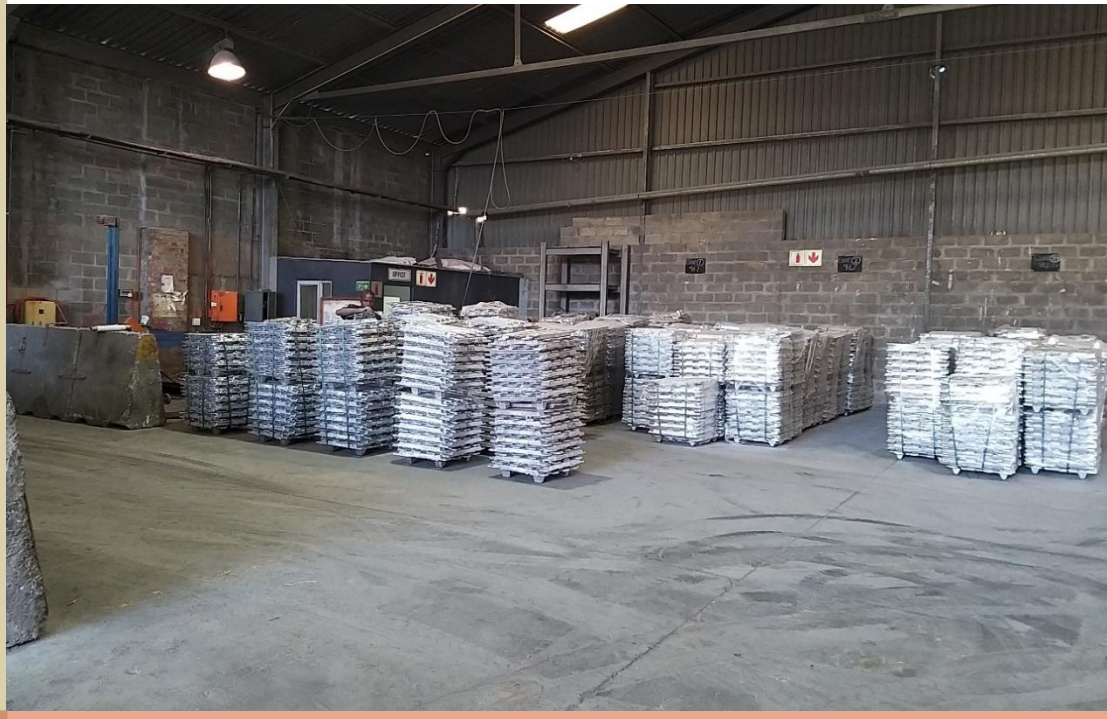

PRE-APPLICATION DRAFT BASIC ASSESSMENT REPORT: PROPOSED GET ALLOYS FOUNDRY EXPANSION, ERF 12399 & 2363, PAROW

The Environmental Practice

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Executive Summary

1) Introduction

Get Alloys operates a scrap aluminium foundry on Erf 12399 and Erf 23631 in the industrial area of Beaconvale, Parow. Get Alloys is proposing to expand the plant in order to meet a greatly increased demand for their products and services. The expansion will entail additional scrap aluminium furnaces as well as the addition of furnaces to processes scrap copper.

Figure A Site locality plan

Image courtesy of Google Earth, 2021

2) Application Requirements

The expansion requires a Waste Management Licence in terms of the National Environmental Management Waste Act, Act No. 59 of 2008, as amended (NEMWA). This is because the foundry expansion entails the recovery of scrap aluminium and copper ("general waste") in excess of 10 tons per day.

A Basic Assessment- type Environmental Impact Assessment (EIA) process will be followed for authorisation of the proposed plant expansion in terms of Chapter 4, Part 2 of the EIA Regulations published under the National Environmental Management Act, Act No. 107 of 1998, as amended (NEMA).

The foundry expansion will also require an amendment of the current Atmospheric Emissions Licence held by the facility in terms of the National Environmental Management: Air Quality Act, Act No. 39 of 2004, as amended (NEMAQA). This is due to the expansion of throughput capacity being proposed.

