

# Transalloys coal-fired power station, near eMalahleni, Mpumalanga Province

Motivation for amendment of the Integrated Environmental Authorisation

DEA Ref.: 14/12/16/3/3/97

June 2019

**savannah**  
environmental

 +27 (0)11 656 3237       +27 (0)86 684 0547  
 info@savannahsa.com       www.savannahsa.com

**Prepared for:**

Mr Andrey Korzh,  
Transalloys (Pty) Ltd,  
P.O. Box 856,  
eMalahleni, 1035.  
Fax: 011-214-0540  
Tel: 011-214-0553

Email: A.Korzh@transalloys.com



+27 (0)11 656 3237



+27 (0)86 684 0547



info@savannahsa.com



www.savannahsa.com

First Floor, Block 2, 5 Woodlands Drive Office Park, Cnr Woodlands Drive & Western Service Road, Woodmead, 2191

## PROJECT DETAILS

<b>Title</b>	: Transalloys coal-fired power station and associated infrastructure, near eMalahleni, Mpumalanga Province: Motivation for Amendment to the Environmental Authorisation
<b>Authors</b>	: Savannah Environmental (Pty) Ltd Gideon Raath Arlene Singh Jo-Anne Thomas
<b>Specialist Consultants</b>	: Gerhard Botha - Nkurenkuru Ecology & Biodiversity Jaco van der Walt - Heritage Contracts and Archaeological Consulting CC (HCAC) Morné de Jager - Enviro Acoustic Research CC Tony Barbour - Tony Barbour Environmental Consulting and Research Chantél Muller - EnviroRoots (Pty) Ltd Joppie Schrijvershof – Oasis Environmental Specialists (Pty) Ltd Lourens du Plessis – LOGIS (Pty) Ltd Dr. Hanlie Liebenberg-Enslin – WSP South Africa (Water Use Licence)
<b>Client</b>	: Transalloys (Pty) Ltd
<b>Report Status</b>	: Draft Motivation Report - Report for Public & Authority Review and Comment

**When used as a reference this report should be cited as:** Savannah Environmental (2019) Motivation Report for the Amendment to the Environmental Authorisation for the Transalloys coal-fired power station, near Emalahleni, Mpumalanga Province.

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## PURPOSE OF THE REPORT

An integrated Environmental Authorisation (EA) and Waste Management Licence for the 55MW Transalloys coal-fired power plant and associated infrastructure near Emalahleni, Mpumalanga Province (DEA ref: 14/12/16/3/3/97) was obtained by Transalloys (Pty) Ltd on the 2<sup>nd</sup> of March 2016. The approved project was intended to provide power to the existing Transalloys smelter complex, which is a ferro-metal plant recovering Silicon Manganese (SiMn) from ore. Since being issued, Transalloys (Pty) Ltd (hereafter "Transalloys") have conducted further feasibility and financing work, which determined that the power requirements of the existing plant (as modelled for future capacity) require greater amounts of electricity (above the 55MW approved), and that the existing site has potential for up to 150MW<sup>1</sup> of electricity production. Subsequently, due to economic considerations, financing (lending) considerations, potential of the site and capacity requirements, Transalloys are submitting this request for amendment of the original EA (2016), and are proposing the following amendments thereto:

1. An increase in the authorised output capacity from 55MW to: **A range between 120MW – 150MW**;
2. **An amended layout**, with specific mention of the swapping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR);
3. An **update of the contact person details** (holder of the EA); and
4. An **update of the validity of the EA**, to extend by an additional 5 (five) years from the expiry date of the original EA.
5. An amendment of the project description as detailed in the EIA Report.

The increase in output capacity and optimisation of the layout will result in the optimisation of the facility overall, which was submitted to the Department of Environmental Affairs (DEA) in the initial EIA process. These amendments to the project are proposed in order to increase the efficiency of the facility and consequently the economic competitiveness thereof, and to promote further electricity independence of the plant.

The proposed amendments in themselves are not listed activities, and do not trigger any new listed activity as the proposed amendments are within the original authorised development footprint, and do not change the scope of the EA.

In terms of Condition 5 of the Environmental Authorisation and Chapter 5 of the EIA Regulations of December 2014 (as amended on 07 April 2017 and 13 July 2018), it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved.

Savannah Environmental has prepared this motivation report in support of this amendment application on behalf of Transalloys (Pty) Ltd. This report aims to provide detail pertaining to the significance and impacts of the proposed change to the project description and layout in order for interested and affected parties to be informed of the proposed amendments and provide comment, and for the competent authority to be able to reach a decision in this regard. This report is supported by specialist studies in order to inform the final conclusion regarding the proposed amendments (refer to **Appendix A to I** of this report). This main report must be read together with these specialist studies in order to obtain a complete understanding of the proposed amendments and the implications thereof.

1

This amendment motivation report will be made available to registered interested and affected parties for a 30-day period from **21 June 2019 to 22 July 2019**. The availability of the report was advertised in the Witbank News on **21 June 2019** (refer to **Appendix I**).

This document is available for download at [www.savannah.com](http://www.savannah.com). CD copies are available on request. To obtain CD copies, further information, register on the project database, or submit written comment, please contact:

**Nicolene Venter of Savannah Environmental**  
Post: PO Box 148, Sunninghill, 2157 Johannesburg  
Tel: 011 656 3237  
Fax: 086 684 0547  
Email: publicprocess@savannahsa.com  
[www.savannahsa.com](http://www.savannahsa.com)

All comments received during the review period will be included within a Comments and Responses Report (CRR) to be submitted to the DEA with the final amendment motivation and application.

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<sup>1</sup> The 150 MW capacity plant was previously assessed via an EIA process conducted for the project in 2015.

## 1. OVERVIEW OF THE PROJECT

### 1.1. Location and background

Transalloys (Pty) Ltd (Transalloys) is a ferro-metal plant recovering Silicon Manganese (SiMn) from its ore. Transalloys is located 9 kilometres south-west of Witbank (eMalahleni) in Mpumalanga province and directly south of the N4 freeway between Pretoria and Nelspruit. It is situated on portions 34 and 35 of the farm Elandsfontein 309JS and portions 20 and 24 of the farm Schoongezicht 308JS. It is bounded to the south-east by Clewer, a small township south-west of Witbank. The site falls within the jurisdiction of the eMalahleni Local Municipality, a constituent of the Nkangala District Municipality. Land use activities in the Transalloys neighbourhood include agriculture, residential, industrial and mining.

### 1.2. The EIA previous process conducted in 2015 considered a 150 MW power plant and layout as an alternative and a 55 MW power plant and layout. The 55 MW layout was subsequently approved by DEA at the request of the applicant after submission of the EIR. This being said the specialist studies had therefore considered the impacts and footprint of the 150 MW power plant. It is important to note that the amendment will not result in an increased footprint than that previously assessed for the 150 MW plant during the original assessment conducted in 2015. Potential Environmental Impacts as determined through the EIA Process

From the specialist investigations undertaken within the EIA process for the power plant and associated infrastructure, the following environmental impacts were identified:

- » Potential impacts on biodiversity;
- » Potential impacts on soils and agriculture;
- » Impacts on Surface and Groundwater Resources;
- » Impacts on wetlands;
- » Impacts on air quality and human health;
- » Noise impacts;
- » Visual impacts;
- » Impacts on Heritage Sites;
- » Traffic impacts;
- » Socio-economic impacts;
- » Cumulative impacts; and
- » Impacts associated with waste treatment and management activities

### 1.3. Key conclusions and recommendations of the EIA pertinent to this application

From the conclusions of the specialist studies undertaken, it was concluded that the impacts associated with the construction and operation of the power plant and associated infrastructure were expected to be of Medium to Low significance with the implementation of appropriate mitigation measures (with one remaining impact of high significance). No environmental fatal flaws were identified to be associated with the proposed project. The following summaries are provided for the specialist studies at submission of the final EIA (May 2015):

- » **Biodiversity impacts** associated with the construction of the power station and associated infrastructure. While most of the expected impacts associated with this development to the actual footprint will be unavoidable, the success of mitigation will be determined by the success of preventing impacts from spreading outside the footprints of the development. Aspects such as infestation of surrounding habitat by alien and invasive species, the introduction of non-endemic and invasive animals, dust, effluents, contamination, hydro-carbons spillages, etc. will represent the ultimate challenge of the environmental management plan as these aspects will cause the spread and exacerbation of impacts into the natural environment caused by the development. The major objective of the environmental management programme of the development should therefore be the complete prevention and containment of any impact from the development that might cause harm to areas of surrounding natural habitat, with particular emphasis on avoiding or limiting impacts as far as possible on the aquatic environment (i.e. the Brugspruit and its western tributary as well as the wetlands in the area).

Ultimately, the expected loss of natural resources from the site and immediate surrounds as a result of the development would result in impacts of low significance and will be highly localised. No protected plant and animal species were identified in the study area which will be adversely affected by the proposed project.

Impacts of a cumulative nature, although estimated to result in moderate and low significance, represent a continuous, low level threat to biodiversity on a local and regional scale. The increase in industrial and mining activity in the region implies constant losses of natural habitat and species. This is exacerbated by the decline in environmental quality caused by peripheral and indirect impacts such as species invasion, degradation, contamination, disruption of ecological processes, habitat fragmentation and isolation, etc.

In conclusion however, no specific impact was identified that would render the proposed development as an unacceptable threat to the biological environment or any specific aspect or species that are known to occur, or could potentially occur within the study area or required servitudes, provided that detailed, comprehensive and sensible environmental management principles are applied throughout the lifetime of the operation.

- » **Impacts on Soils and Agricultural Potential** associated with the construction phase (soil loss and erosion) and the operational phase (permanent loss of agricultural land). The development of the power station was deemed to have **low to medium negative impact** on agricultural resources and productivity. The significance of all agricultural impacts was influenced by the fact that the land potential was limited due to soil depth and moisture holding constraints and pressures in terms of mining use. Erosion potential could increase in areas disturbed on the site during construction unless appropriate mitigation is implemented. Impacts in this regard were however expected to be of **low significance**.
- » **Impacts on Surface and Groundwater Resources** related to construction and operation of the power station. Impacts on water resources were related to quality and quantity. Impacts on water quantity were not expected as water was not proposed to be abstracted from a natural resource in the area, but would rather be obtained from nearby industrial water users with a water surplus. As proposed for the project, the implementation of dry cooling and dry ashing is the preferred technology in order to minimise water required thereby reducing impacts on water resources. Impacts on water quality relate to sedimentation and contamination during both the construction and operational phases of the project. These impacts could be successfully managed through the implementation of appropriate

mitigation and management measures, such as liners for the ash disposal facility and coal stockpile areas, and implementation of dust suppression measures on exposed surfaces. Impacts on water resources were expected to be of **Medium to Low significance**. On-going water quality monitoring throughout the operational phase was required to be undertaken.

- » **Impacts on wetlands** associated with the construction of the power station and associated infrastructure. Five wetlands were identified in the study area of the valley bottom (associated with the Brugspruit) and hillslope seepage variety. While a significant impact is expected over a section of hillslope seepage wetland identified on the project site for the siting of the ash disposal facility (for the 150MW design alternative), the loss of the wetland was deemed to constitute acceptable loss, due to the degraded present ecological state of the wetland and the opportunity to rehabilitate other nearby wetlands of conservation value as a mitigating condition of the project. The overall impact on the wetland proposed to be lost to development will however remain **High significance**. This impact is in itself was mitigated by the development of the 55MW design alternative, which does not require the siting of the ash disposal facility within delineated wetland systems.
- » **Impacts on air quality and human health** associated with the construction phase (dust) and the operational phase (emissions from the power station and PM from the ash disposal facility). The area was dominated by winds from the east and east-south-east. It was determined that impacts associated with the construction phase would be limited largely to the Transalloys smelter complex with no exceedances at the air quality sensitive receptors. Impacts were expected to be of **low significance**. Impacts during operation related to dust from the ash disposal facility and coal stockpile as well as emissions ( $\text{SO}_2$ ,  $\text{NO}_2$  and  $\text{PM}_{10}$ ) from the power station. From the results of the modelling undertaken, the release of  $\text{PM}_{2.5}$ ,  $\text{PM}_{10}$  and  $\text{NO}_2$  during the operational phase were expected to result in exceedances of both long term (annual) and short term (1-hour and/or 24-hour) ambient air quality criteria off-site. Furthermore, dustfall as a result of unmitigated PM emissions was expected to exceed the criteria for residential areas at the closest residences of Clewer. Impacts were expected to be of **medium significance** when unmitigated for all emissions. It was concluded that the development of the 55MW design alternative was unlikely to result in adverse air quality impacts at the identified receptors.
- » **Noise impacts** associated with the construction (short-term) and operational (long-term) phases. Impacts were expected to be more significant during the night (22:00 – 06:00) than during the daytime (i.e. 06:00 – 22:00). Impacts during the construction phase were expected to be of **low significance** while impacts during the operational phases were also considered to be of **low significance** due to the existing ambient noise conditions. No mitigation or routine noise monitoring was therefore required for the operational phase of the facility.
- » **Visual impacts** associated with the 150MW power station and associated infrastructure. Potential visual impacts were expected to be of **Medium significance** and mostly restricted to within 10km of the site. The consolidation of the proposed infrastructure in areas of existing visual disturbance was however preferred (as proposed by the siting and layout arrangements), rather than the distribution thereof over larger areas. The visual impact would be mitigated if the 55MW design alternative is developed resulting in a much-reduced visual profile of the project.
- » **Impacts on Heritage Sites** during the construction phase. A cemetery, two initiation sites and the demolished remains of structures were identified during the heritage survey which were found to be located outside of the development footprint of the power plant, of which the latter were not

considered to be of heritage significance. The cemetery and initiation sites would not be impacted by construction activities. Impacts to the heritage environment were considered to be of **low significance**. The Heritage Impact Assessment assessed site alternatives for the proposed power plant that were larger in extent than the current proposed amendment layout with heritage features falling outside of the preferred alternative site layout. From an archaeological point of view there was no reason why the development should not proceed.

- » **Traffic impacts** associated with construction and operation of the power station. The traffic volumes generated by the proposed Transalloys Power Station development was deemed to have an additional impact on the external road network. The potential impact was considered to vary significantly between the 55MW and 150MW design alternatives. However, road improvements were expected to be required irrespective of whether the proposed development continues or not in order to address access and safety provisions. Furthermore, the onus was placed on the relevant roads authorities to address the recommended road improvements. It was expected that this was to be undertaken in light of the number of proposed mining projects in the area. It was recommended that Transalloys engage the traffic authorities in order to determine expectations in this regard.
- » **Socio-economic impacts** were expected during both the construction and operation phases of the proposed project. The construction and operation of the power station was expected to have both negative and positive social and economic effects. From a socio-economic perspective, the positive effects in terms of construction, operation, and decommissioning of the coal-fired power plant included an increase in national electricity capacity (or relief to the Eskom grid), economic development, job creation, increase in household income, and government revenue.

The town of Clewer was determined to be the most directly affected social receptor which would be the most prone to impacts arising from air quality, noise and visual impacts. These impacts were expected to be mitigated to a large extent through the development of the 55MW design alternative over the 150MW design alternative.

Considering that many of the negative impacts would be possible to mitigate, although not completely eliminated, the trade-offs between negative and positive effects suggested that from the socio-economic perspective the project should be approved for development. It would contribute to achieving local and national government developmental objectives at a relatively limited cost. Nonetheless, it is imperative that the construction, operation, and decommissioning of the project should be conducted in the most sustainable way with the primary objective of minimising, and where feasible, completely eliminating the potential for deterioration of human livelihoods, reducing business turnover, and altering the environment in the proposed area.

