1 Legislative context

The EIA Regulations require that an EIA application investigates the "need and desirability" of a development proposal. This relates to how sustainable the proposed new land use will be if the development proposal goes ahead.

According to the Department of Environmental Affairs and Development Planning's March *Guideline on Need and Desirability*, the "need" for a facility relates to whether the facility is needed at this point; whilst the desirability of the facility relates to the location or the receiving environment in which the facility is situated; i.e. "is this the right time and is it the right place for locating the type of land-use/activity being proposed" (2013, p. 11)?

To investigate the need and desirability of the proposed new foundry, reference has been made to the Ekurhuleni's Town Planning Scheme, 2014, their Integrated Development Plan, 2017, their Spatial Development Concept report, 2012 and the Regional Spatial Development Framework Strategic Environmental Assessment report, 2012.

Specialist input obtained to date, as well as the EAP's professional opinion based on experience with similar projects, has also informed the investigation. This section attempts to address all the issues raised in the DEA's 2014 Guideline on Need and Desirability. In so doing, this section addresses how the development complies with the principles set out in Section 2 of NEMA and meets the requirements of sustainable development.

Please refer to **Annexure I** for a comprehensive breakdown of the Need & Desirability related to the proposed new foundry.

1.1 Approved Land Use and Zoning

The un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR is zoned as an Industrial 1 land use in terms of the Ekurhuleni's Town Planning Scheme (2014). According to the Town Planning Scheme, Industrial 1 zone includes land use for noxious industry purposes, with the consent of the municipality: "an activity where any one or more of the following activities are carried out: … smelting of ores and minerals; calcining; puddling and rolling of iron and other metals; … re-heating; annealing; hardening; forging; converting and carburizing iron and other metals…" (p. 10). A Consent Use application will be made to the municipality.

Further to the appropriate zoning of the site, the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR is fully surrounded by Industrial and Mining zoned properties. In addition to this, the closest residences are more than 850m away. The land use of the surrounding area is therefore appropriate for establishing a noxious industry.

1.2 Ecological Integrity and Biodiversity

The proposed foundry is to be situated on the un-subdivided portion of un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR in Germiston Knights industrial area, which is already developed. Historically, the site formed part of the Soweto Highveld Grassland vegetation type, but according to the Environmental Management Framework of 2007, the area of the proposed development and its surrounds has been completely altered. There is thus no anticipation of impacts to the ecological integrity and biodiversity of the area.