3) Detail, Experience and Independence Statement of the EAP

Get Alloys has appointed The Environmental Practice (Pty) Ltd (Enviroprac) to undertake the application for a Waste Management Licence. Enviroprac is an independent consultancy with no financial interest in operations at the scrap aluminium furnace, other than remuneration for work performed in terms of the NEMWA, NEMAQA, NEMA and the EIA Regulations; and does not have and will not have any vested interest in the outcome of this Basic Assessment application.

Colleen has fourteen years' experience in environmental management, including impact assessment. Colleen is a registered environmental assessment practitioner with the Environmental Assessment Practitioners Association of South Africa (Reg. No. 2018/166); has an Economics Honours degree from the University of Cape Town; and is a member of good standing with the International Association of Impact Assessment, the National Association for Clean Air, and the Institute of Waste Management in Southern Africa.

4) The Purpose of the Basic Assessment Process

The purpose of the Basic Assessment process is to investigate the plant expansion proposal; identify site sensitivities and potentially significant impacts associated with the expansion; investigate site, layout and technology alternatives in order to minimise these impacts; and assess the impacts of the development proposal.

Specialist input into the EIA process has been obtained where required. In accordance with the requirements of the EIA Regulations, the No-Go Alternative (i.e. the option of not expanding the current canola processing plant) has also been investigated.

The impact assessment process has identified what, in Enviroprac and the specialist team's opinion, is the Best Practicable Environmental Option (BPEO) for achieving the purpose of the activity given the context of the receiving environment. BPEO is defined 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".

5) Project description

The proposal is to expand current operations at the Get Alloys scrap aluminium alloying foundry, to increase the aluminium alloy production capacity. This will also include melting scrap copper for copper alloy production, and improved infrastructure for aluminium dross recovery.

The current foundry has been operating since the 1980s. Currently, the foundry is operating with two furnaces. The upgrade will entail operating with a total of four fuel-oil fired melting furnaces: (one 5-tonne and three 8-tonne in capacity. And: each 8-tonne melting furnace operates in combination with a 10-tonne holding furnace, from which the melt is poured and cast. The alloy is cast into moulds via one of three casting machines, to form ingots.

In addition, one 2.5-tonne or two 1-tonne box type furnaces will be installed to produce copper alloy ingots. The fuel oil fired furnace(s) is charged with copper scrap in a batch process. Copper alloy is tapped and cast into moulds on a carousel system and allowed to cool to form copper ingots. The plant will produce 250 tonnes of copper alloy per month. Both aluminium and copper alloy ingots are packed and dispatched via truck.

For the aluminium alloy production, it is expected that the final output of aluminium will be 1750 tonnes per month, derived from melting about 2100 tonnes of scrap aluminium. For the copper, 300 tonnes of scrap will be melted to produce 250 tonnes of copper per month.

All furnaces are fitted with localised fume extraction to capture emission from the furnace charging (loading), melting and casting processes. Fugitive emissions will furthermore be extracted from the building roof at its apex. Emissions will be discharged to atmosphere via a bag filter.

About 20 tonnes per day of dross from the aluminium furnaces will be tapped or skimmed from the molten material surface and recovered for reuse on site. It is expected that a recovery rate of 10 – 15% can be achieved. The dross recovery plant will be connected to the foundry emission extraction and filtration system.

Bulk engineering services

The foundry is already connected to the municipal bulk engineering services network. The expansion will utilise this municipal services supply.

Site access

The trucks travelling to and from the site will utilise the current site access points in Glenhurst Street and in Selsdon Road.

Water uses

Groundwater is being abstracted from an existing borehole at the rate of ±10 000 litres per month and is used for cooling the moulds.

6) Alternatives Identified and Investigated

Alternative means of fulfilling the general purpose of the application, which is the provision of additional scrap aluminium and copper processing services by Get Alloys, have been identified and investigated during the Basic Assessment process. These alternatives are based on the potential impacts associated with the plant expansion.