- » **Cumulative impacts:** Transalloys is situated in the Highveld Energy Hub Area (Zone A) according to the Environmental Management Framework for the Olifants and Letaba River Catchment Areas (OLEMF), which describes this zone as representing the current “powerhouse” of South Africa, housing extensive coal fields, numerous large coal mines, coal-fired power stations and several major industries and towns that are located in the area.
- » The proposed Transalloys power station site is situated near the following industrial / mining facilities:
  - The existing Transalloys siliconmanganese smelter complex (adjacent)

- Evraz Highveld Steel and Vanadium which is a producer of steel and vanadium products (within 2km).
- The proposed Anglo Coal Landau Colliery Life Extension Project (new pits within 1km west of Transalloys)
- The proposed Izazi Colliery on Portions 26, 36, 37 and a portion of portion 46 of the farm Elandsfontein 309 JS (within 1km east of Transalloys).
- A proposed colliery on Portion 25 of the farm Elandsfontein 309 JS (within 1km east of Transalloys).
- The existing AngloAmerican Landau Colliery (within 5km to the south-east)
- The proposed Khanyisa Coal Fired Power Station (450MW) within the South African Coal Estates Complex (including the Greenside, Kleinkopje and Landau Collieries).
- Existing power stations including the soon to be operational Eskom Kusile Power Station situated less than 20km to the west and the Eskom Duvha Power Station within 22km to the south-east.

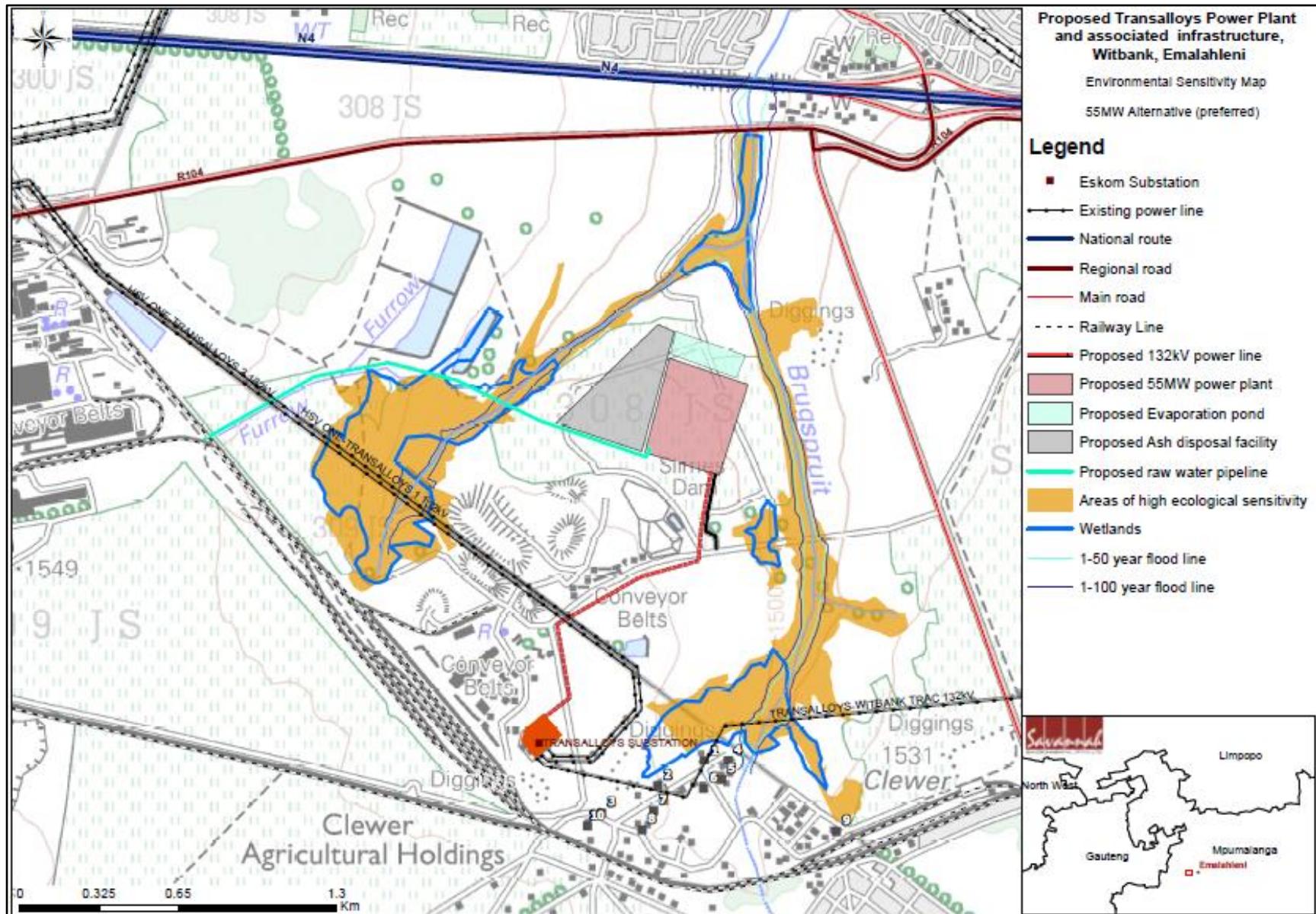
The development of the proposed Transalloys Power Plant along with the development of the abovementioned projects will have negative and positive cumulative environmental, social and economic impacts. It is essential that each new coal-fired power station and related coal-developments (such as new coal mines) subscribe to sound environmental management during these projects life-cycle (construction, operation, decommissioning and rehabilitation phases). This would require input from regulating authorities and applicants during the development of coal and power station projects in the region to ensure that cumulative environmental impacts are managed to acceptable levels.

- » **Impacts associated with waste treatment and management activities:** Impacts associated with waste treatment and management activities relate to those associated with the ash disposal facility and the wastewater treatment works. Potential impacts on surface and groundwater were anticipated should appropriate mitigation measures not be implemented. In terms of the assessment of impacts undertaken within this EIA study, impacts on water resources were expected to be of **Medium to Low significance**. On-going water quality monitoring throughout the operational phase is required to be undertaken. In addition, an appropriate Integrated Water and Waste Management Plan (IWWMP) and Stormwater Management Plan must be developed and implemented for all phases of the proposed project.

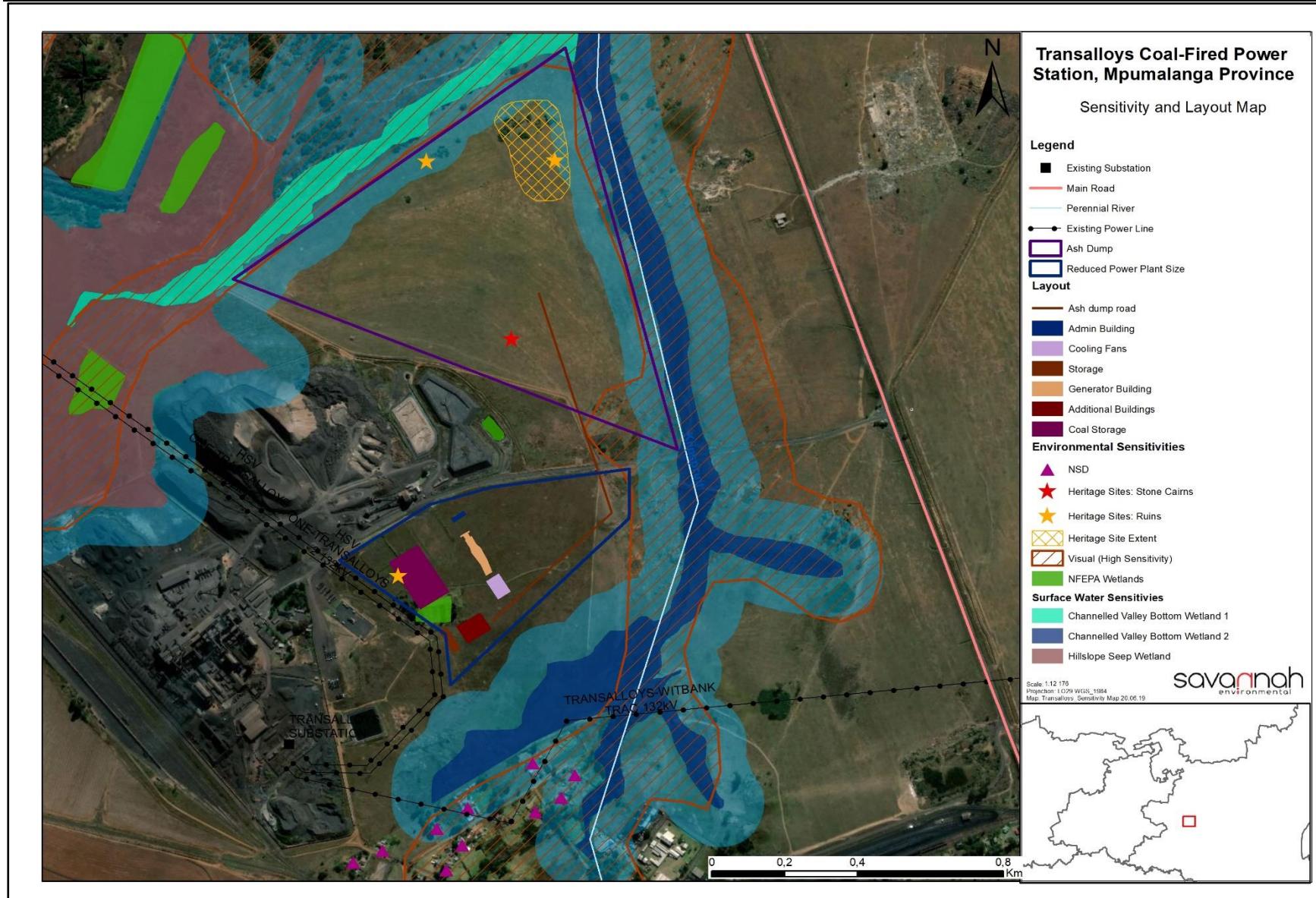
As part of the planning mitigation strategy, the applicant considered all the above-mentioned findings and sensitivities, and duly made the necessary amendments to the layout considered in the EIA in order to reduce impacts to an acceptable level (refer to **Figure 1**). No environmental fatal flaws were identified to be associated with the proposed Transalloys coal-fired power plant Site 1. A number of issues requiring mitigation were however highlighted. Environmental specifications for the management of potential impacts are detailed within the approved Environmental Management Programme (EMPr).

#### **1.4. Amendments of the Environmental Authorisation**

Apart from this current amendment application and motivation report (this report), no amendment applications were submitted for this project since the EA issuance. The EA dated 2 March 2016 is thus the first issue with no further authorisation amendments applicable.



**Figure 1:** The preferred authorised Site Layout Alternative for Power Plant site, approved as per Condition 3.1 of the EA dated 2 March 2016.



**Figure 2:** The proposed amendment layout for the power plant and ash dump with Environmental Sensitivities (2019)

## 2. DETAILS OF THE AMENDMENTS APPLIED FOR

The amendments being applied relate to the 55MW Transalloys coal-fired power plant and associated infrastructure near Emalahleni, Mpumalanga Province as detailed in the EA dated 02 March 2016. This requested amendment will result in the optimisation and efficiency of the plant layout and achieve economic competitiveness and feasibility of the power station. The proposed amended layout is presented in **Figure 2**. It must be noted that this amended layout will be finalised and submitted to the DEA for review and approval (in accordance with Condition 3.6 of the EA) as part of this amendment application.

This section of the report details the amendments considered within this report and by the specialist investigations (refer to **Appendix A – H**). Each amendment request is detailed below:

### 2.1. An increase in output capacity from 55MW to: A range between 120 MW – 150 MW

Should it be approved, the proposed power plant will have a net generating capacity of between 120 MW – 150 MW rather than the originally authorised 55 MW. It is therefore requested that the project description in the EA be amended to include the amended generating capacity range (120 MW- 150 MW). The wording on page 1 of the EA is requested to be changed as follows (amendments shown in **Bold** text):

**From:**

55MW Transalloys coal-fired power plant and associated infrastructure near Emalahleni, Mpumalanga Province.

**To:**

**120MW – 150MW Transalloys coal-fired power plant and associated infrastructure near Emalahleni, Mpumalanga Province.**

### 2.2. Amendment to the layout, with specific mention of the swapping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR),

The approved layout contained within the original integrated EA, issued 2 March 2016, and "Page xiii: Figure 2: Environmental Sensitivity Map overlay of 55MW power plant alternative (preferred)" of the final EIR (dated 28 May 2015) - Alternative 1, is proposed to be amended for technical reasons, in particular by the swapping of the locations for the power plant and the ash dump (as contained in the final EIR).

An amended layout will be provided which indicates the proposed layout for this amendment application. The amended layout falls within the preferred site locations as assessed in the EIA and does thus not represent a novel property or footprint for assessment.

As such, the original integrated EA, issued 02 March 2016, is proposed to be amended on page 6:

**From:**

"3.1 Authorisation is granted for the establishment of Transalloys coal-fired power plant and associated infrastructure within site co-ordinates as indicated above. Developmental site alternative 1 hereby approved."

**To:**

**"3.1 Authorisation is granted for the establishment of Transalloys coal-fired power plant and associated infrastructure within site co-ordinates as indicated above. The updated layout (DWG.NO F0315K-Z-01) as supplied for in the Amendment Application is hereby approved."**

### **2.3. Amendment of Main Infrastructure detailed in the EA**

The original integrated EA, issued 2 March 2016 (first issue, Reference 14/12/16/3/3/97) details the main infrastructure for the Transalloys coal-fired power station on page 5 of EA. The infrastructure listed specifically relates to the authorised 55 MW power plant (2016).

However, in order to ensure the feasibility of the operations of the power plant - as amended (120-150MW generation capacity) - minor modifications to the main infrastructure listed in the project description is required, as the amendment generation capacity logically necessitates minor changes to the infrastructure required by the plant. Importantly, the infrastructure that is applicable to the operations of the requested 120 MW – 150 MW power plant has already been assessed within the previous EIA for the 150 MW power plant option, therefore the impacts have already been assessed. In order to ensure the infrastructure listed matches the generation capacity requested in this amendment, it is requested that the main infrastructure detailed on page 5 of the EA be amended from:

"The main infrastructure for the Transalloys coal-fired power station includes:

- Power plant production unit/s (boilers/furnaces, turbines, generator and associated equipment, control room);
- Ash disposal facility and run- off leachate collection ponds;
- Dams for storage and separation of "clean" and "dirty" water;
- Raw water pipeline;
- Coal and limestone offloading and storage areas;
- Ash silos;
- Facility conveyor belts;
- Water and wastewater treatment facilities and raw water reservoir;
- Evaporation pond;
- A 33 kV overhead power line from the switchyard to connect into the existing Transalloys Substations;
- General and hazardous waste storage area;
- Internal access roads; and
- Other operational support and administrative building."

**To:**

**"The main infrastructure for the Transalloys 120 MW- 150 MW coal-fired power station includes:**

- **Power plant production unit/s (boilers/furnaces, turbines, generator and associated equipment, control room) and infrastructure for the Circulating Fluidised Bed boiler technology;**
- **Ash disposal facility and associated drainage channels, pollution control dams and run- off leachate collection ponds;**
- **Dams for storage and separation of “clean” and “dirty” water;**
- **Raw water pipeline;**
- **Coal and limestone offloading and storage areas;**
- **Ash silos;**
- **One stack with a maximum height of 120m;**
- **Facility conveyor belts;**
- **Water and wastewater treatment facilities and raw water reservoir;**
- **Evaporation pond;**
- **A 33 kV overhead power line from the switchyard to connect into the existing Transalloys Substations;**
- **General and hazardous waste storage area;**
- **Internal access roads; and**
- **Other operational support and administrative building.”**

#### **2.4. Amend Contact Details**

The request to change the Holder of the EA is as follows (shown in bold font) on page 2 of the EA:

**From:**

Authorised Details of the Holder of the Environmental Authorisation (initial EA, Section 2):

Mr Hilgard Rademeyer  
Transalloys (Pty) Ltd  
P.O. box 856;  
eMalahleni,  
1035

Fax No: 013-659-7173  
Tel No: 013-693-8113  
E-Mail: [hilgard@transalloys.co.za](mailto:hilgard@transalloys.co.za)

**To:**

Requested Amended Details of the Holder of the Environmental Authorisation, to reflect the following:

**Mr Andrey Korzh**  
**Transalloys (Pty) Ltd**  
**P.O. Box 856,**  
**eMalahleni,**  
**1035.**

**Fax: 011-214-0540**  
**Tel: 011-214-0553**  
**Email: [A.Korzh@transalloys.com](mailto:A.Korzh@transalloys.com)**  
**Cell: 076 130 1337**

A confirmation of change of Director has been attached as **Appendix 6 of the application form** submitted to DEA. This letter provides confirmation of acceptance of the roles and responsibilities of the EA.