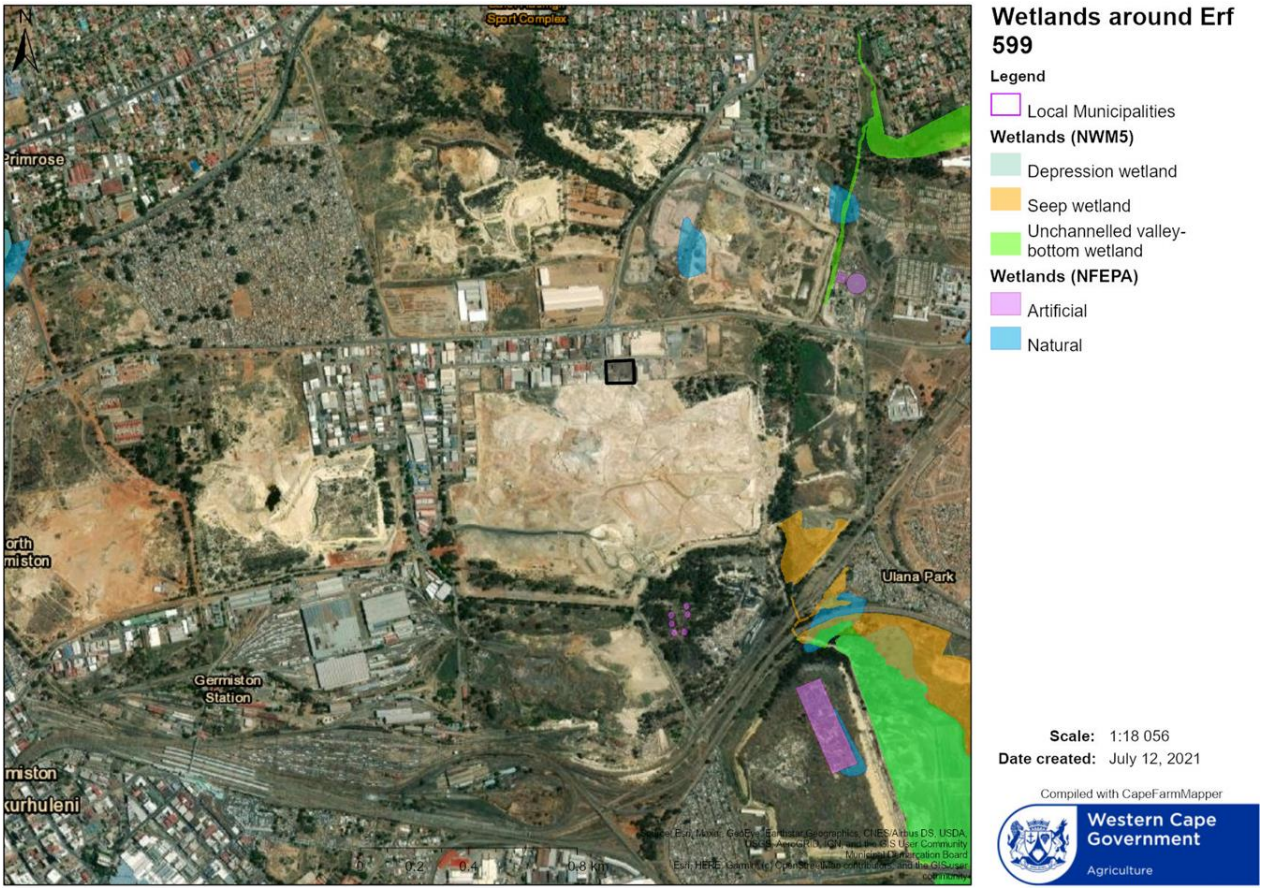
1.2.1 Terrestrial Biodiversity

The proposed foundry is to be situated on the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR in Germiston Knights industrial area and is already developed. Historically, the site formed part of the Soweto Highveld Grassland vegetation type, but according to the Environmental Management Framework of 2007, the area of the proposed development and its surrounds have been completely altered. Adjacent to the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR is an abandoned mine dump, which is completely bare of vegetation. There is thus no anticipation of impacts to the terrestrial biodiversity of the area.

1.2.2 Aquatic Biodiversity

Based on the National Wetland Map 5 and the National Freshwater Priority Area maps, the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR is situated some 380m southwest of an identified natural freshwater priority area (NFEPA map) and 750m northwest of a seep wetland (National Wetland Map 5). No watercourses were identified on the proposed property. Figure 8, below, shows the proximity of the wetlands to the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR. Based on the figure, it is clear that the natural wetland has been altered extensively with little to no naturally remaining wetland. Due to the distance from the wetlands as well as the altered state of the natural wetland and the surrounding area (see Figure 8), no water quality and erosion impacts associated with the development are anticipated.

Figure 1: Wetlands surrounding the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR



1.3 Global Responsibilities for Protecting the Environment

The development proposal complies with global responsibilities relating to terrestrial and aquatic vegetation and biodiversity conservation (see Item 1.2.1 and 1.2.2).

In terms of global responsibilities relating to cultural and historical resources, there are no anticipated impacts as the proposed development is located more than 3km away from the two Grade II heritage sites - the St Andrew's Presbyterian Church and Victoria Street bridge.

In terms of global responsibilities relating to air quality and climate change, the following is applicable:

The proposed foundry will require an Atmospheric Emissions Licence in terms of the NEMAQA. In terms of the AEL, the plant will need to meet the statutory Minimum Emissions Standards for scrap aluminium and copper processing using combustion installations. These standards are premised on the need to protect ambient air quality and reduce climate change impacts. Air quality management of the new plant will be in line with the Ekurhuleni Municipality's Air Quality Management Plan of 2005.

Similarly, the AEL will stipulate general management measures for reducing impacts on air quality from all aspects of the aluminium and copper melting operation, also with the aim of protecting air quality and reducing climate change impacts.

Global responsibilities relating to waste management are discussed under Item 1.7.

1.4 Use of and Impact on Natural Resources; Dematerialised Growth

1.4.1 Use of Natural Resources

Aluminium

The foundry will form part of the metal recovery value chain, for the purposes of utilising the metals for supporting human activities. Being aluminium and copper, the products can be used in the construction and manufacturing industries (installation of copper pipes, aluminium windows, etc.).

Both aluminium and copper are non-renewable / finite natural resources. The proposed development thus addresses this through the smelting and moulding of scrap aluminium and copper, thereby reducing the demand for its mining. Furthermore, recovering aluminium and copper from scrap is commonly known to have a smaller carbon footprint and to be less energy intensive than mining these virgin ores. The foundry will therefore have environmental benefits. The proposed development will thus benefit the circular economy by diverting waste from landfills.

Fuel

The furnace will use fossil fuel, such as Low Sulphur Oil (LSO) or natural gas. As regards the possibility of replacing hydrocarbon furnace oil or natural gas with a biofuel, GeT Alloys have indicated that, provided quality, performance, competitive cost, and security of supply can be assured, biofuels can be utilized.