In order to avoid or minimise any adverse impacts, and to maximise any benefits associated with the expansion, site, activity, process and technology alternatives were investigated. These include technology for preventing ambient air quality impacts from the particulate matter and gaseous emission from the oil-fired furnaces and fugitive particulate matter emissions from dross handling.

The development proposal described in the Basic Assessment Report, includes the alternatives identified by the specialist team and by Enviroprac, as having the least adverse impacts and the most benefit for the receiving environment and surrounding community.

7) Public Participation

A key component of the Basic Assessment process is public participation. This allows stakeholders to assist in identifying issues or concerns around the activity which may need further investigation or assessment. In this way, stakeholders can also contribute to the identification of alternatives for achieving the Best Practicable Environmental Option.

The identification of potential stakeholders; the process whereby these stakeholders are notified of the application process; providing stakeholders with an opportunity to register as “Interested and Affected Parties” (I&APs) and to comment on all reports published during the process; the requirement for the Environmental Assessment Practitioner and the project team to address any and all issues raised by registered I&APs; and the requirement that the applicant notifies registered I&APs of the decision which the DEA&DP reaches on the application, are all strictly prescribed by the regulations contained in Chapter 6 of the EIA Regulations.

This Pre-Application Draft Basic Assessment Report is the first report to be distributed for public comment. A full record of public participation will be included in subsequent versions of the Basic Assessment Report.

8) Environmental Impact Statement

Summary of Key Findings of the EIA

The development proposal (including the technology, site, process and activity alternatives that were found on investigation to be the best practicable options for the minimisation of health, safety, and environmental impacts) was assessed against the no-go option, or the option of not expanding the foundry on Erf 23631 and Erf 12399.

The impacts which were identified as associated with the proposed plant expansion are:

OPERATIONAL PHASE IMPACTS

1. Potential risk of soil, groundwater, and surface water contamination (Indirect)
Handling and storage of hydrocarbons, as well as fuel and refuelling activities to be done in accordance with standard operating procedures will result in a **Low** significance impact with mitigation.

2. Impacts on air quality / pollutants
Increased particulate matter and gaseous emissions may occur from aluminium scrap pre-heating and oil-fired furnaces, resulting in poor ambient air quality. At sufficiently high concentrations, these pollutants may result in potential health, nuisance, dust, and odour impacts without mitigation. Regional air quality may be negatively affected as a result of the cumulative impacts associated with these emissions. This may lead to a potentially more widespread negative impact for residents within proximity to the facility. A **Low** significance impact is expected with mitigation.

3. Increase traffic and congestion – nuisance
The foundry will have associated additional trucks on the road, transporting scrap aluminium and copper to the plant while also transporting alloy to customers. This will add to the cumulative impacts associated with the movement of heavy vehicles within the industrial area and localised surrounds. Effects are likely to only be felt on a localised level and in keeping with the design capacity of the surrounding road network. **Low** significance impacts are predicted.

4. Adverse occupational health effects on staff due to significant levels and periods of exposure
The foundry has significant associated risks in terms of health and safety of workers (working with extreme temperature machinery and molten metal; furnace emissions in the workplace; handling hazardous dross (corrosive; skin and lung irritant; potential for harmful and explosive fumes when wet). The facility needs to be designed and operated in such a way as to effectively avoid and manage health and safety risks.

Get Alloys will need to prepare standard operating procedures for the various foundry processes (e.g., furnace charging, tapping, casting, dross handling and storage), as well as prepare preventative maintenance plans for all infrastructure associated with the foundry activities, in order to ensure that best-practice health and safety measures are implemented, and that infrastructure does not become derelict and unsafe to operate. With the implementation of mitigation, the impact is expected to be of **Low** significance.

5. Noise resulting in nuisance factors / potential complaints
Potential noise impact related to the operation of the facility. This may be significant at start up and shut sown procedures but is compatible with the existing land use planning objectives for the property (zoned for industrial use).