## 2.5. EA Validity Period

Transalloys request an update of the validity of the original EA, to extend by an **additional 5 years**.

The following validity periods apply over the history of this project:

No.	Date issued	DEA REF	Valid From	Valid To	Validity period
EA (2016) – first Issue	2 March 2016	14/12/16/3/3/3/97	2 March 2016	2 March 2021	5 years
Proposed validity extension – this application					
To be confirmed	To be confirmed	To be confirmed	2 March 2021	2 March 2026	5 years

Transalloys (Pty) Ltd requests an extension of the validity of the EA **by an additional five (5) years**. This would take effect from the initial Environmental Authorisation (as it was the first issue), which was issued on the 2 March 2016, with DEA reference number 14/12/16/3/3/3/97, for which the validity period lapses on the 2nd March 2021.

Subsequently, Condition 3.4 of the original Environmental Authorisation dated 2 March 2016, is requested to be amended:

### From:

"The activity must commence within a period of five (5) years from the date of issue. If commencement of the activity does not occur within that period, the environmental authorisation lapses and a new application for an environmental authorisation must be made for the activities undertaken. Commencement with one activity listed in terms of this authorisation constitutes commencement of all authorised activities."

### To:

**"The activity must commence within a period of five (05) years from the date of expiry of the original Environmental Authorisation, dated 2 March 2016 and originally expiring on 2 March 2021. As such, this amendment EA is hereby extended by an additional 5 years, and therefore now lapses on 2 March 2026."**

The table below provides a detailed comparison of the project description included in the EA as authorised on 02 March 2016, with the proposed project components which are requested to be amended (shown in **bold** text) This proposed amended layout is presented in Figure 2.

## 2.6. Amendment of authorised project description

Table 1: Comparison of authorised 55MW project description and the proposed 120 MW- 150 MW Power Plant

Component	Authorised 55MW Plant	Amended 120 MW- 150 MW Range Plant
Location of the site	Transalloys Siliconmanganese smelter complex - Portions 20 and 24 of the Farm Schoongezicht 308 JS. The existing plant is currently situated in Austria.	Transalloys Siliconmanganese smelter complex - Portions 20 and 24 of the Farm Schoongezicht 308 JS
Municipal Jurisdiction	The site is located within the eMalahleni Local Municipality which falls within the Nkangala District Municipality.	The site is located within the eMalahleni Local Municipality which falls within the Nkangala District Municipality.
Power Plant	<ul style="list-style-type: none"> <li>» 55 MW capacity</li> <li>» Annual average capacity factor of ~40%</li> <li>» Operational availability 24 hours per day/365 days pa Life expectation: ~25 years</li> </ul>	<ul style="list-style-type: none"> <li>» <b>120MW -150 MW range capacity</b></li> <li>» Annual average capacity factor of ~85%</li> <li>» Operational availability 24 hours per day/365 days pa Life of plant: ~25 years</li> </ul>
Stack height	Maximum height: 65 m	Maximum height:120 m
Proposed technology	<ul style="list-style-type: none"> <li>» Pulverized coal fired power station</li> <li>» Dry cooled</li> </ul>	<ul style="list-style-type: none"> <li>» Circulating Fluidised Bed (CFB) coal-fired power station</li> <li>» Dry cooled</li> </ul>
Extent of the proposed development footprint.  The proposed amendment footprint falls within the authorised development footprint for the 55 MW layout option previously authorised during the EIA process.	<ul style="list-style-type: none"> <li>» Power Plant – ~ 10 ha</li> <li>» Ash Disposal Facility – ~ 10 ha</li> <li>» Evaporation pond – ~ 3 ha</li> </ul>	<ul style="list-style-type: none"> <li>» Power Plant – 22 ha</li> <li>» Ash Disposal Facility – 45 ha</li> <li>» Evaporation pond – 8 ha</li> </ul>
Extent of broader site	<ul style="list-style-type: none"> <li>» Site of proposed power plant, ash disposal facility and evaporation pond: 38 ha</li> </ul>	<ul style="list-style-type: none"> <li>» Site of proposed power plant: 18 ha</li> <li>» Site of Ash disposal facility: 45ha</li> <li>» Total: 63 ha</li> </ul>
Construction period	~ 18 months	~ 36 months
Site access	The R547 Road is expected to be the main access road to the project site. Existing gravel access roads will be utilised in order to access the power plant. The gravel roads will be widened to be 8m in width.	The R547 Road is expected to be the main access road to the project site. Existing gravel access roads will be utilised in order to access the power plant. The gravel roads will be widened to be 8m in width.
Ash disposal facility and associated drainage channels and pollution control dams	<ul style="list-style-type: none"> <li>» 25 years storage capacity; 70 000 to/a based on 85% CF and &lt;12% ash coal</li> </ul>	<ul style="list-style-type: none"> <li>» 25 years storage capacity; 320 000 to/a based at 40% ash coal</li> </ul>

Component	Authorised 55MW Plant	Amended 120 MW- 150 MW Range Plant
Grid connection	» 33kV power line connecting the power station to the Transalloys Substation	» 33kV power line connecting the power station to the Transalloys Substation

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<sup>2</sup> The throughput capacity of the water and wastewater treatment plants are below thresholds specified by Activity 55A of GN R 544

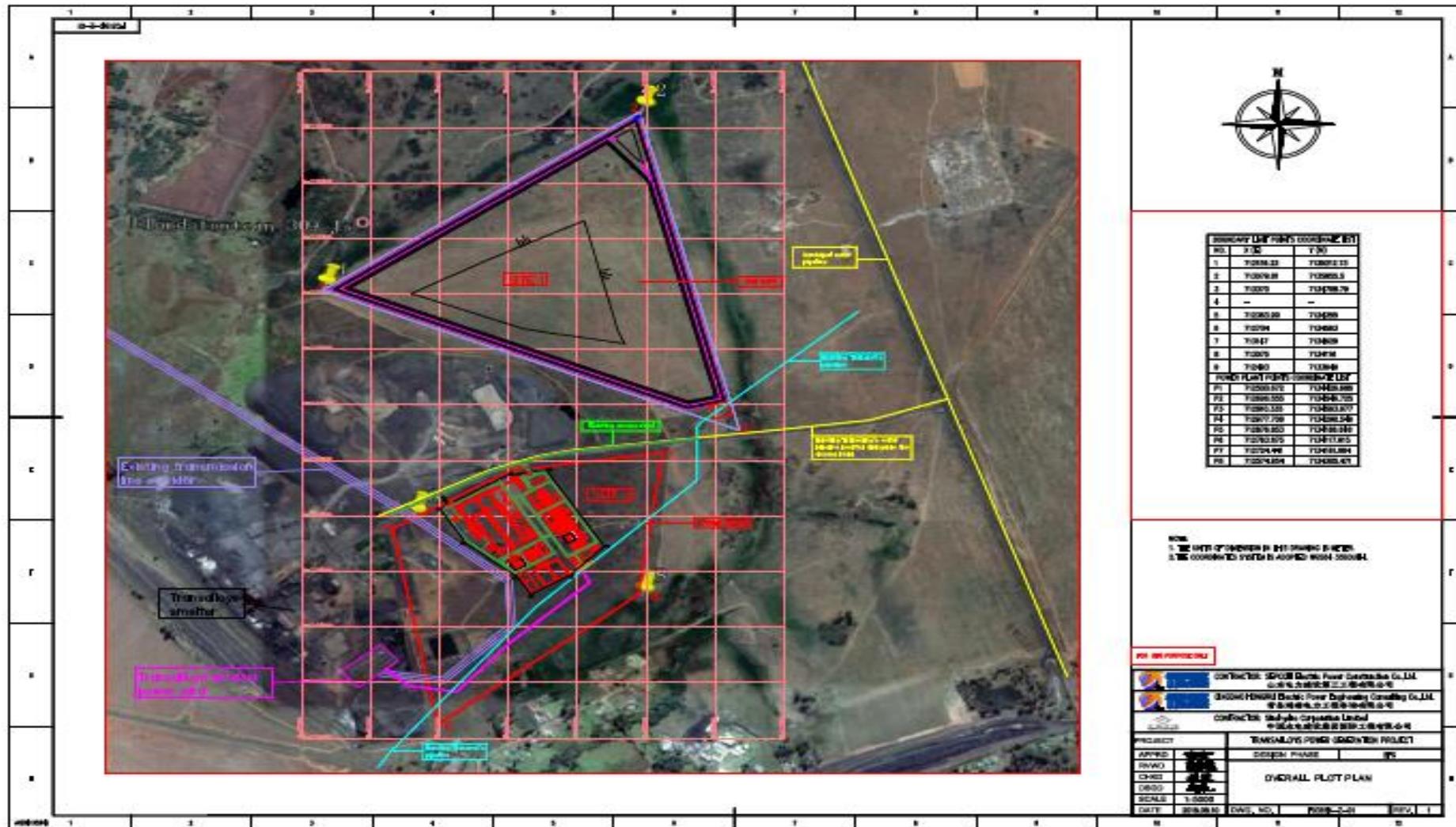


Figure 3: Updated power plant layout (A3 Map included in [Appendix H](#)).

### 3. MOTIVATION FOR THE PROPOSED AMENDMENTS

#### 3.1. An increase in generation capacity from 55MW to: A range between 120 MW – 150 MW

Transalloys is an energy intensive user. The recent inflation increases in the South African electricity tariffs introduced from 2008 onwards had a negative impact on profitability and was identified as one of the major risk factors for future sustainability and possible expansion of the business. The decision was made to investigate the opportunity of own power generation for the existing smelter. A high level Desktop Study of the Captive Coal Fired Power Station was completed in 2013. Later in 2013 Transalloys commenced with a Bankable Feasibility Study (BFS) for the development of a 150 MW Circulated Fluidised Bed Technology (CFB) boiler power plant. An Environmental Impact Assessment (EIA) for 150 MW Circulating Fluidized Bed (CFB) boiler Power Plant was also undertaken in 2014. During the feasibility study process Transalloys gradually evaluated different generation options, as well as power plant capacities and configurations. As a result, a decommissioned 55MW coal-fired power plant had been identified in Austria in 2015 as an option for relocation and recommissioning at Transalloys' site. An initial output capacity of 150MW was assessed in the original EIA, however 55MW power plant was subsequently approved following the EIA submission (2015, approved 2016) which was in line with the concept of the project pursued at that time.

Further feasibility work and detailed Value Engineering exercises indicated that the smelting operations required greater capacity than initially intended and 55MW authorised was not the optimum solution and did not cater for the required level of operation efficiencies improvement. This led to reconsideration and reversal towards original project concept and required power plant capacity in range of between 120MW and 150MW.

As an energy intensive electricity user, Transalloys intends to build, operate and own a new coal-fired Power Plant associated with the smelter with the aim of benefitting from reduced to a minimum electricity costs. Successful implementation of the Own Power Generation project will allow Transalloys to survive in the mid and long run as a South African Si-Mn smelter, to retain competitive position at the global landscape, to preserve more than 300 jobs and even create more well-paid jobs at the brand-new power plant, maintain tax payments, continue to support local communities and prosperity of employees', contractors' and their dependants.

Subsequent feasibility work indicated that:

- » In order to extract more value from its massive mineral resources, South Africa has developed a beneficiation policy. Beneficiating ore into alloys increases the value of what South Africa is selling 5- to 7-fold.
- » In fact, while SA has > 80% of the world's discovered high-grade manganese (Mn) resources, and has increased production and export of the ore, beneficiation of Mn in SA has been declining at a dramatic pace.
- » Once one of the world's leading players in production of ferroalloys, SA lost its competitive position – both the global share in alloys production as well as the physical output have declined to dismal levels. The smelting industry is on the verge of extinction.
- » SA's inherent macroeconomic drivers and trends lead to erosion of SA's global competitiveness in this sector, and a massive closure of the smelting capacity allowing other countries to emerge as major smelting hubs (e.g. China, Malaysia).

- » Despite major producers' attempts to mitigate challenges and adopt survival strategies, industry is still having to close furnaces in response to rising smelting costs. It causes loss of lots of well-paid jobs and expertise, and this process would be irreversible.
- » Mn-alloy production in SA stagnant and declining since 2014 more than 2 times (by 60%).
- » South African smelting costs are escalating faster than market prices and such cost inflation, mainly driven by electricity cost increases, exceeds that of competitors.
- » Transalloys is the last Mn-alloys smelter operational at 100% capacity in South Africa, however 50 jobs have already been lost during 2016 crisis.
- » Power supply from the national or regional grid remains constrained, unreliable and at constantly increasing tariff which threaten sustainability of Transalloys operation and puts at high risk the retention of more than 300 jobs currently employed by the facility;
- » The smelting operations required greater capacity than initially intended with the 55MW authorised, specifically to that of between 120MW and 150MW;
- » That the power plant area and design was optimised to allow for the production of between 120MW and 150MW, as opposed to the 55MW initially proposed, and was initially assessed. A need for expanded generation capacity and the potential to supply that capacity thus presented itself.

The objective is to build and operate a state-of-the-art coal-fired power plant meeting world best practice criteria including an emphasis on excellence in Health, Safety and Environmental (HSE) performance.

The development of the amended power plant project would effectively mean that Transalloys would become less dependent of the Eskom electricity grid through greater levels of own electricity production by , thereby creating also additional capacity within the Eskom grid for use by other electricity users and providing greater confidence in supply of energy for operational purposes.

The construction phase is expected to extend over a period of 36 months for the proposed amended layout and proposed 120MW-150MW output capacity power plant, creating approximately 1 500 employment opportunities and will employ 150 people on a full-time basis for up to 25 years. These opportunities far outweigh the 400 employment opportunities and 44 full time opportunities that the authorised 55MW power plant will provide.

The amendment to the output capacity thus has the potential to alleviate between 120MW and 150MW of power required from the constrained national grid through local production and use (as opposed to drawing from the Eskom grid), as well as the most optimal and beneficial use of the approved power plant to maximise power output, while greatly contributing to the ongoing operational security of the smelter and thus the people employed therein.

### **3.2. Amendment to main infrastructure within the EA for the 120 MW- 150 MW power plant**

An initial output capacity of 150MW (Circulating Fluidized Bed (CFB) boiler technology) was assessed in the original EIA, however, at the request of the applicant the 55MW power plant was subsequently approved following the EIA submission (2015, approved 2016), in order to align the approval with the project concept pursued at that time.

Further feasibility work and detailed Value Engineering exercise since the EA was issued however, indicated that the smelting operations required a greater capacity than initially anticipated and that the 55MW output capacity authorised was not the optimum solution (i.e. did not optimise the generation plant sufficiently)

and furthermore would not provide sufficient energy for the smelting operations envisaged. This led to reconsideration, and subsequent reversal towards the original project concept and required power plant generation capacity in a range of between 120MW and 150MW, to allow for sufficient energy generation and supply whilst making the most beneficial and optimal use of the facility.

In order to achieve efficiency of the 120 MW- 150 MW power plant, as being requested in this amendment, the main infrastructure and technology presented above require minor modification, specifically in order to match the amended generation capacity (and not that of the 55MW authorised) with suitable infrastructure, and would thus need to be formerly updated and cited within the EA.

