleum gas installations involving storage vessels of individual water capacity exceeding 500 litres per installation; and
- 5.9.6 The proposed site shall comply with the requirements as prescribed in the Public roads Act No. 12 of 2002.

5.9.7 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

5.10 LPG CONSUMER FACILITIES

The following guidelines shall be applicable for siting of a LPG consumer facility:

5.10.1A proposed LPG consumer facility shall be located in domestic, commercial, agricultural and industrial areas as prescribed in ZS 429 parts 1 and 2. Notwithstanding, the ERB will not approve installation of a LPG Consumer facility in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time;

5.10.2Siting of a LPG consumer facility shall be such that adequate access for emergency response teams including but not restricted to Fire Brigade, Police and Ambulance services as well as delivery vehicles is provided;

5.10.3A LPG consumer facility shall be sited in on open ground and well ventilated, but restricted area and which, so far as can be reasonably foreseen, will remain so, even on subsequent development of the surroundings;

5.10.4The ERB will not approve installation of a Large Consumer in a locality that is prone to activities or incidences that pose a safety, health, product quality or environment risk such as but not restricted to riotous human behavior, flooding and any other as may be prescribed by the ERB from time to time;

5.10.5Where there is existing electricity infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the ERB's Way-leave Code of practice;

- 5.10.6 The minimum distance from the LPG storage tanks to the boundary of the property that is or can be built on, shall be as prescribed in ZS 429 part 1 and 2;
- 5.10.7 The proposed site shall comply with the requirements as prescribed in the Public roads Act No. 12 of 2002.
- 5.10.8 Where there is existing railway line infrastructure, the proposed site shall comply with the requirements for safety distances as prescribed in the Railways Act CAP 453 of the Laws of Zambia; and
- 5.10.9 The proposed site shall comply with the requirements as prescribed in the Public Roads Act No. 12 of 2002; and
- 5.10.10 The proposed site shall not be located within an area considered to be sensitive by ZEMA, as provided for in the Environmental Management Act of 2011. In this regard, the required distance may be decided appropriately by the relevant agency.
- 5.10.11 The proposed site shall comply with the requirements of other relevant Government Agencies and Institutions, where necessary.

APPENDIX 1: APPLICABLE ZAMBIAN INFRASTRUCTURE STANDARDS RELEVANT FOR SITING PETROLEUM INFRASTRUCTURE

A1.1 ZS 385: THE PETROLEUM INDUSTRY CODE OF PRACTICE:

Part 1: Storage and Distribution of Petroleum Products in Above-Ground Bulk Installations;

Part 2: Electrical installations in the distribution and marketing sector;

Part 3: The installation of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations;

Part 4: Aboveground Containerized Tank Installation; and

Part 5: Operational requirements at service station.

A1.2 ZS 429: THE HANDLING, STORAGE AND DISTRIBUTION OF LIQUEFIED PETROLEUM GAS IN DOMESTIC, COMMERCIAL AND INDUSTRIAL INSTALLATIONS - CODE OF PRACTICE:

Part 1: Liquefied petroleum gas installations involving gas storage containers of individual water capacity not exceeding 500 Litres and a combined water capacity not exceeding 3000 Litres per installation;

Part 2: Liquefied petroleum gas installations involving storage vessels of individual water capacity exceeding 500 litres per installation; and

Part 3: Storage and Filling sites for refillable liquefied petroleum gas (LP gas) containers of capacity not exceeding 9Kg.

A1.3 ZS 703 – Rural Filling Stations: Code of Practice;

A1.4 ZS 402: THE CLASSIFICATION OF HAZARDOUS LOCATIONS AND THE SELECTION OF ELECTRICAL APPARATUS FOR USE IN SUCH LOCATIONS - Code of Practice;

A1.5 ZS 392: THE STORAGE AND HANDLING OF LIQUID FUEL – Code of Practice:

- i) Part 1: Small Consumer Installations; and
- ii) Part 2: Large Consumer Installations.

A1.6 ZS 704: TRANSPORTATION PIPELINE SYSTEMS FOR LIQUID HYDROCARBONS – Code of Practice.

A1.7 Energy Regulation Board: Electricity infrastructure Wayleave Code of practice (June 2011).

APPENDIX 2: GENERAL REQUIREMENTS FOR CONSTRUCTION PERMITS

- A2.1 The Construction Permit is issued by the ERB as a regulatory tool to monitor the siting and construction of infrastructure in the Petroleum sector;
- A2.2 Upon approval, one copy of the detailed site (or route) plans, structural and engineering drawings will be stamped and approved by the ERB and attached to the conditions of the Construction Permit. The said copies will form the basis for subsequent random and pre-commissioning inspections;
- A2.3 The Construction Permit, which shall be specific to a site, shall be valid for a stipulated period from the effective date and may be renewed in accordance with the provisions of the conditions. In this regard, the developer will need to provide justification why a renewal should be granted;