6. Waste impacts
The operation of the foundry will generate small quantities of general waste such as office and some kitchen waste. This will be disposed of in the municipal waste stream [normal solid waste collection services as provided by the Municipality in the area].

The dross that remains after 10 -15% aluminium recovery (the recovery process also includes separating out of steel and magnetic metals from the dross for resale) is disposed of to landfill. With the dross recovery process

and with implementation of best practice waste management methods, the impact is expected to be of **Low** significance.

7. Socio-economic benefits

The components making up the socio-economic benefits are highlighted below – the result of the associated impacts is expected to a have a **Medium positive** impact.

8. Socio-economic (employment opportunities)

GeT Alloys will increase their market share and profitability. Not only will there be knock-on benefits for Get Alloys' staff in terms of job and income security, and benefits to the owners of GeT Alloys, but the plant expansion will enable Get Alloys to employ a total of up to about 50 staff members.

9. Socio-economic (contribution to capital investment)

GeT Alloys provides a service to downstream production and construction industries. These are essential industries which support human activities.

It can be argued that successful businesses in the Beaconvale industrial area, could attract additional investment into the area: businesses which provide goods and services to GeT Alloys, the scrap providers (companies and individuals), and construction-related businesses which use GeT Alloys' aluminium alloy and copper in their manufacturing and construction processes.

10. Socio-economic (contribution to the economy)

An expanded and financially stable and profitable industry generates tax revenue for the government, which is an essential aspect of the economy.

11. Impact on natural resources (positive) - contribution to green economy and national waste diversion from landfill objectives and targets

The operation of the facility will result in a positive impact on the use of natural resources:

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 mining of these metals. 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.

In addition, scrap metal will be diverted from landfill, thereby saving on scarce landfill airspace. The foundry will therefore have environmental benefits.

Also, the furnaces to be installed shall use fossil fuel, such as low sulphur oil (LSO). The consideration of replacing hydrocarbon furnace oil with a biofuel, provided that the quality, performance, competitive costs, and security of supply can be assured, has been assured by the Applicant.

A summary of the findings of the impact assessment is contained in **Table 1** below. It has been found that any negative impacts associated with expanding and operating the existing foundry can be avoided altogether or can be reduced to acceptable levels through appropriate mitigation. All of the negative impacts are of **Low** significance.

The identified benefits associated with the proposed foundry were found to be of **Medium benefit** during the operational phase.

The activity proposal has been assessed against the no-go option, which is the option to not expand the existing foundry. The no-go option has thus provided a baseline against which to assess the benefits and drawbacks of the proposed expansion.

With the no-go option, no benefits of sufficient significance were identified to warrant not expanding the foundry.

However, the no-go option has the drawback of constraining GeT Alloy's service offering to the construction industry, as well as their profitability. The no-go option also represents the loss of potential investment, income, job opportunities and service to downstream industries, which could be realised with the expansion of the existing facility.

Table 1: Summary of Operational Phase Impacts Associated with the Plant Expansion

Impact	Before mitigation	After mitigation
Ambient air quality	Medium (-ve)	Low (-ve)
Traffic	Low (-ve)	Low (-ve)
Soil and groundwater contamination	Medium (-ve)	Low (-ve)
Health and safety risk	High (-ve)	Low (-ve)
Noise	Medium (-ve)	Low (-ve)
Waste management	Medium (-ve)	Low (-ve)
Socio-economic benefits	Medium (+ve)	

Recommendations from the EAP and Recommended Conditions to be Included in the Environmental Authorisation:

The Environmental Practice recommends that the proposed expansion of an aluminium and copper foundry on Erf 23631 and Erf 12399 **should be authorized**. This recommendation is based on the outcome of the impact assessment process, which has been informed by Enviroprac's professional experience in environmental management as well as on specialist input and detailed process information provided by the Applicant.