### **3.3. Amendment to the layout, with specific mention of the swopping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR),**

In order to maximise the power output of the plant, layout adjustments are required. A pipeline passing through the site initially allocated for the Ash disposal facility was identified during detailed land audits, rendering the size of the site insufficient for the ash disposal facility, but large enough for the power plant facility. This necessitated exchanging the power station zone and the ash dam disposal zone (literally exchanging the location of the one for the other) as approved with Alternative 1 in the original integrated EA, issued 2 March 2016. The need for amending the layout also allowed for minor optimisations of the facility, which was applied to the layout provided for approval in this amendment application.

### **3.4. Update of contact details**

Changes in staffing within Transalloys (Pty) Ltd rendered the contact details captured in the originally issued EA partially incorrect, necessitated the updating of contact details. The correct and updated contact details are provided for and updates to the EA are duly requested in this amendment application.

### **3.5. Update of the validity period**

Due to the detailed land audits identifying the Transnet pipeline occurring within the footprint for the initial authorised power plant, as well as the potential for optimising the facility and the updated layout required, updated designs and feasibility work was required. The applicant is thus requesting an extension of the EA validity to ensure sufficient time to complete the necessary planning work prior to the commencement of construction, and to avoid the lapse of the EA while planning efforts are ongoing.

These amendments to the project are proposed in order to increase the layout efficiency and generation capacity of the facility, and consequently the economic competitiveness thereof, as well as to avoid environmental sensitivities at the site.

The amendment to the generation capacity, layout, validity and contact details are not in itself a listed activity and will not trigger any new listed activities as the proposed amendment will fall within the originally authorised footprint of the facility or change the scope of the EA

### **3.6. Amendment of Project Description**

As the proposed amendment is for the change in layout (swopping of the ash dump and power plant) and change in the output capacity from the authorised 55 MW to a range of 120 MW- 150 MW, these two amendments call for various parameter changes that will enable the feasibility, efficiency and sustainability

of the 120 MW – 150 MW power plant. It was realised that smelting operations required greater capacity than initially intended with the 55 MW authorised power plant. Following feasibility evaluations, the range of 120 MW – 150 MW was deemed to be most suitable for the power plant. In order to accommodate a 120 MW- 150 MW plant the site area was optimised following a land audit that indicated that a pipeline was identified to be passing through the site that as initially allocated for the ash disposal facility thereby restricting the development capacity of the site. This restriction resulted in the site being of insufficient size for the ash disposal site but was determined to be large enough to accommodate the power plant. This necessitated the swopping of the power station zone and the ash disposal zone. It must be noted that these locations were approved for the project in the original integrated EA issued 2 March 2016. Although the locations of the power plant and ash dump are within the development footprint previously assessed in the EIA for the 150 MW power plant, the footprints of the amendment locations are different. The difference between the 150 MW power plant previously assessed and the proposed amendment 120 MW- 150 MW power plant are presented below:

**Table 2:** Differences between the extent and technology of the 150 MW power station vs. 120 MW- 150 MW power station

	<b>150 MW power plant (previously assessed)</b>	<b>120 MW- 150 MW power plant (proposed amendment)</b>
Power plant extent	30 ha	22 ha
Ash disposal facility extent	30 ha	45 ha
Stack height	150 m	120 m
Proposed technology	Circulating Fluidised Bed (CFB) coal-fired power station	Circulating Fluidised Bed (CFB) coal-fired power station

Table 2 indicates that the extent of the power plant is slightly reduced compared to the 150 MW power station previously assessed. The ash disposal site has increased by 15 ha as compared to the 150 MW previously assessed layout. The change in the extent of the footprints for the power plant and the ash disposal site is attributed to the swap in locations.

The proposed 120 MW- 150 MW power station will utilise Circulating Fluidised Bed CFB combustors (boilers) which have the advantage that sulphur trapping can take place with the sorbent bed (limestone) in these boilers, ensuring a plant with relatively low emissions, this technology was initially assessed for the 150 MW power plant within the EIA conducted in 2015. In addition, the power station will utilise dry cooling technology and dry ashing due to water availability constraints, this is a change in the technology intended to be used for the proposed amendment. The authorised 55 MW power plant was intended to be a conventional pulverised coal fired power station. The proposed 120 MW – 150 MW power plant will require additional infrastructure to accommodate for the capacity and technology. (refer to Table 1)

## **4. CONSIDERATIONS IN TERMS OF THE REQUIREMENTS OF THE EIA REGULATIONS**

In terms of Regulation 31 of the EIA Regulations of December 2014, (as amended on 07 April 2017) , an environmental authorisation may be amended by following the process in this Part (i.e. a Part 2 amendment) if it is expected that the amendment may result in an increased level or change in the nature of impact where such level or change in nature of impact was not:

- a) Assessed and included in the initial application for environmental authorisation; or
- b) Taken into consideration in the initial authorisation.

In this instance, the increase in range from 120 MW - 150MW and the swapping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR) were not considered in the initial authorisation. The changes do not however, on its own, constitute as listed activities or specified activities. Therefore, the application is made in terms of Regulation 31(a).

## **5. POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE EIA AS A RESULT OF THE PROPOSED AMENDMENTS**

In terms of Regulation 32(1)(a)(i), the following section provides an assessment of the impacts related to the proposed change. Understanding the nature of the proposed amendments and the impacts associated with the project (as assessed within the EIA), the following has been considered:

- » Ecological Impacts;
- » Heritage Impacts;
- » Socio-Economic Impacts;
- » Air Quality Impacts;
- » Surface Water Impacts;
- » Aquatic Ecology & Wetland Impacts;
- » Visual impacts; and
- » Noise impacts.

The proposed amendments are expected to have **no effect** on the findings of the Traffic Impact Assessment and Soil and Agricultural Potential undertaken as part of the EIA process. Therefore, no Traffic Impact Assessment or Soil Agricultural Impact Assessment Report have been included. The potential for change in the significance and/or nature of impacts based on the proposed amendments as described within this motivation report is discussed below, and detailed in the specialists' assessment addendum reports contained in **Appendix A-H**.

Additional mitigation measures recommended as a result of the proposed amendment have been underlined for ease of reference, where applicable. This section of the main report must be read together with the specialist reports contained in **Appendix A-H** in order for the reader to obtain a complete understanding of the proposed amendments and the implications thereof.

### **5.1. Ecological Impacts**

The original assessment was based on a power plant facility with a generation capacity of 150MW and was conducted by Mr Gerhard Botha in April 2014 (Appendix A). The updated Ecological Assessment and Letter (Appendix A; 2019) was conducted by Mr Gerhard Botha in March 2019 for the proposed 120 MW - 150 MW output capacity amendment.

The 2019 assessments addressed specifically the output capacity change from 55 MW to a range of 120 MW - 150 MW and the proposed swooping of the ash dump and power plant locations. The specialist has acknowledged that the proposed amendment will not result in an increase in the footprint than what was previously assessed during the original assessment conducted in 2014 (150 MW output capacity).

The findings of the March 2019 report indicated that vegetation within the proposed development footprint was highly degraded and transformed. Site 1 comprised of a short secondary grassland occupying old cultivated land whilst Site 2 comprised of predominantly of secondary grassland with patches of primary grassland, which did not represent a change from the 2014 assessment findings. Site 1 was still found to be used for grazing of livestock although access to the site is currently being regulated due to fencing. The proposed amended layout will be located within Vegetation Unit 3, which is deemed to be of **low-sensitivity**. It was found that grasslands have improved within site 2 due to strict access control onto the site (preventing grazing) from the 2014 assessment. Extensive clearing of Category 1 Alien Invasive Species, *Acacia decurrens* and *A. mearnsii* have also been noted since the last assessment.

It was determined that the current proposed amended layout avoids all high sensitivity (wetlands and watercourses) and no-go areas. The one protected species previously identified within the development footprint as part of the original ecological assessment (*Satyrium longicauda*) did not occur within the proposed amended footprint as per the findings of the March 2019 assessment. One additional protected plant species (*Crinum macowanii*) was identified during the site visit conducted on 03 January 2019 within site 1, however it was not anticipated that this development will have a significant impact on this species within the region as this species has a relatively wide distribution throughout the northern and eastern parts of South Africa and is a fairly common Crinum species within Mpumalanga Province.

During the original ecological assessment (April 2014), a total of 26 different species of weeds and alien plants were recorded including 12 listed invasive alien plants including:

- » Category 1b: *Solanum sisymbriifolium*, *Solanum mauritianum*, *Nicotiana glauca*, *Cirsium vulgare*, *Phytolacca octandra* and *Campuloclinium macrocephalum*.
- » Category 2: *Ricinus communis* var. *communis*, *Eucalyptus grandis* and *Nasturtium officinale*, *Acacia dealbata*, *A. decurrens*, *A. mearnsii*.

Through the updated ecological assessment (March 2019) it was clear that although much of the alien vegetation has been cleared over the past few years, these species were identified to have become more prominent than in the original ecological assessment (April 2014). This was identified as an additional impact for the development and mitigation measures were presented within the report accordingly to be included within the EMPr.

### **5.1.1. Comparative Assessment**

As the assessment of impacts within the original Ecological Impact Assessment (2014) was based on a 150MW facility, all listed impacts and their calculated significant ratings are still applicable and relevant. However, due to some factors relating to the new proposed facility layout as well as current on-site conditions, some additional mitigation measures have been deemed necessary in order to reduce impacts and avoid any potential detrimental impacts, especially on the surrounding wetland and grassland habitats. The only additional impact identified relates to the potential threat posed by Alien Invasive Plants (AIPs). This was based on the recent observation of the current degree of invasion of the Category 1b AIP, *Campuloclinium macrocephalum* and to a lesser extent due to the current status of *Verbena bonariensis*.

(Category 1b) within the development footprint. At the time of the initial survey (29th and 30th of January 2014) for the original Ecological Impact Assessment, only one individual of *C. macrocephalum* was recorded just outside of the development boundary. However, during the latest site visit (03 January 2019) it was found that this species has started to establish itself within the development footprint as well as surrounding area.

A summary of all applicable impacts listed within the original Ecology Report is provided in Table 3 below, followed by a re-assessment of all impacts that will either increase or decrease in significance following the proposed amendments, based on the 2019 Ecological Assessment. All impacts that will have no change in significance are only mentioned. Additional mitigation measures are provided where deemed necessary and are underlined to indicate their novel introduction.

The assessment of impacts within the original Ecological Impact Assessment was based on a 150MW facility. **All listed impacts are still applicable and relevant considering the updated layout and reduced power plant footprint for the 120 MW – 150 MW power plant (now approximately 22 ha rather than the 30 ha previously assessed for the 150 MW power plant), as well as their calculated significant ratings for vegetation unit 3 in which the proposed development will be located (i.e. no change in severity ratings were determined for the proposed amendment).** However, due to some factors relating to the new proposed facility layout as well as current on-site conditions, some additional mitigation measures have been deemed necessary in order to reduce impacts and avoid any potential detrimental impacts, especially on the surrounding wetland and grassland habitats. The only additional impact determined during the 2019 specialist assessment relates to the potential threat posed by Alien Invasive Plants (AIPs following the identification of a more prominent establishment of Alien Invasive species on site). This proposed additional impact and associated mitigation measures is detailed below and have been included in the updated EMPr. Please note: this impact is not a result of the proposed amendment, but rather a natural increase in invasive species present on site since the initial 2014 assessment. This measure is thus a response to the current environment and not due to any impacts associated with the proposed amendment.

**Table 3:** Construction and Operational Impact 1: Potential increased alien plant invasion during construction and operation (specific to Vegetation Unit 3 in which the development will take place)

**Impact Nature:** Increased alien plant invasion, especially *Campuloclinium macrocephalum* is a significant risk factor associated with this development. The disturbed and bare ground that is likely to be present at the site during and after construction would leave the site vulnerable to alien plant invasion during the operation phase if not managed. Furthermore, the National Environmental Management Biodiversity Act (Act No. 10 of 2004), as well as the Conservation of Agricultural Resources Act, (Act No. 43 of 1983) requires that listed alien species are controlled in accordance with the Act.

	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local - Regional (3)	Local (1)
<b>Duration</b>	Permanent (5)	Short-term (1)
<b>Magnitude</b>	Low (5)	Low (4)
<b>Probability</b>	Highly Probable (4)	Improbable (2)
<b>Significance</b>	<b>Moderate (52)</b>	<b>Low (12)</b>
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Low	High

<b>Irreplaceable loss of resources</b>	Moderate Probability	Unlikely
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
	<ul style="list-style-type: none"> <li>» An Alien Invasive Plant Management Plan for the proposed development must be compiled by a qualified specialist, addressing the monitoring and eradication of such listed AIPs (especially <i>C. macrocephalum</i>) during construction and operational phase.</li> <li>» Regular monitoring for alien plants at the site must occur and could be conducted simultaneously with erosion monitoring.</li> <li>» When alien plants are detected, these must be controlled and cleared using the recommended control measures for each species to ensure that the problem is not exacerbated or does not re-occur.</li> <li>» Clearing methods must aim to keep disturbance to a minimum.</li> <li>» No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose must be allowed.</li> <li>» Eradication of <i>C. macrocephalum</i>: <ul style="list-style-type: none"> <li>▪ Chemical Control:</li> <li>• Registered herbicides: Plenum, Access and Climax</li> <li>• Herbicide mixture: 5% Glyphogan 360 SL herbicide liquid with 1,5% Power Up adjuvant ammonium sulphate liquid (1l of Glyphogan and 300ml of Power Up) mixed into 20l of water.</li> <li>• The flowerheads should be cut off and placed in plastic bags (for later burning) a week after chemical application.</li> <li>• Optimal application/spray period are between December and February. After February chemical control reduces significantly in effectiveness.</li> <li>• It is imperative that only registered, selective, broadleaf herbicides are used in grasslands.</li> <li>• Non-selective herbicides should never be used to control pompom weed in the veld or along grassy road reserves.</li> <li>• Non-selective herbicides should only be used where pompom weed occurs in croplands and industrial situations, e.g. concrete drains, pavements etc.</li> <li>• Selective broadleaf herbicides will damage all broad-leaved plants exposed to the spray including native forbs and shrubs, so spot spraying is advised rather than indiscriminate broadcast applications.</li> <li>• Each area sprayed must be revisited for the next seven years to neutralise the soil seedbank.</li> </ul> </li> <li>▪ Physical control:</li> <li>• Uprooting and burning of plant</li> <li>• It is not advisable to plough or grade lands with pompom weed, as this will damage the rootstock, stimulating further vegetative growth and denser stands.</li> </ul>	
<b>Mitigation</b>		
<b>Residual Impacts</b>	With appropriate mitigation such as regular monitoring and eradication, residual impacts will be low. However in the absence of sufficient mitigation	

	measures or the inadequate execution of recommended mitigation measures these species may proliferate and build up a significant seed bank making these species extremely difficult and expensive to eradicate and may spread into the surrounding grassland and wetlands where they may replace indigenous vegetation reducing the value (functions and services) of such habitats.
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Impacts and mitigation measures regarding the proposed location of Ash Dump within Site 2 and the impacts to wetlands and surface water have been evaluated as per their respective specialist studies and captured below, and all additional mitigations have been captured within the EMPr (Refer to Appendix K).

### 5.1.2. Conclusion

Identical impacts were determined by the ecological specialist when comparison was made between the initially authorised facility and the proposed amendment. In addition, all impact severity ratings were determined to be exactly the same for the proposed amendment. All impacts determined for the proposed amendment were capable of being mitigated to such an extent where their significance is reduced to levels regarded as acceptable. In addition, no fatal flaw, or alternatively impact of high severity rating was found from an ecological perspective.

One novel impact was however determined by the ecological specialist, relating to the potential increase in alien plant invasion levels during both the construction and operational phases for the site. This impact was identified as a result of changed conditions on the site and not as a result of the proposed amendment. New mitigation measures were determined for this impact and have been incorporated into the EMPr for implementation. Subject to the implementation of the recommended mitigation measures, the ecological specialist is of the opinion that the amendment application, as proposed, may be authorised.

## 5.2. Heritage Impacts

The original heritage impact assessment was conducted in 2014 with an originally proposed capacity of 150MW by Mr. Jaco van de Walt of HCAC. The updated assessment was conducted in February 2019 and revised in April 2019 by HCAC for the proposed amendment application.