1.4.2 Impact on Natural Resources

This is discussed in Items 1.2, 1.3, 1.10 and 1.12.

1.5 Identified Environmental Attributes and Management Proposals from The City's Regional Spatial Development Framework and Strategic Environmental Assessment Report

A review of Ekurhuleni Regional Spatial Development Framework and Strategic Environmental Assessment report, 2012, found as follows with regards to the Germiston Knights industrial area where the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR is situated:

- The Current State of Housing and Current State of Industry map shows the site and Germiston Knights industrial area falling outside the residential area and as zoned for industrial land usage. The site is directly adjacent to an electricity powerline. The site is situated within the urban edge.

- The Catchment Areas map shows Germiston Knights industrial area falling within the Natalspruit catchment, while the Floodline map shows that the proposed development falls outside the areas identified as having a flood risk. No rivers are situated nearby. Some wetlands are situated about 380m northeast and 750m southeast of the site.
- The entire Ekurhuleni Municipality is largely built up with few natural spaces. From the Ekurhuleni Biodiversity Open Space Strategy Open Space Network map, it is clear that there is no open space development planned for area in the vicinity of the Germiston Knights industrial area and the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR.
- No cultural map of the Germiston Knights industrial area exists. However, 2 Grade II historical sites are more than 3 kilometres away from the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR. These are the St Andrew's Presbyterian Church school and Victoria Street bridge.

The Regional Spatial Development Framework states that there is a need for better connections between the towns of the municipality due to conflicts between local and freight traffic, among other things. Plans to connect these towns through development are thus proposed (p. 11).

Based on a review of the City's SDP and EMF, the development of the site for industrial purposes is supported by the City's regional planning policies. Developing a potentially noxious industry in an area that is zoned for such a land use, is the environmentally responsible option. Compliance with legislated emissions standards and dust fall limits will ensure that the facility aligns with the City's management priorities.

And economic and social benefits (scrap metal recovery and diversion from landfill; service to the construction and manufacturing industries; investment in Germiston), are associated with this development, but not at the expense of the receiving environment.

1.6 Pollution of the Natural Environment

The following aspects of the foundry operation could pollute the environment:

- Fuel storage and handling - tank and line failure and incorrect tank and furnace refuelling and fuel handling procedures could lead to contamination of the municipal stormwater system. According to GeT Alloys, if furnace oil is used to fuel the furnaces, bulk fuel storage tanks and associated infrastructure, including bunding, will be designed in accordance with *SANS 10131, Above-ground storage tanks for petroleum products*.
- Fuel combustion – criteria pollutants such as particulate matter, sulphur dioxide and nitrogen dioxide are emitted during combustion.
- Material handling – transport, stockpiling and conveyance of dry dross output has the potential for significant dust emissions if not managed appropriately.

Standard best practice operating procedures, impact management measures and infrastructure design and maintenance are required in order to minimise the possibility of such pollution occurring. The foundry should readily be able to implement such measures, and these will be included in the environmental management programme for the project. The abatement system for the air emissions will be designed to ensure that pollutant concentrations meet the Minimum Emissions Standards for combustion installations in the metallurgical industry, and for secondary aluminium processing facilities.

1.7 Waste Management

The following aspects of the foundry operation are considered to be part of the waste-to-value chain, and to entail waste management activities:

- The activity itself is a general waste (scrap metal) recovery activity. Impacts associated with this waste recovery process have been discussed elsewhere and entail mainly air emissions and health and safety risks. These can be readily minimised by implementing fit-for-purpose emissions abatement and best practice health and safety operating protocols.
- A significant waste stream associated with the recovery of aluminium is a substance called dross. Dross is the unwanted material that forms on the surface of molten metal. Dross is considered hazardous, especially when it is wet as it releases high concentrations of hydrogen and ammonia. Weatherproofing of the dross and best practice health and safety operating protocols are essential for minimizing he impacts associated with this waste management activity.

1.8 Environmental Rights

The rights of people to an environment that is not harmful to their health or wellbeing, and equal access to that environment and its resources, are enshrined in the NEMA Preamble. The preamble goes on to state that development should be sustainable, i.e., that for both present and future generations, pollution and ecological degradation should be prevented, conservation should be promoted, and that development and use of natural resources should be ecologically sustainable whilst promoting justifiable economic and social development.

The proposed foundry will take place on an appropriately zoned site in a heavy industrial area. The proposal does not entail any associated environmental impacts that cannot be adequately managed with standard best practice design and operational measures. And the proposal has significant environmental and socio-economic benefits in terms of adding to the waste-to-value chain and service to the metallurgical industry.