The facility should be designed and operated with the implementation of all the mitigation measures recommended by the specialists and required by the commenting authorities. All of these measures are contained in the EMPr. The implementation of the EMPr should therefore be the condition of the environmental authorisation.

All ongoing emissions monitoring and other ongoing management measures contained in the EMPr should be reported on to the DEA&DP's Waste Management Directorate and to the City of Cape Town's Air Quality branch by the applicant on the basis reflected in the environmental authorisation. On a five-yearly basis, the facility should be audited against the conditions of the EMPr by an independent Environmental Control Officer (ECO). These audit reports should be submitted to the DEA&DP for their record-keeping purposes.

These recommendations for monitoring and auditing of operations against the EMPr are contained in the EMPr and should therefore be a condition of authorisation.

Ambient air quality [1]

- As per the planned Turnkey Modular air pollution control system design, all furnaces must be fitted with fume extraction, both from the furnaces itself and via hoods to capture fumes during charging and/or tapping. Fugitive emissions must furthermore be extracted from the foundry building roof at its apex as well as the dross recovery plant. The system design must ensure the PM concentration in the plume exiting the 30 m stack meets the MES of 30 mg/Nm3.
- Fugitive PM emissions should be minimised to avoid off-site exceedances of NAAQS.
- Good housekeeping, e.g., avoiding and cleaning up spillages of fine materials such as baghouse dust and dross.
- Keep vehicle driveways clean and free of dust to avoid entrainment.
- Avoid unnecessary handling of dry fine materials such as dross as it is removed from the foundry to the cooling bay to the recovery plant.
- Ensure cooling dross stockpiles are not exposed to wind to avoid windblown dust.

[1] Recommended inclusions in EA from Nicolette von Reiche, Soundscape. Full ambient air quality impact mitigation measures are included in impact assessment and in EMP.

- Fugitive ammonia emissions must be avoided by keeping dross dry i.e., covered within the cooling bay dross recovery building.
- To reduce vehicle exhaust emissions, avoid unnecessary idling of vehicles on-site.

Health and safety risks

- The management and mitigation of the employees' exposure to these health and safety risk factors is through sound implementation and compliance to the requirements of the Occupational Health and Safety Act and applicable Regulations, as well as best practice management and mitigation measures to minimize these potential impacts.
- The applicant should compile Standard Operating Procedures and Preventative Maintenance Plans for all aspects of the operation where significant health and safety risks are attendant, including a Dross Management Procedure to ensure adequate ventilation of dross-handling areas, weatherproofing of dross handling areas, etc. The Dross Management Procedure should address all hazards and risks identified in available Material Safety Data Sheets for dross.

Noise

- Developing a mechanism to record and respond to complaints
- In the event of a compliant being lodged, investigate through specialist site visit and noise monitoring to determine cause, and implement any recommended remedial measures to resolve complaint.
- Avoid unnecessary revving of engines and switch off equipment/vehicles/trucks when not required.
- Managing the impact of reverse warning signals by removing the need for reversing by using drive through pathways.
- Maintain internal road surfaces.
- Avoid excessive use of exhaust brakes.
- Maintain machinery and equipment to minimise noise.
- A complaints register must be kept.

Waste

- 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.
- Weatherproofing of the dross and best practice health and safety operating protocols are essential for minimizing the impacts associated with this waste management activity.
- The applicant should compile a dross management procedure and train staff accordingly.

Freshwater, soil and groundwater contamination

- Ensure that fuel storage tanks are adequately bunded and the installation complies with SANS 10131: Above-ground storage tanks for petroleum products.
- Designated refuelling areas and procedures to reduce spills, leaks, infrastructure failure. Educate employees in correct handling and refuelling procedures.
- A spill response kit appropriate to hydrocarbons will be available on site. Hydrocarbon contaminated material will be disposed of as hazardous waste
- A Standard Operating Procedure (SOP) for all activities relating to Fossil Fuel storage, refilling, handling and use in processing must be compiled to minimise associated health, safety, and environmental risks.
- Staff must be trained in the SOP, with records of staff competency retained.