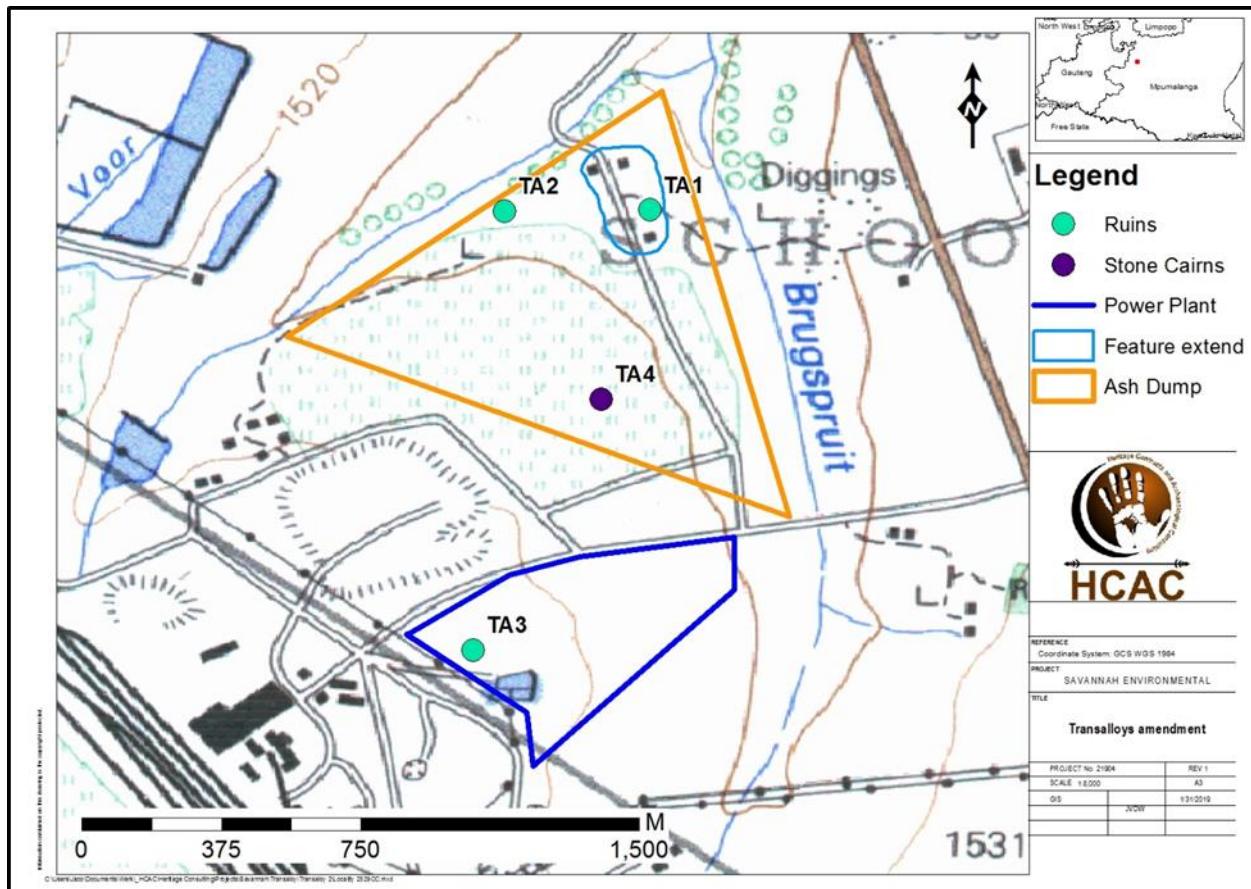
Both a field survey and desktop level assessment were conducted for the proposed amended layout. As per the previous conclusions to the 2014 heritage impact assessment, the 2019 assessment revealed that the site is disturbed due to previous mining and agricultural activities.

During the 2019 survey the demolished remains of structures were recorded together with multiple stone cairns from clearing of the agricultural fields, detailed in Table 4 and Figure 4.

**Table 4:** Features recorded during the survey (2019)

Label	Longitude	Latitude	Description
TA1	29° 07' 35.0761" E	25° 52' 59.1023" S	Remains of a homestead multiple piles of cleared stones.
TA2	29° 07' 22.4147" E	25° 52' 59.1853" S	Separate part of homestead with a small broken-down fence that is reminiscent of a graveyard enclosure. No graves located.

TA3	29° 07' 19.6860" E	25° 53' 37.4567" S	Remains of a brick structure and foundation
TA4	29° 07' 30.8459" E	25° 53' 15.5941" S	Stone cairns (most likely cleared from agricultural fields)



**Figure 4:** Identified features in relation to the development. As described above, due to the heavy damage experienced by these features, they are not regarded as having any heritage value and thus require no conservation.

TA1 and TA2 located close to the border of the proposed Ash Dump were found to be homesteads built in the 1960's and demolished by 1996. TA3 was identified to be stone cairns (stone packed features attributed to clearing activities related to cultivation and are of no heritage significance) was located within the proposed Ash Dump site. In terms of the built environment (Section 34 of the NHRA) of the area the demolished remains of these three structures (TA 1 – 3) were identified scattered over the study area. The specialist found that due to the extent of the destruction of these structures they are of no heritage significance and not conservation worthy. In addition, TA4 located close to the proposed power plant site was identified to be a cement foundation that was not found to have heritage significance. However, the chance find procedure has been recommended by the specialist and incorporated within the EMPr should a burial site be detected on site.

Two initiation sites were also recorded in 2019 on the banks of the "Brugspruit" river, also having been identified in the 2014 study, however both these features are located outside the amended development footprint and will not be impacted by the proposed amendment.

### 5.2.1. Comparative Assessment

TA 1, 2, and 3 will be altered by the development (Figure 4) but the features are already demolished and considered to be of no heritage significance and therefore the impact assessment rating for the construction and operational phases of the development, with and without mitigation is considered to be of **low significance**.

As per the 2014 mitigation measures the graveyard located outside of the proposed amended development footprint is currently fenced, however it is recommended that the graveyard be fenced off with provision for family members through an access gate during construction activities to ensure no disturbance to the site takes place.

Due to the lack of significant heritage resources in the study area, the impact of the proposed project on heritage resources is considered low. In terms of the original assessment compared to the proposed amendment there are no changes in impacts, no novel impacts, or any reduction or increase in impact severity ratings anticipated as compared to the previous layout and activities. It is therefore recommended that the proposed amendment can commence on the condition that the following additional recommendations are implemented as part of the EMPr (refer to Appendix K) and based on approval from SAHRA:

- » Implementation of a chance find procedure: This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

All recommendations and mitigation measures that have been identified as per the 2014 assessment and 2019 assessment have been captured and incorporated within the EMPr.

### 5.2.2. Conclusion

Due to the severe damage to the heritage features found on site during the 2019 specialist assessment, and the lack of significant heritage resources in the study area, the impact of the proposed amendment on heritage resources is considered low and the amendment is deemed acceptable from a heritage perspective. No changes in impact types, severity ratings or mitigation measures, as well as no novel impacts are anticipated due to the proposed amendment (as compared to the previous layout and activities). It is however recommended that a Chance Finds Procedure be implemented for the project.

Regarding the archaeological component of the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999) Section 35, no Stone Age or Iron Age material were recorded. Therefore, no further mitigation prior to construction is recommended in terms the archaeological component of Section 35 for the proposed development to proceed. In terms of the palaeontological component of Section 35 an independent desktop assessment was conducted for the project (Millsteed 2013).

In terms of National Heritage Resources Act NHRA of 1999 (Act 25 of 1999) Section 36 of the Act no burial sites were recorded, however unmarked graves can be associated with the structures recorded and the implementation of a chance find procedure was recommended and incorporated within the EMPr for

implementation. No public monuments are located within or close to the study area. The proposed development will not impact negatively on significant cultural landscapes or viewscapes due to the existing mining in the area. During the public participation process conducted for the project no heritage concerns were raised.

As the impact of the proposed amendment on heritage resources was determined to be of low significance no new pre-construction mitigation measures in terms of archaeological resources was deemed to be required based on approval from SAHRA. The two initiation sites and graveyard were located outside of the proposed amendment development footprint and are not anticipated to be disturbed by construction activities. The specialist determined that the socio-economic benefits of the power plant and associated infrastructure as per the amendment outweighs the potential impacts of the development if the correct mitigation measures (i.e. chance find procedures supplied above) are implemented for the project.

### **5.3. Social Impact**

The Social Impact Assessment (SIA) was initially conducted by Tony Barbour Environmental Consulting and Research in December 2014 for the establishment of a 150 MW power station. The updated social impact study (2019) was conducted by Tony Barbour Environmental Consulting as an amendment to the impact assessment study conducted in 2014 (with an originally proposed capacity of 150MW). The updated 2019 study reflects the new power plant and ash storage facility layout located within the project implementation sites assessed in 2014 and successfully approved through the 2 March 2016 Environmental Authorisation (as per the final EIR dated May 2015). The baseline data used for the 2019 report is informed by the 2016 Community Household Survey.

Based on the review of information for the amendment application and the specialist knowledge of the area, it was determined that the proposed changes would have no bearing on the findings of the Social Impact Assessment dated December 2014.

According to the SIA (2019) the Mpumalanga Economic Growth and Development Path (MEGDP 2011) indicates that the Transalloy Coal- Fired power plant is in line with the objectives of reducing unemployment rates, increasing employment opportunities, increase of income levels, increasing the human development index (HDI) and reducing inequality.

The findings of the SIA Report (December 2014) were therefore deemed to remain valid for, and apply to, the proposed change from the 150 MW output capacity previously assessed to the 120-150 MW output capacity amendment. The swapping of the location of the proposed 120-150 MW power plant site and ash dump did not change the findings of the original SIA Report undertaken for the proposed 150 MW plant in 2014 and the associated significance ratings.

#### **5.3.1. Comparative Assessment**

The findings of the SIA conducted in 2019 indicate that the significance of the potential negative impacts with mitigation was assessed to be of **Low Negative significance**. The significance ratings of social impacts for the construction phase and operation phase of the proposed 120 MW- 150 MW amendment remain identical to the significance rating of the authorised 55MW.

The majority of the potential negative impacts can be effectively mitigated if the recommended mitigation measures as specified in the 2014 SIA are implemented. In addition, given that the majority of the low and semi-skilled construction workers can be sourced from the local area the potential risk posed by construction workers to local family structures and social networks is regarded as **low**. However, the impact on individuals who are directly impacted on by construction workers (i.e. contract HIV/ AIDS) was assessed to be of **Medium-High negative significance**.

In addition, the change in the location of the proposed 120 MW-150 MW plant site and ash dumps will not result in any changes in the findings of the SIA Report undertaken for the proposed 150 MW plant in 2014 and the associated significance ratings. The social impacts and associated significance ratings with enhancement and/or mitigation for the construction and operational phase are summarized within the SIA report. It was determined that **no additional mitigation measures will be required over and above those listed in the existing 2014 SIA**.

### 5.3.2. Conclusion

Based on a review of the available information and the specialist findings it can be concluded that, the amendment will have no bearing on the findings of the Social Impact Assessment dated December 2014. The findings of the SIA Report (December 2014) therefore remain valid for, and apply to, the proposed change from a 150 MW to 120 MW-150 MW coal fired power station. In addition, the change in the location of the proposed 120 MW-150 MW plant site and ash dumps will **not result in any changes in the findings of the SIA Report undertaken for the proposed 150 MW plant in 2014** and the associated significance ratings.

The findings of the SIA undertaken for the proposed Transalloys 150 MW coal fired power station (December 2014) indicate that the development will create employment and business opportunities for locals during both the construction and operational phase of the project, the same was deemed for the proposed 120 MW- 150 MW amendment. It was recommended by the specialist that the power plant as per the proposed amendment be supported, subject to the implementation of the recommended mitigation measures and management actions contained in the SIA and other specialist reports.

## 5.4. Impacts on Air Quality

The initial Air Quality Impact Assessment (AQIA) was conducted by Airshed Planning Professionals in November 2014 for the establishment of a 150MW power station during the previous Environmental Impact Assessment process that was undertaken. The updated Air Quality Impact Assessment was conducted by Airshed Planning Professionals in May 2019 for the proposed generation capacity of 120 MW- 150 MW and the Circulating Bed Fluidised (CFB) boiler technology.

The updated Air Quality Impact report assessed baseline air quality conditions, delineated sensitive receptors and identified potential impacts that may arise as result of the amendment in terms of the impact rating from the 2014 study.

The findings of the report indicated that ambient air pollutant levels in the proposed Project area were affected by the following sources of emissions: the existing Transalloys ferro-metal plant; mining activities to the east, south-east and south; and a steel processing plant to the west (Ferrobank, an Industrial area hosting various manufacturing and processing plants, located about 5 km to the north east). Other activities and

sources of pollution in the region included, mining; chemical and metallurgical industries; vehicle tailpipe emissions; agriculture; domestic fuel combustion; and open areas exposed to wind erosion.

Pollutants released in the region included, fugitive PM2.5, PM10 and Total Suspended Particles (TSP), as well as metallic and gaseous pollutants, which are products from the processing of ore and combustion of petrol, diesel and coal.

Transalloys continuously measures PM10 concentrations and dustfall rates. Analysis of these results were determined as follows:

- The 2016/2017 results indicate elevated (non-compliant) PM10 concentrations at Transalloys weighbridge and at Clewer, an AQSR.
- Results from 2013 and 2015 obtained at Transalloys Weighbridge (on-site) and the Clewer Primary School (off-site) monitoring stations indicate elevated PM10 concentrations in exceedance of the 24-hour National Ambient Air Quality Standards (South Africa) NAAQS. Calculated period average PM10 concentrations did not exceed the annual average NAAQS of 40 µg/m<sup>3</sup>, but only marginally.
- More recent results (August 2018 to January 2019) obtained from both locations did not exceed the daily or the annual NAAQS.
- Dustfall results from October 2015 to January 2019 indicate compliant dustfall deposition rates at five on-site and two residential sampling locations. Dustfall rates are generally low.

The nearest Air Quality Sensitive Receptor (AQSRs) are Clewer and Kwa-Guqa. Clewer is immediately adjacent to the existing Transalloys premises and the proposed power station location. Kwa-Guqa is situated north of the proposed project.

Air quality impacts were assessed in accordance with the following regulatory requirements; NEMAQA (Act No. 39 of 2004 as amended) Minimum Emission Standards (MESs) for solid fuel combustion installations primarily used for steam raising or electricity generation), World Bank emission guidelines for Turbines/reciprocating engines (reproduced from IFC, (2008), Air quality standards for specific criteria pollutants (SA NAAQS), The National Dust Control Regulations (NDCR), Regulations regarding Air Dispersion Modelling were promulgated in Government Gazette No. 37804 vol. 589; 11 July 2014, (DEA, 2014), The National Atmospheric Emission Reporting Regulations (NAERR) and Greenhouse Gas Emissions NAEIS was published in 2017 (DEA, 2017a).

#### **5.4.1. Comparative Assessment**

The significance rating of the various impacts assessed in the study as well as the rating criteria are presented below. The construction and closure phases impacts were assessed qualitatively, while the operational phase impacts were assessed quantitatively. Impacts due to PM2.5, PM10, NO<sub>2</sub>, SO<sub>2</sub> and dustfall are presented separately for the operational phase. Incremental (quantitative) and cumulative (qualitative) impacts were assessed in order to provide impact significance ratings that truly reflect the current and future air quality impacts in the area.