Therefore, no aspects of the development proposal infringe on others' environmental rights.

1.9 Socio-Economic, Cultural, and Historical Impacts of the Development

1.9.1 Cultural and Historical

Four historical sites in Germiston that have been highlighted as a potential concern are 1) St Andrew's Presbyterian Church, 2) Victoria street bridge, both constructed in the late 1800's as well as 3) Germiston Theatre and 4) Simmer and Jack Mine house building. Only St Andrew's church and the Victoria street bridge are Grade II heritage sites. However, most of these heritage sites are more than 3 kilometers away from the un-subdivided portion of Remainder of Portion 1 of farm Driefontein No. 87-IR. As a result, the foundry is not expected to impact negatively on heritage, cultural or historic aspects of the area.

Preliminary feedback from a heritage specialist is that a screening-level assessment will suffice for this application. The outcome of the assessment of the heritage screening report determined the expected impacts on heritage resources are summarized as follows:

- Potential impact on the **Built Environment Heritage and Cultural Landscape: -** Although Germiston has a number of heritage buildings, none of the known significant architecture from Germiston is located near to the area proposed for development and *no negative impact is anticipated* to any significant built environment heritage resources or any significant cultural landscapes.
- Potential impact on **Archaeology: -** Although numerous archaeologically significant finds have been identified in proximity to the development area. Based on the already transformed nature of the area proposed for development, and considering that no additional excavation is anticipated, it is *not expected that any significant archaeological* heritage will be impacted by the proposed development.

- Potential impact on **Palaeontology:** - According to the SAHRIS Palaeo-sensitivity Map, the area proposed for development is underlain by sediments of low palaeontological sensitivity. Based on the information available, and considering that no additional excavation is anticipated, it is *not expected that any significant palaeontological heritage will be impacted* by the proposed development.

The heritage impact statement concludes:

- Based on the available information, it is *unlikely* that the proposed development will impact on significant heritage resources.
- As such it is recommended that *no further studies* are required in terms of section 38 of the NHRA.
- Should any heritage resources such as archaeological material, unmarked burials or fossil material be unearthed during excavations, work must cease in this area and SAHRA must be contacted regarding an appropriate way forward.

1.9.2 Socio-Economic

- Germiston is known as an industrial and mining town. The area of Germiston Knights industrial area is thus designated as an Industrial Zone. According to the Gauteng Spatial Development Framework for 2020-2030, the area of Germiston is considered a focus area for economic prosperity and socio-economic integration and a large portion of the area is zoned for industrial and commercial use. This means that industrial development in this zone is generally supported.
- Industrial development in this area has therefore been recognised as beneficial for the region's economy.
- Given the country's current economic position and its high unemployment rate, investment into a new industrial enterprise that will contribute to job creation is desirable.
- The new foundry will entail the development of many jobs at GeT Alloys, approximately 50 – including general managers, furnace operators, maintenance staff and office staff. Industrial development in the Germiston area, can therefore be considered a social benefit.

1.10 Best Practicable Environmental Option

The NEMA defines the Best Practicable Environmental Option as: "the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as in the short-term".

From the information contained in Items 1.1 to 1.9, it is evident that the development of the foundry does not entail any significant negative environmental impacts. All associated impacts can readily be minimised and managed with the application of industrial best practice in the design and operation of the plant, and by compliance with applicable legislation.

The benefit which the plant represents in terms of investment in the South African metallurgical industry and in the South African waste-to-value chain, is significant. The facility also represents job creation and income for the local municipality.

Given the approved land use of the site, as well as the biodiversity planning and economic planning goals relevant to the area, the foundry could be considered as the BPEO for the site.

1.11 The positive and negative cumulative ecological/biophysical impacts of the development

A summary of the cumulative ecological / biophysical impacts of the development is as follows, based on the full impact assessment contained in Annexure J.

- Any impacts associated with the foundry are considered cumulative impacts, i.e., adding to impacts already occurring in the Germiston Knights industrial area associated with new and existing industrial activities; and
- It is not expected that the foundry will entail any unacceptable negative impacts on the receiving environment, i.e., where ecological processes will be severely disrupted, where ecological resources will be significantly damaged, where irreplaceable natural resources will be lost, where heritage-related resources will be lost, where pollution of the environment will exceed statutory limits and be unmitigable, etc.

1.12 The positive and negative cumulative socio-economic, health and safety and wellbeing, and cultural heritage impacts of the development:

- Visual: Visual impacts due to the obstruction of views of the town centre as well as the visual intrusion of night lightning and the large silo structures.
- Health and safety, risk of fire and explosion: Impact on employee health and safety associated with the bulk storage and handling of hazardous and flammable goods