APPENDIX 3: REQUIREMENTS FOR A PERMIT TO CONSTRUCT A FILLING STATION

The following are prerequisites for the issuance of a Construction Permit for a filling station:

- A3.1 Decision letter from ZEMA;
- A3.2 Zoning approval by the Local authority,
- A3.3 Proof of ownership (Title or Consent from Traditional Rulers for customary land). In case of long term lease, proof of ownership or legitimate claim to the land will be required. In which case, the copy of Title for the land and documentary evidence linking the signatories on the lease agreement to the land in question will be required;
- A3.4 Proof of change of land use if the proposed location was initially not designated for petroleum infrastructure by the planning authority;
- A3.5 Two (02) copies of complete, consistent and properly referenced site layout drawings duly approved by the Local Authority indicating all safety distances and position of other important provisions such as tank farm, drainage system, offloading and loading points, oil interceptor, vent pipes and ingress/egress. The site layout should comply with the Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;
- A3.6 Two (02) copies of complete, consistent and properly referenced detailed engineering and structural drawings duly approved by the Local Authority of the following; tank farm, oil interceptor, canopy and price display. The said drawings should be consistent with the site layout and should comply with the

Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;

- A3.7 Approval of road infringement from the Road Development Agency;
- A3.8 A valid practicing certificate for the Registered Engineer that will supervise the project. The said permit is issued by the Engineers Registration Board in accordance with the provisions of the Engineering Institution of Zambia Act No. 17 of 2010 of the laws of Zambia. The said Engineering practitioner shall certify all key installations site as guided by the respective national standards including those prescribed by the ERB. It is worth noting that the ERB will report any form of unethical practice with regards to the project to the Engineering Institution of Zambia for further action in accordance with the provisions of the law ; and
- A3.9 Documentary evidence of the Registered Engineering professional’s commitment to the project on the said location in form of either acceptance letter from the Registered Engineer; an appointment letter from the employer signed by both parties; or a contract signed by both parties or letter of acceptance letter from the Engineer clearly stating the details;
- A3.10 Depending on the circumstances of each site, the ERB may demand for additional documentary proof of clearance from other concerned and /or affected parties such as but not restricted to the custodian of the railway line and utility companies on a case by case basis;
- A3.11 The Construction Permit, which shall be specific to a site, shall be valid for a period of two (02) years from the effective date and the developer may apply for a renewal in accordance with the provisions of the Construction Permit conditions.

APPENDIX 4: REQUIREMENTS FOR A PERMIT TO CONSTRUCT A BULK FUEL DEPOT

The following are prerequisites for the issuance of the Construction Permit for Bulk depots:

- A4.1 Decision letter from ZEMA with all the conditions;
- A4.2 Zoning approval by the Local authority,
- A4.3 Proof of ownership (Title or Consent from Traditional Rulers for customary land). In case of long term lease, proof of ownership or legitimate claim to the land will be required. In which case, the copy of Title for the land and documentary evidence linking the signatories on the lease agreement to the land in question will be required;
- A4.4 Proof of change of land use if the proposed location was initially not designated for petroleum infrastructure by the planning authority;
- A4.5 Two (02) copies of complete, consistent and properly referenced site layout drawings duly approved by the Local Authority indicating all safety distances and position of other important provisions such as tank farm, firefighting system, drainage system, offloading and loading points, oil interceptor, and ingress/egress. The site layout should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;
- A4.6 Two (02) copies of complete, consistent and properly referenced detailed engineering and structural drawings duly approved by the Local Authority of the following; tank farm, oil interceptor, gantry and pump houses. The said drawings should be consistent with the site layout and should comply with the Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;

- A4.5 Approval of road infringement from the Road Development Agency;
- A4.6 Documentary evidence of the Registered Engineering professional's commitment to the project on the said location in form of either acceptance letter from the Registered Engineer; an appointment letter from the employer signed by both parties; or a contract signed by both parties or letter of acceptance letter from the Engineer clearly stating the details;
- A.4.7 Depending on the circumstances of each site, the ERB may demand for additional documentary proof of clearance from other concerned and /or affected parties such but not restricted the custodian of the railway line and utility companies on a case by case basis;
- A4.8 The Construction Permit, which shall be specific to a site, shall be valid for a period of two (02) years from the effective date and may be renewed upon application

APPENDIX 5: REQUIREMENTS FOR A PERMIT TO CONSTRUCT A LPG BULK DEPOT

The following are prerequisites for the issuance of the Construction Permit for LPG Bulk depots:

- A5.1 Decision letter from ZEMA with all the conditions;
- A5.2 Zoning approval by the Local authority,
- A5.3 Proof of ownership (Title or Consent from Traditional Rulers for customary land). In case of long term lease, proof of ownership or legitimate claim to the land will be required. In which case, the copy of Title for the land and documentary evidence linking the signatories on the lease agreement to the land in question will be required;
- A5.4 Proof of change of land use if the proposed location was initially not designated for petroleum infrastructure by the planning authority;
- A5.4 Two (02) copies of complete, consistent and properly referenced site layout drawings duly approved by the Local Authority indicating all safety distances and position of other important provisions such as buildings, tank farm, firefighting system, offloading and loading points, filling sheds and driveways. The site layout should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;
- A5.4 Two (02) copies of complete, consistent and properly referenced detailed engineering and structural drawings duly approved by the Local Authority of the following; tank farm, offloading and loading points, filling sheds and pump areas. The said drawings should be consistent with the site layout and should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;