**Table 5:** Summary of significance ratings between construction & operational phases

Significance Ratings	Authorised (Previous study) 150 MW	Proposed amendment (current study) 120 MW – 150 MW
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Construction/Closure				
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
<b>Qualitative assessment of the significance of construction/closure air quality impacts</b>	18 (Low)	15 (Low)	18 (Low)	15 (Low)
Operational Phase				
<b>Assessment of the significance of operational phase air quality impacts associated with PM2.5 emissions</b>	52 (Medium)	33 (Medium)	56 (Medium)	44 (Medium)
<b>Assessment of the significance of operational phase air quality impacts associated with PM10 emissions</b>	60 (Medium)	33 (Medium)	56 (Medium)	44 (Medium)
<b>Assessment of the significance of operational phase air quality impacts associated with NO2 emissions</b>	44 (Medium)	44 (Medium)	36 (Medium)	36 (Medium)
<b>Assessment of the significance of operational phase air quality impacts associated with SO2 emissions</b>	32 (Medium)	32 (Medium)	32 (Medium)	32 (Medium)
<b>Assessment of the significance of operational phase impacts associated with dustfall deposition</b>	36 (Medium)	27 (Low)	44 (Medium)	27 (Low)

As per the significance ratings for the operational aspects of the power plant for the previously assessed (2014), the proposed amendment to the layout (power plant and Ash Dump), change in technology (CFB), as well as the amendment to the range in output capacity (120 MW to 150 MW) did not result in any significant change to the pollutants impact rating assessed in the 2014 study.

The specialist recommended that the following air quality mitigation and management measures are implemented to ensure the lowest possible impact on Clewer, Kwa-Guqa and the environment. The recommended management measures include the following:

- The mitigation and management of sources of major emissions – ensuring compliance with NAAQS at both the existing Transalloys ferro-metal plant boundary and the proposed Transalloys Power Project (when operational), will result in significant reduction in elevated levels measured at Clewer.
- On-site emissions monitoring during the construction phase will provide insight as to the levels to be anticipated during operation (since construction phase emissions are generally lower than operational phase and intermittent in nature).
- Ambient air quality monitoring – Ambient PM, SO<sub>2</sub> and NO<sub>2</sub> concentrations at Clewer and other areas need to comply with the NAAQS during the construction phase of the proposed project, in order to provide an indication of the concentration levels to be anticipated during the operational phase.

The specialist has proposed the following additional mitigation measures for the proposed 120MW-150MW facility for the construction and operational phases which have been included within the EMPr:

- » Air quality impacts during construction could be reduced through basic control measures such as limiting the speed of haul trucks and mobile equipment; limiting unnecessary travelling of vehicles on untreated roads; and applying dust suppressants on regularly travelled, unpaved sections.
- » When haul trucks need to use public roads, the vehicles need to be cleaned of all mud and haul material must be covered to minimise any fly-off dust. The access road to the Project also needs to be kept clean to minimise carry-through of mud on to public roads.
- » A stack emission measurement campaign be conducted once the proposed power project is fully operational. This is to confirm that the emissions fall within their required standards
- » Ensure compliance with NAAQS at both the existing Transalloys ferro-metal plant boundary and the proposed Transalloys Power Project (when operational).

#### 5.4.2. Conclusion

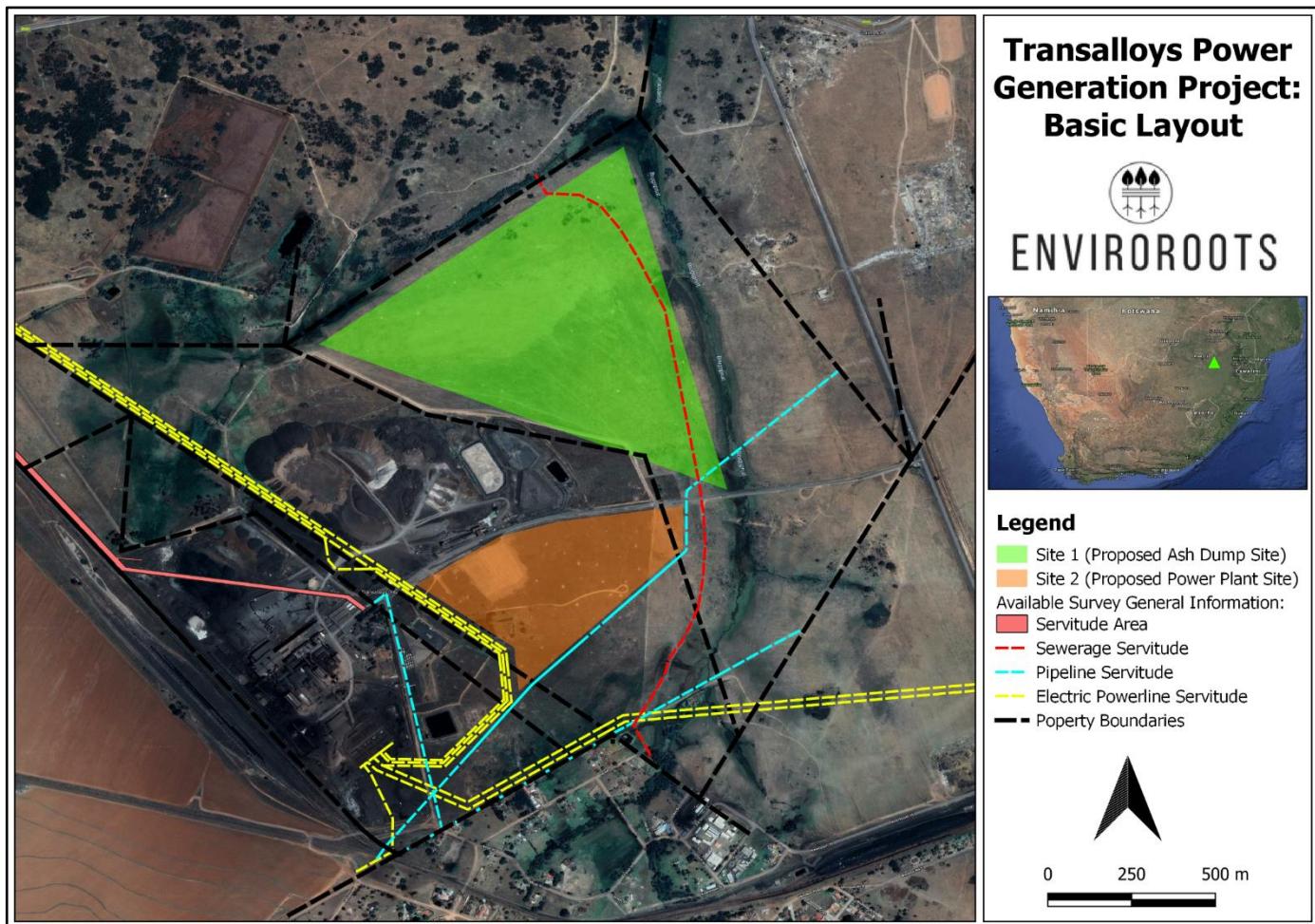
Based on findings of the revised Air Quality Impact study conducted in May 2019 for the proposed amended layout, amended technology (CFB) and the amendment to the range in output capacity (120MW- 150MW) indicated **that no significant changes to the pollutants impact rating assessed in the 2014 study**. The results of the reassessment indicated no changes in the severity of construction impacts as determined for the 150MW plant previously assessed. For operational phase impacts, the significance of PM2.5 and PM10 had increased but remained within the same qualitative severity category as previously assessed. The significance of SO<sub>2</sub> and dustfall remained identical to the previous assessment remaining moderate and the significance rating for NO<sub>2</sub> has decreased slightly but remained within the same qualitative severity category (moderate) as previously assessed. The specialist has deemed these increases/decreases in severity rating to be acceptable. Further, the specialist has advised there is no reason for the project not be authorised provided that the recommended air quality mitigation and management measures are implemented to ensure the lowest possible impact on Clewer, Kwa- Guqa and the environment. These proposed measures have been included within the EMPr (refer to Appendix K) to ensure that the measures are implemented.

As there are no significant changes to the impact ratings for the construction and operation phases, the mitigation measures within the 2014 assessment (150 MW) are still applicable and must be implemented together with the additional measures from the 2019 (120 MW- 150 MW) assessment. These measures have all be incorporated within the EMPr.

#### 5.5. Surface Water Impacts

The initial Surface Water Assessment was conducted for the 150MW power plant in November 2014 by M2 Environmental Connections cc. The updated Surface Water Assessment for the proposed layout amendment and output capacity of 120 MW- 150 MW was conducted in February 2019 by Eviroots (Pty) Ltd. An extensive desktop study and field investigation was conducted on the 17 January 2019. The specialist has indicated that the previous Surface Water Assessment (MENCO 2014) was utilised where information was still relevant. Floodline determination and storm water management were excluded from the updated report as these are engineering aspects.

The identified water resources within close proximity to the project site include the Brugspruit to the east of the project site and an unnamed western tributary of the Brugspruit found to the north-west of the proposed ash dump site (as per the amended layout). These tributaries drain in a northern direction to join the Klipspruit river where it further flows in a north eastern direction to ultimately confluence with the Olifants River.



**Figure 5:** Basic site layout of the project area (existing Transalloys Smelter and proposed new Power Plant and Ash Dump localities)

During the field investigation in-situ water quality was collected at 3 points along the tributaries. The specialist indicated that water quality was impacted by an upstream sewer pipeline discharging into the Brugspruit. The field investigation also revealed that portions of the site were infested with alien invasive vegetation and have been disturbed by extensive mining activities. In-situ water quality variables taken over three years (2012, 2014 and 2019) have indicated that water quality has remained within **unacceptable limits** compared to the Target Water Quality Ranges (TWQRs) for aquatic ecosystems of South Africa. Only pH levels for the study area have decreased to within acceptable values from exceeding the TWQR in 2012.

All sites were furthermore found to be **low sensitivity** (EIS), due to the extensive anthropogenic activities. As per the National Freshwater Ecosystem Priority Areas (NFEPA) Atlas (Nel, et.al., 2011) the water use activities at the Transalloys study site is located within a **Low Priority Area**. The Brugspruit and its unnamed tributary transecting the Transalloys property was therefore not considered important or sensitive by the specialist in terms of aquatic ecosystems contribution.

As indicated by the Mpumalanga Biodiversity Sector Plan (MBSP) Freshwater Assessment (2011), the proposed Ash Dump Site (Site 1) will be situated within an already heavily modified terrain, whereas the proposed Power Plant Site (Site 2) will be situated within an area classified as “other natural areas”. However, no

Freshwater Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) are found within the immediate vicinity of the proposed study site.

The primary surface water impacts associated with the proposed Transalloys Power Generation Project were identified as potential impacts on the regional water balance, water quality degradation due to incidental waste and wastewater discharges, contaminated storm water runoff and subsequent degradation of wetlands and/or drainage lines.

The aquatic ecology and wetland assessment report (2019) also informed the findings of the Surface Water report (2019) and have therefore been summarised within the 2019 Surface Water report. The findings of the aquatic ecology and wetland assessment will however be assessed separately as part of this motivation report.

#### **5.5.1. Comparative Assessment**

According to the updated Surface Water Assessment no additional negative impacts other than those already identified previously during 2014 Surface Water Assessment have been identified for the construction and operational phases. The identified impacts were re-assessed to determine whether the new proposed layout and output capacity would cause changes in impacts or their ratings.

According to the impact ratings for the construction and operational phases, identical impact ratings were calculated for all impacts identified as was previously determined in the 2014 Surface Water Assessment, in other words the severity rating remained identical between 2014 and 2019. No new impacts were determined as a result of the proposed amendments. Additional mitigation measures were proposed by the specialist that were not included within the previous Surface Water Assessment. These are to be incorporated and implemented within the EMPr (refer to Appendix K). The following additional measures were included within the EMP:

- » Any topsoil removed from the project footprint must be stockpiled separately from subsoil material and be stored suitably for use in rehabilitation activities;
- » Materials or the plant and plant infrastructure, other than sourced from the approved quarries/pits, must be sourced from a licensed commercial source.
- » No washing of any construction equipment in close proximity to the Brugspruit or any wetlands is permitted.
- » No releases of any substances that could be toxic to fauna or faunal habitats within the Brugspruit or any wetland areas is permitted.
- » Do not locate the construction camp or any depot for any substance within a distance of 250 m from the wetland systems or 100 m from any drainage channels.
- » Portable toilets must be placed on impervious level surfaces that are lipped to prevent spillage. The general consensus is that they should be within 30 m to 50 m of a work face.
- » Cut-off trenches must be constructed to prevent any harmful substances from entering the wetland areas.
- » Materials needed for construction must be stored in a construction camp in the applicable manner i.e. hazardous substances must be stored in bunded areas; sand and stone in such a manner to reduce wind and water pollution, etc.

- » Education of workers is key to establishing good pollution prevention practices. Training programs must provide information on material handling and spill prevention and response, to better prepare employees in case of an emergency.
- » Signs should also be placed at appropriate locations to remind workers of good housekeeping practices including litter and pollution control.
- » The proper storage and handling of hazardous substances (hydrocarbons and chemicals) needs to be ensured. All employees handling fuels and other hazardous materials are to be properly trained. Storage containers must be regularly inspected so as to prevent leaks.
- » Ensure that any rubbish/litter is cleared once a month as to minimise litter near the wetland areas. These will need to be cleaned out in accordance with a regular maintenance programme.
- » Do not allow surface water or stormwater to be concentrated, or to flow down cut or fill slopes without erosion protection measures being in place.
- » Bank erosion must be monitored at regular intervals during the construction/establishment (and operational) phase in order to assess whether further river bank protection/stabilisation works are required.
- » If erosion has taken place, rehabilitation must commence as soon as possible.
- » All roads need to be maintained and any erosion ditches forming along the road filled and compacted.
- » Berms/ earthen walls should be vegetated in order to avoid erosion and sedimentation.
- » Vegetation clearing must be undertaken as and when necessary in phases. The entire area must not be stripped of vegetation prior to commencing construction/establishment activities.
- » Herbicides must be carefully applied, in order to prevent any chemicals from entering the river. Spraying of herbicides within or near to the wetland areas is strictly forbidden.
- » A 110 m buffer should be implemented for the wetland systems.
- » Runoff water from the waste dumps, stockpiles and contaminated stormwater will be channelled into pollution control dams to avoid effects on the aquatic ecosystem.
- » Stabilise, re-shape and rehabilitate disturbed areas as soon as practically possible (within 3 weeks of disturbance) with indigenous wetland and riparian vegetation. Such rehabilitation should be informed by a suitable replanting and re-vegetation programme, sand bags, silt fencing, etc. A mix of rapidly germinating indigenous vegetation must be used.
- » Demarcated and bunded stockpiles and waste dumps will also be placed in areas where groundwater and surface water pollution can be avoided.
- » The runoff will be routinely monitored for acidity and salinity as an early warning for potential increases in salinity or acidic drainage water.
- » Long term attenuation measures, such as attenuation/infiltration trenches, swales, must be established to control stormwater from hardened surfaces so as to Sustainable Urban Drainage Systems (SUDS): All storm water runoff from the site must be supplemented by an appropriate road drainage system that must include open, grass-lined channels/swales rather than simply relying on underground piped systems or concrete V-drains. SUDS will encourage infiltration across the site, provide for the filtration and removal of pollutants and provide for some degree of flow attenuation by reducing the energy and velocity of storm water flows through increased roughness when compared with pipes and concrete V-drains.
- » Aquatic biomonitoring (SASS 5 and habitat assessments), where/if flow conditions allow for effective sampling, must take place bi-annually to determine any trends in ecology and hydrology.
- » Ongoing alien plant control must be undertaken during the construction/establishment and operational phase and particularly in the disturbed areas as these areas will quickly be colonised by invasive alien species, especially in the riparian zone, which is particularly sensitive to AIP infestation.
- » Attenuation structures must be placed between the development and associated infrastructure and the river.

The overall impact on the surrounding surface water environment could be seen as significant without the appropriate mitigation measures in place. However, with the implementation of mitigation management measures (existing and additional measures provided here) the impact of the power plant on the surface water environment is ranked as **Moderate to Low**.

### 5.5.2. Conclusion

The results of the surface water assessment conducted in February 2019 for the amended layout of the proposed power station and ash disposal facility revealed that the in situ water quality variables taken during all three sampling years (2012, 2014 and 2019) have remained within unacceptable limits compared to the Target Water Quality Ranges (TWQRs) for aquatic ecosystems of South Africa as per the 2014 Surface Water Assessment. In addition, the water use activities at the Transalloys study site are located within a Low Priority Area. The Brugspruit and its unnamed tributary transecting the Transalloys property is therefore **not considered important or sensitive in terms of aquatic ecosystems contribution**.

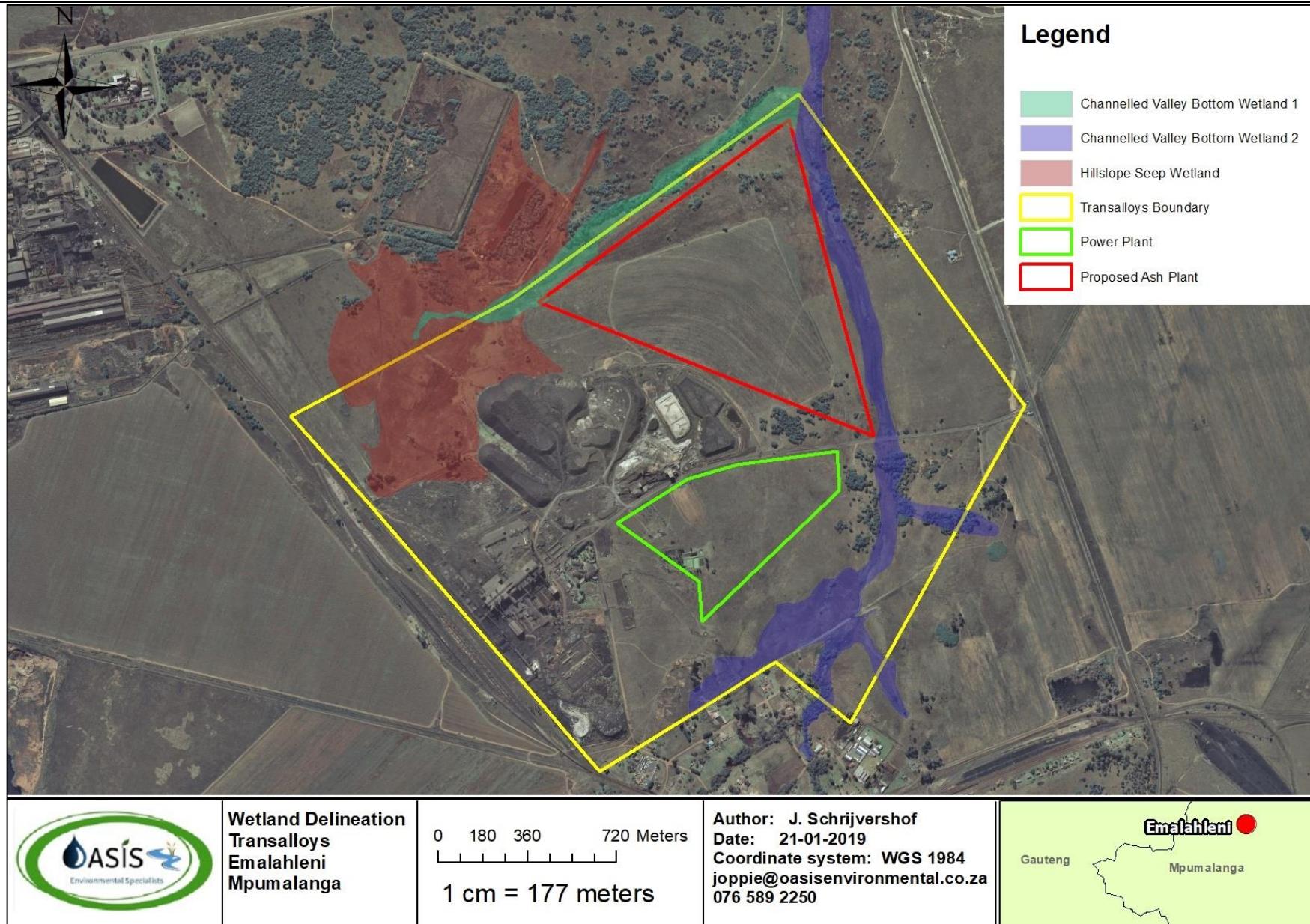
According to the impact ratings for the construction and operational phases, identical impact ratings were calculated for all impacts identified as was previously determined in the 2014 Surface Water Assessment, in other words the severity rating remained identical between 2014 and 2019. No new impacts were determined as a result of the proposed amendments. The specialist indicated that the impacts to surrounding water resources as a result of the project can be significant without the appropriate additional and existing mitigation measures and recommendations in place. The additional impacts and mitigation measures have been captured within the EMPr to ensure implementation at all phases of the power station.

The specialist concluded that the Environmental Management Programme (EMP) and the Integrated Water and Waste Management Plan (IWWMP) for the proposed project should address good waste management practices, guidelines for the storage, handling, use and disposal of waste, etc. It is of utmost importance that the project aims to limit impacts on the aquatic resources as far as possible in order to not only maintain its current basic ecosystem functions but strive to improve it.

## 5.6. Aquatic Ecology and Wetland Impacts

The initial Aquatic Biomonitoring and Wetland Delineation and Assessment was undertaken by M2 Environmental Connections CC in November 2014 for the EIA process for the now authorised 55MW power station. An updated aquatic ecological and wetland assessment was undertaken by Oasis Environmental Specialist in February 2019 for the amended application including and assessment of the output capacity of 120MW-150MW. The results of this updated assessment are discussed below.

Three wetland areas were delineated within a 500m buffer surrounding the Transalloys boundary and associated infrastructure (refer to Figure 5). A wetland health assessment concluded the seep wetland to be **largely modified (Category D)** and the two valley bottom wetlands to be **moderately modified (Category C)**. The Ecological Sensitivity and Importance of the wetlands has generally been recorded as **low** as a result of the provision of natural resources and the maintenance of biodiversity that many of these wetlands provide.



**Figure 6:** Transalloys Wetland Map (Image courtesy of Oasis Environmental as the appointed Wetland Specialists; February 2019).

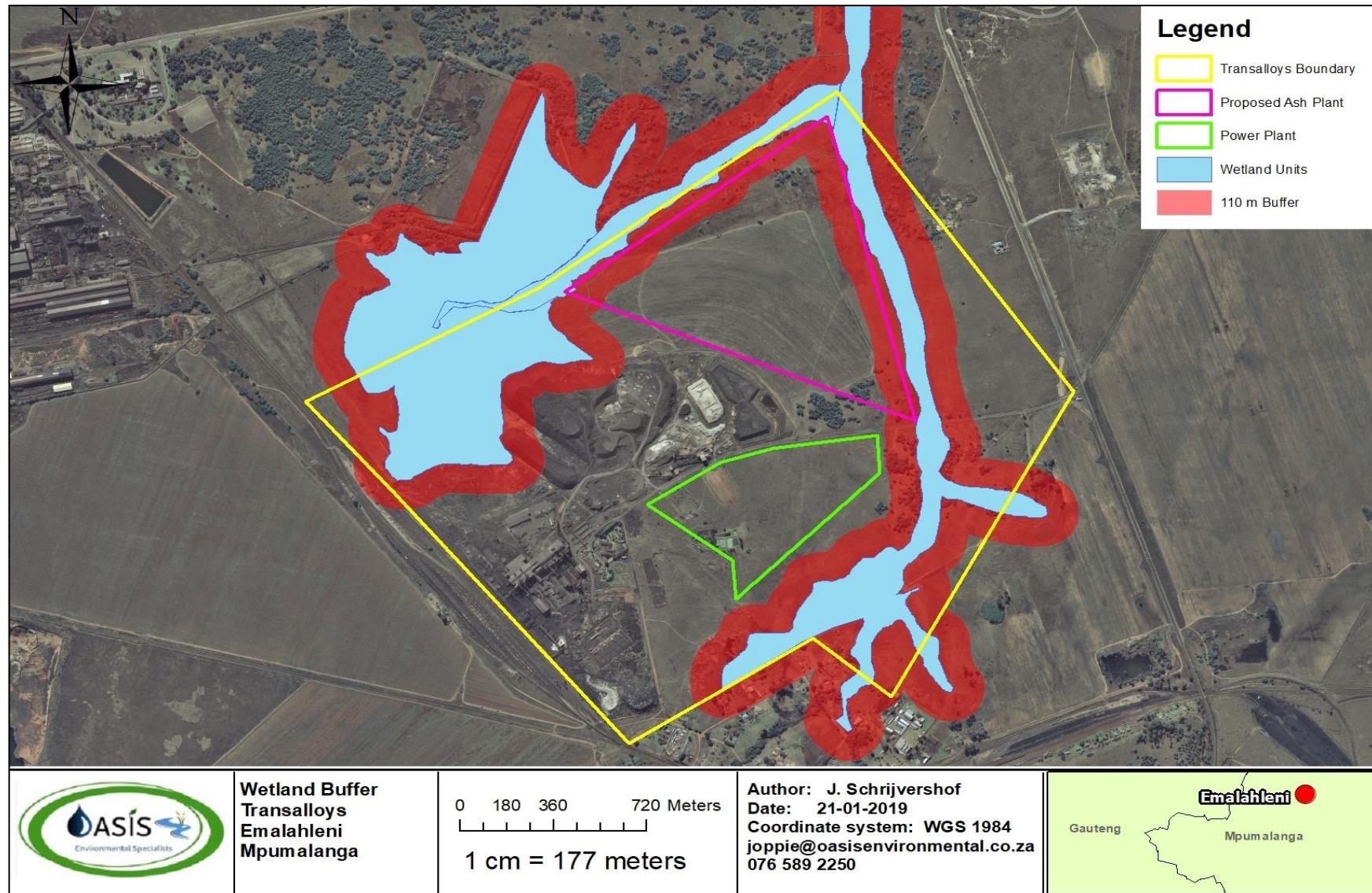


Figure 7: Transalloys – 110 m Wetland Buffer map (February 2019).

Additional considerations for the ash disposal material were considered within the buffer tool. The results calculated by the tool indicated that a 110 m buffer is appropriate for the protection of the ecosystem services provided by the wetland systems (Figure 6). Therefore, any development must occur outside of the recommended 110 m buffer zone. The ash dump layout will be adjusted accordingly to abide by the 110m buffer. Current modifications to all the wetland systems were from the use of the larger catchment area agricultural activities and livestock grazing. The previous wetland assessment calculated a 100m buffer based on the factors and layout of the power plant at the time in 2014.

The rated potential impacts for the construction from the Ash dump and Power plant for the amendment were found to be of **moderate** significance on the already highly transformed landscape. The Transalloys property boundaries falls within the Eastern Highveld Grassland vegetation type. No plant species of conservation concern were identified during the site visit. The riparian vegetation (VEGRAI) associated with the stream is **seriously modified (Class E)**, due largely to mining, grazing and alien invasive plants within the marginal and non-marginal zone. Riparian plant species included Cyperus spp., Typha capensis, and Juncus spp. Alien invasive plants observed onsite included Khaki Weed (*Tagetes minuta*), Castor Oil Plant (*Ricinus communis*), Black Wattle (*Acacia mearnsii*) Balloon Vine (*Cardiospermum grandiflorum*), Bugweed (*Solanum mauritianum*), Pom Weed (*Campuloclinium macrocephalum*), Spiny Cocklebur (*Xanthium spinosum*) Pampas Grass (*Cortaderia jubata*) and Gumtrees (*Eucalyptus* spp.). The Intermediate Habitat Integrity Assessment (IHIA) was found to **be seriously modified (Class E)**. Existing impacts include mining, erosion, alien invasive vegetation, grazing, water crossings and upstream impoundments. It is likely that small scale abstraction of water is occurring for irrigation purposes.

The macroinvertebrate assessment was found to be **seriously modified (Class E/F)**, however these results should be regarded with caution, due to a lack of sufficient stone and flow habitat conditions found in the IHAS assessment. SASS5 scores for the both the Brugspruit and its tributary were found to be in a **seriously modified (Category E/F)**.

The MIRAI results show that water quantity, poor water quality and impoundments are the primary drivers for the loss of migratory and sensitive macroinvertebrates within the Brugspruit and its tributary and were found to be in **a seriously modified (Category E/F)**.

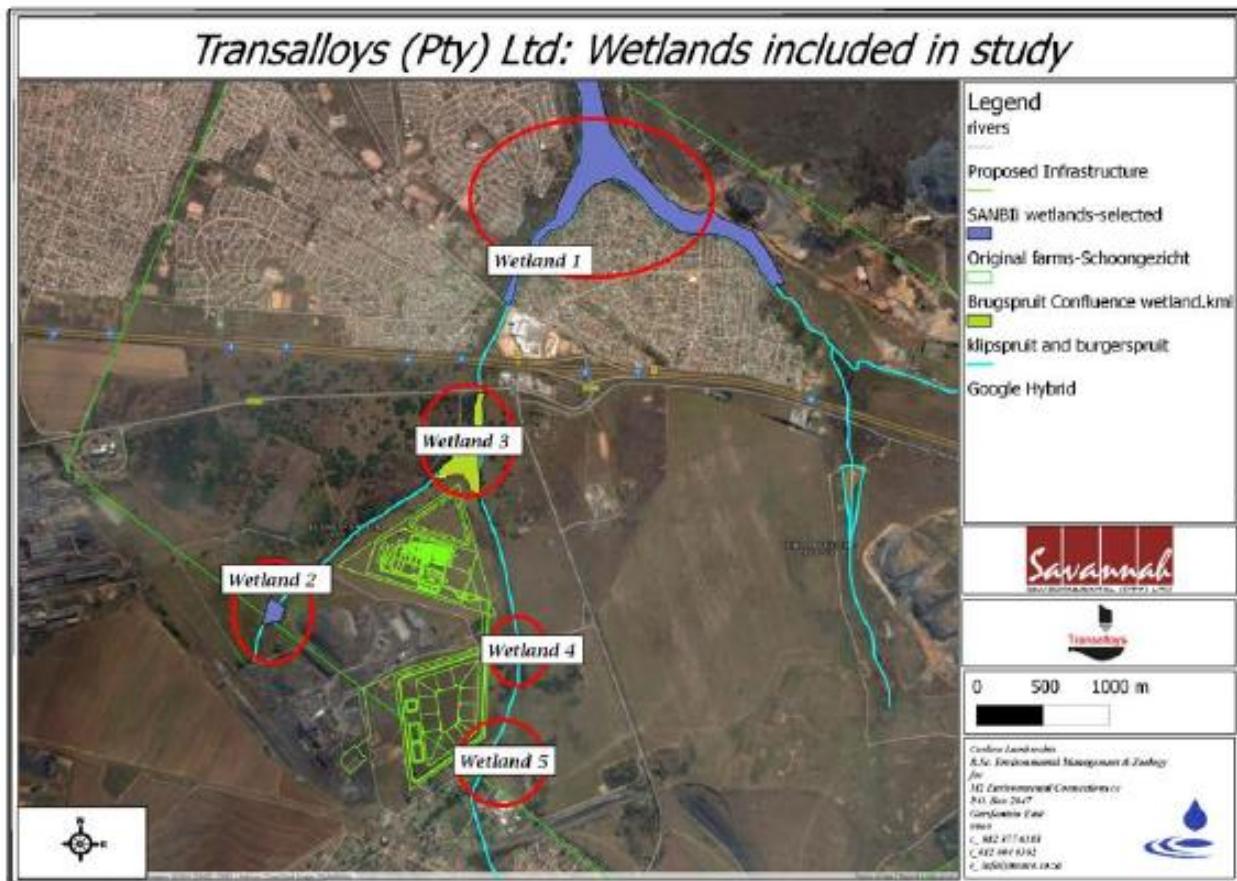
No fish are thought to occur within this stretch of stream according to the SQR data provided by Department Water and Sanitation, however one Chubbyhead barb (*Enteromius anoplus*) was collected at the downstream site of the Brugspruit watercourse which was considered to be **seriously modified (Category E/F)** according to the FRAI results.