- A5.5 Approval of road infringement from the Road Development Agency;
- A5.6 Documentary evidence of the Registered Engineering professional's commitment to the project on the said location in form of either acceptance letter from the Registered Engineer; an appointment letter from the employer signed by both parties; or a contract signed by both parties or letter of acceptance letter from the Engineer clearly stating the details;
- A5.7 Depending on the circumstances of each site, the ERB may demand for additional documentary proof of clearance from other concerned and /or affected parties such but not restricted the custodian of the railway line and utility companies on a case by case basis;
- A5.8 The Construction Permit, which shall be specific to a site, shall be valid for a period of two (02) years from the effective date and may be renewed upon application

APPENDIX 6: REQUIREMENTS FOR A PERMIT TO CONSTRUCT A PETROLEUM OR BIOFUEL BLENDING REFINERY

The following are prerequisites for the issuance of the Construction Permit for a Petroleum refinery:

- A6.1 Decision letter from ZEMA with all the conditions;
- A6.2 Zoning approval by the Local authority,
- A6.3 Proof of ownership (Title or Consent from Traditional Rulers for customary land). In case of long term lease, proof of ownership or legitimate claim to the land will be required. In which case, the copy of Title for the land and documentary evidence linking the signatories on the lease agreement to the land in question will be required;
- A6.4 Proof of change of land use if the proposed location was initially not designated for petroleum infrastructure by the planning authority;
- A6.5 Two (02) copies of complete, consistent and properly referenced site layout drawings duly approved by the Local Authority indicating all safety distances and position of other important provisions such as buildings, process plants, utilities, tank farms, firefighting system, offloading and loading points, Corrugated Plate Interceptors (CPI), filling sheds and driveways. The site layout should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;
- A6.4 Two (02) copies of complete, consistent and properly referenced detailed engineering and structural drawings duly approved by the Local Authority of the following; tank farm, process plants, utilities, Corrugated Plate Interceptors (CPI), offloading and loading points, filling sheds and pump areas. The said drawings should be consistent with the site layout and should comply with the

relevant Zambian petroleum infrastructure standards and other ERB requirements and shall be approved by the relevant Local Authority;

- A6.5 Approval of road infringement from the Road Development Agency;
- A6.6 Documentary evidence of the Registered Engineering professional's commitment to the project on the said location in form of either acceptance letter from the Registered Engineer; an appointment letter from the employer signed by both parties; or a contract signed by both parties or letter of acceptance letter from the Engineer clearly stating the details;
- A6.7 Depending on the circumstances of each site, the ERB may demand for additional documentary proof of clearance from other concerned and /or affected parties such but not restricted the custodian of the railway line and utility companies on a case by case basis;
- A6.8 The Construction Permit, which shall be specific to a site, shall be valid for a period of five (05) year from the effective date and may be extended for period not exceeding two (02) years on similar terms and conditions at the Board's discretion.

APPENDIX 7: REQUIREMENTS FOR A PERMIT TO CONSTRUCT A PETROLEUM PIPELINE

The following are prerequisites for the issuance of a Construction Permit for a Petroleum pipeline:

- A7.1 Decision letter from ZEMA with all the conditions;
- A7.2 Documented proof Right of way approvals/permit/agreements;
- A7.3 Two (02) copies of complete, consistent and properly referenced route layout drawings/maps indicating the location of key pipeline infrastructures such as but not restricted to Pump stations, Pigging stations and Cathodic protection sites. The route layout/maps should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements;
- A7.3 Two (02) copies of complete, consistent and properly referenced detailed engineering and structural drawings including but not restricted to the following: Pump stations, Pigging stations, Cathodic protection sites. The said drawings should be consistent with the site layout and should comply with the relevant Zambian petroleum infrastructure standards and other ERB requirements;
- A7.3 Approval of road infringement from the Road Development Agency;
- A7.3 Documentary evidence of the Registered Engineering professional's commitment to the project on the said location in form of either acceptance letter from the Registered Engineer; an appointment letter from the employer signed by both parties; or a contract signed by both parties or letter of acceptance letter from the Engineer clearly stating the details;
- A7.4 Depending on the circumstances of each site, the ERB may demand for additional documentary proof of clearance from other concerned and /or

affected parties such but not restricted the custodian of the railway line and utility companies on a case by case basis;

A7.5 The Construction Permit, which shall be specific to a site, shall be valid for a period of five (05) years from the effective date and may be renewed upon application in accordance with the provisions of the existing conditions.

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