The operational phase impacts include alterations on the flow patterns of the river and stream due to sedimentation from run off as well as possibly increased toxicity levels. The operational phase has an overall **high-risk** rating. Although the impacts and risks were found to be high, mitigation measures are recommended to limit the effects on the ecosystems and include the protection of soil, the rehabilitation of disturbed areas, and the management of stormwater and pollution prevention.

### **5.6.1. Comparative Assessment**

#### **Wetlands**

During the wetland delineation conducted in 2014 for the 150 MW power plant, 5 known wetland systems were assessed. Two (2) were included in the National wetland classification system and had data available (SANBI tools) while the third wetland located relatively near the 150 MW infrastructure, had not been delineated. One channelled valley bottom wetland was identified as developing into a hillslope seep due to leakage from a tailings facility. The remaining two wetlands were assessed using a previous wetland assessment conducted by Transalloys in 2012. The third wetland located near the proposed 150 MW was deemed to be the most important wetland due to the potential impact the plant would induce, subsequently this wetland was manually delineated.



**Figure 8:** Wetlands referenced as per the 2014 Wetland delineation and assessment

The impact ratings for the EIA focused on wetland 3 and wetland 5 which would be most likely to be impacted by the amended 150 MW plant layout. The significance ratings for the construction phase for wetland 3 (deemed the Brugspruit confluence) without mitigation measures were deemed to be **medium** and with implementation of mitigation measures was deemed as **low**. The operational phase significance ratings were deemed to be **medium – high** but could be mitigated to **medium – low**.

The significance ratings for wetland 5 which would have been impacted by the location of the proposed ash dump for the 2014 assessment for the construction phase were deemed as **high- medium** and could be mitigated to an impact rating of **medium- low**. The significance ratings for the operational phase for wetland 5 were deemed as high- medium without mitigation and with the implementation of the proposed mitigation measures could be recalculated as **medium- low**.

The wetland delineation assessment conducted in 2019 identified 3 wetlands for the proposed amendment site which would potentially be impacted by the proposed amended layout. These 3 wetlands were subsequently identified as part of the focus areas (wetland 3 and 5) of the 2014 report. These wetlands were identified as one hillslope seep and two channelled valley bottom wetlands (refer to Figure 5). The impact ratings for these wetlands for the construction phase were **moderate – high** and could be mitigated to **moderate- low**. The significance ratings for the operational phase for these wetlands were **high** and could be mitigated to **moderate**.

The impact ratings between the 2014 and 2019 wetland assessment are aligned; however, considering the location of the ash dump will no longer impact wetland 5 (as per the 2014 wetland assessment) due to the proposed amended layout, the impact ratings of high-moderate is not pertinent. As the amendment considers swopping of the ash dump and power plant, the impact ratings calculated within the 2019 assessment can be deemed as valid as they are same as the 2014 impact ratings.

The location of the ash dump and power plant have been swopped and additional considerations for the ash dump handling, working methods and usage were used to delineate a buffer of 110m for the amended layout within the 2019 assessment. The 2014 assessment calculated a buffer of 100m. The additional 10m buffer further aids the protection of the wetland resources surrounding the site.

The mitigation measures proposed for the 2014 assessment focused on the construction and operational impacts identified for wetlands 2, 3 and 5 that would potentially be impacted by the 150 MW power plant and associated ash dump. The mitigation measures recommended in the 2019 assessment propose measures for all 3 wetlands identified to potentially be impacted by the project's construction and operational activities. The 2019 wetland assessment comprises of mitigation measures highlighted in the initial 2014 wetland assessment. No additional mitigation measures other than the implementation of the 110m buffer were included. As the 2019 wetland assessment report feeds into the surface water report, many of the mitigation measures have been replicated. All these mitigation measures have been included within the EMPr (Refer to Appendix K) for implementation.

### **Aquatic Ecology**

The aquatic ecological assessment for the proposed amendment was combined within the 2019 wetland assessment. The 2019 aquatic ecological assessment and the 2014 aquatic assessment both indicated the water quality of the Brugspruit was at an unacceptable level. The 2014 assessment indicated that the Brugspruit could support a macro invertebrate community, however the 2019 assessment indicated that the macro response assessment index for the 3 wetland sites were **seriously modified** due to quantity, poor water quality and impoundments. The Intermediate Habitat Integrity Assessment (IHIA) for the 2019 aquatic assessment was found to be **seriously modified (Class E)**, whilst the 2014 assessment found it to be **largely modified**. The overall status of the Brugspruit as identified in the 2014 assessment was classified to be in a **Poor to Fair** condition and the Ecological Importance and Sensitivity is considered as **Marginal/low**. The ecological classification within the 2019 assessment indicated a category of **seriously modified** for all 3 sites.

The comparison of impacts and significance ratings between the 2014 and 2019 assessment reveal the aquatic status of the site has deteriorated since the initial assessment in 2014. There is subsequently no change in the significance rating of impacts identified within the 2014 report. The mitigation measures proposed within the 2019 assessment incorporate all of the measures within the 2014 assessment. No additional mitigation measures were incorporated other than the implementation of the 110m buffer zone.

As the surface water report does feed into the aquatic and wetland report the additional mitigations measures presented in the surface water report have been incorporated within the EMPr for implementation.

### **5.6.2. Conclusion**

It must be considered that the 2014 wetland and aquatic reports address the previously proposed 150 MW power plant and layout. The 2019 report assesses the amended layout with the swapping of the ash dump and power plant which in turn impacts the same wetlands. The impact ratings for the construction and operational phases of the amendment were the same between the 2014 and 2019 assessments. The specialist has considered all mitigation measures to minimise the impacts of the updated layout. These impacts and mitigation measures have now been included within the EMPr. No additional mitigation measures were included by the specialist.

Bearing in mind that according to the comparison between the 2014 and 2019 impact ratings the site may seem to have deteriorated, the implementation of the mitigation measures, should the amendment be authorised, will have a profound positive impact on the wetland and aquatic environment. Should these measures not be implemented the deterioration of the site may continue.

If all mitigation measures including those approved for with the EA granted for the 55MW power plant is adhered to and implemented, the specialist has advised that the combined impact is considered to be low/medium on a local scale and high/medium with regards to the footprint of the power plant. The specialist has indicated proposed development for the Transalloys Ashplant and Powerplant already lies within a heavily transformed landscape and if mitigation measures are implemented appropriately, the possible impacts could be reduced immensely, where the proposed amendment is then supported.

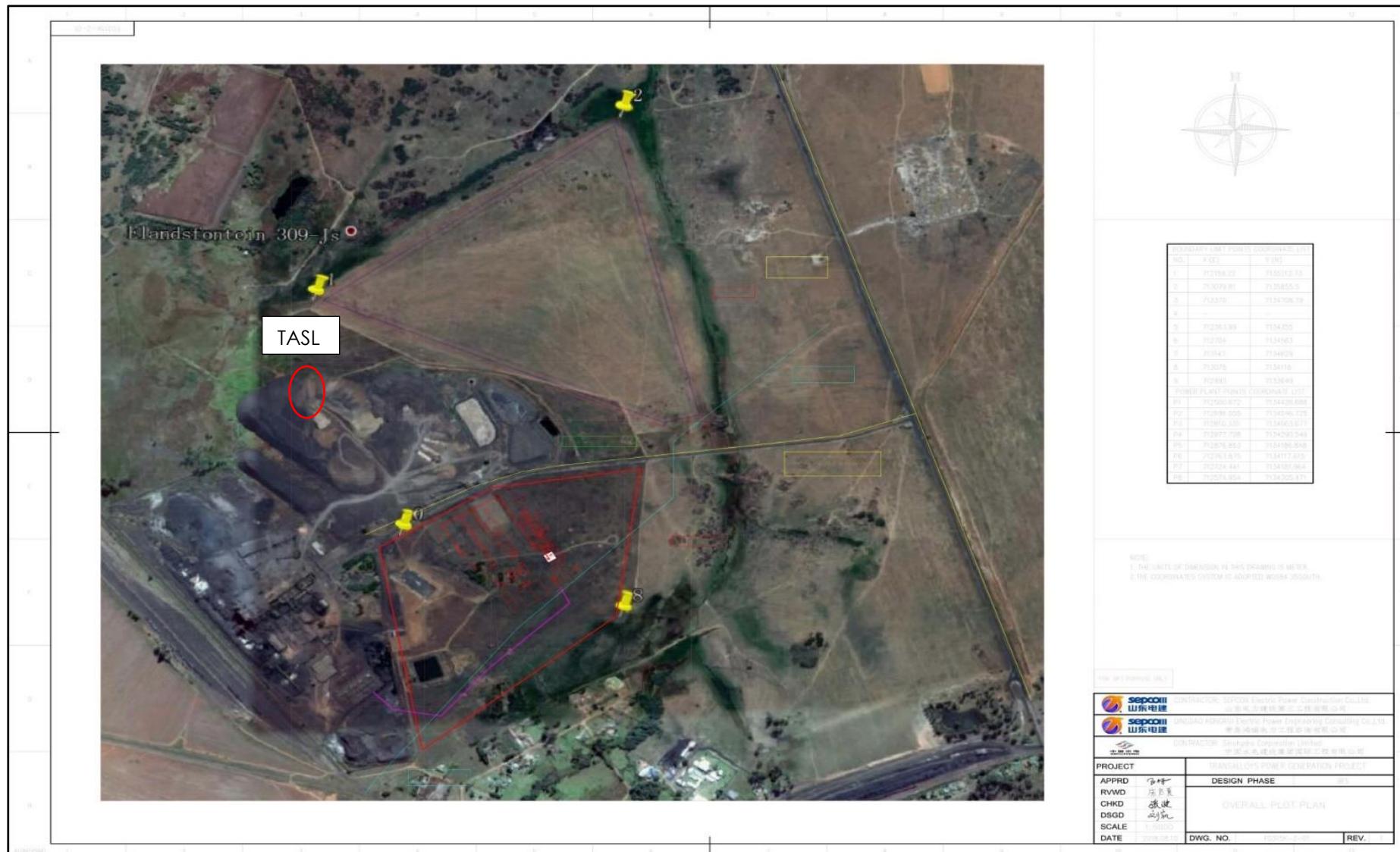
#### Noise impact

The Noise Study was conducted in July 2014 by Enviro Acoustic Research for the EIA process. The updated Noise study by Enviro Acoustic Research was conducted in February 2019 for the proposed amendment. This report addresses ambient sound levels in the area, potential worst-case noise rating levels and the potential noise impact that the plant and amendments (swapping of the ash dump and power plant and the change in range to the output capacity of 120 MW- 150 MW) may have on the surrounding sound environment, highlighting the methods used, potential issues identified, findings and recommendations.

The proposed development is proposed to take place in a relative flat area. Due to existing mining and industrial activities there are a number of artificial stockpiles, berms and dumps that may limit the propagation of noise from the proposed development. The surrounding land use is industrial and mining that is operated 24 hours per day indicating that these currently impact on existing soundscape. The towns of Clewer and Kwa-Guqa are located just south and north of the proposed development. Potential receptors in these towns are already subject to increased noise levels. Potentially noise-sensitive developments (NSDs) were identified during the site visit. Potential receptors in and within approximately 1,000 meters around the proposed development were identified as NSD01 to NSD10. These receptors were indicative of the surrounding community representing the closest dwellings, as there are significantly more people staying in the area. The suburb of Kwa-Guqa is north of the proposed facility but is not included as it is further than 1,000 meters far from the proposed facility and the N4 is located just south between the proposed facility and Kwa-Guqa. This road is a significant source of noise 24 hours of the day.



**Figure 9:** Aerial image indicating surrounding collieries and potentially noise-sensitive receptors



**Figure 10:** Design layout utilised in the updated noise assessment.

Conceptual noise sources for construction and operational phases were identified using the layouts presented by the design plans, which locates the plant slightly closer to the closest receptors and may result in slightly higher noise levels (using the precautionary principle).

No noise is associated with the planning phase and was not investigated further. The significance of the day- and night-time noise impacts for construction activities were determined to be **low** with the implementation of mitigation measures. The significance of the noise impact is higher within the 2019 assessment but remains within the same severity ratings (low) as determined during the 2014 study.

Ambient sound levels at TASL01 (the closest receptor to the proposed plant) was quite high, mainly due to noises from existing industries in the area. The average night-time LAeq,f sound levels over the three night-time periods were 53 dBA, with the lowest LAeq,f level being 44 dBA (the lowest equivalent sound level over a 10 minute period). Ambient sound levels at the houses bordering the industrial area will be impacted and elevated considering the measurement result at this location, as well as the location of the industrial activities in the area. A number of the structures in the vicinity of the project area are used for residential purposes, and the acceptable rating levels would ideally be typical of an urban noise district (55 dBA during the day and 45 dBA at night). However, the existing ambient sound levels is higher than these levels, and, considering the requirements of the International Finance Corporation, the proposed project should not increase the existing ambient sound levels with more than 3 dB.

### **5.6.3. Comparative Assessment**

Construction activities will have a noise impact of **low significance**, even though the proposed development will be close to the NSD. This is mainly due to existing high ambient noise levels and the fact that the proposed project will not change the existing ambient noise with more than 3 dB. The significance of the construction noise impact for this amendment is similar (low significance) to the impact significance determined during the 2014 study. Please refer to Table 6 below.

Night-time operational activities may have a noise impact of **medium significance** on the closest NSD for the amendment option. Mitigation is possible, but considered unfeasible as the mitigation will not reduce the existing noise levels and have a very small benefit in reducing the increase in noise level. The significance of the operational noise impact for this amendment is higher (having increased from low to medium significance (without mitigation) than the impact significance determined during the 2014 study. This is because the power station was moved closer to the NSDs in the area.

The significance of the day- and night-time noise impacts for operational phase activities were determined to be **low - medium** with the implementation of mitigation measures. The significance of the night-time noise impact is higher than that determined during the 2014 study, increasing from low to medium (without mitigation). This is because the power station was moved closer to the NSDs in the area.

**Table 6:** Summary of noise impact ratings between 2014 and 2019 assessment.

<b>Significance Ratings</b>	<b>Previously Assessed 150 MW (2014)</b>	<b>Proposed amendment (current study) 120 MW – 150 MW (2019)</b>	
	<b>Without Mitigation</b>	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Construction Activities during the day</b>	26 (Low)	12 (Low)	12 (Low)
<b>Construction Activities during the night</b>	26 (Low)	24 (Low)	24 (Low)
<b>Operational activities during the day</b>	Not assessed	16 (Low)	16 (Low)
<b>Operational activities during the night</b>	26 (Low)	40 (Medium)	24 (Low)

The proposed plant will be developed next to the existing Transalloys smelter. Noises from this new plant will cumulatively add to the existing ambient noise levels. The increase could range from 1 to almost 3 dB, and, while the cumulative increase may be low, the increase in noise levels may result in complaints from the receptors staying in the area.

Due to high existing noise levels, and the increase in noise levels that will be experienced once this project is started, quarterly noise monitoring is recommended as per the original EIA mitigation measures. This is to ensure that the power station takes into consideration the noise impact that they have on the surrounding environment, the noise levels that the surrounding receptors are subject to and to ensure that the noise levels do not change the existing ambient noise levels with more than 3 dB.

The specialist has recommended that the following must be included within the EMPR as a special condition: "The developer must implement a line of communication (i.e. a Grievance Mechanism) whereby complaints can be lodged. All potential sensitive receptors should be made aware of this mechanism". This has been added to the EMPR (refer to Appendix K).

#### **5.6.4. Conclusion**

Considering the modelled construction and operational noise levels, it can be concluded that the proposed amendments to the layout (i.e. swapping of the ash dam and power station parcels) will not lead to any novel noise impacts, the significance has been updated however still remains of **Low significance** for the construction phase and has increased to **medium** for the operational phase (as the power station was moved closer to the NSDs in the area), as defined in the original impact assessment report nor will any further mitigation measures be required, apart from the complaints line of communication mentioned above. The findings and recommendations highlighted in the 2014 report thus remain the same.

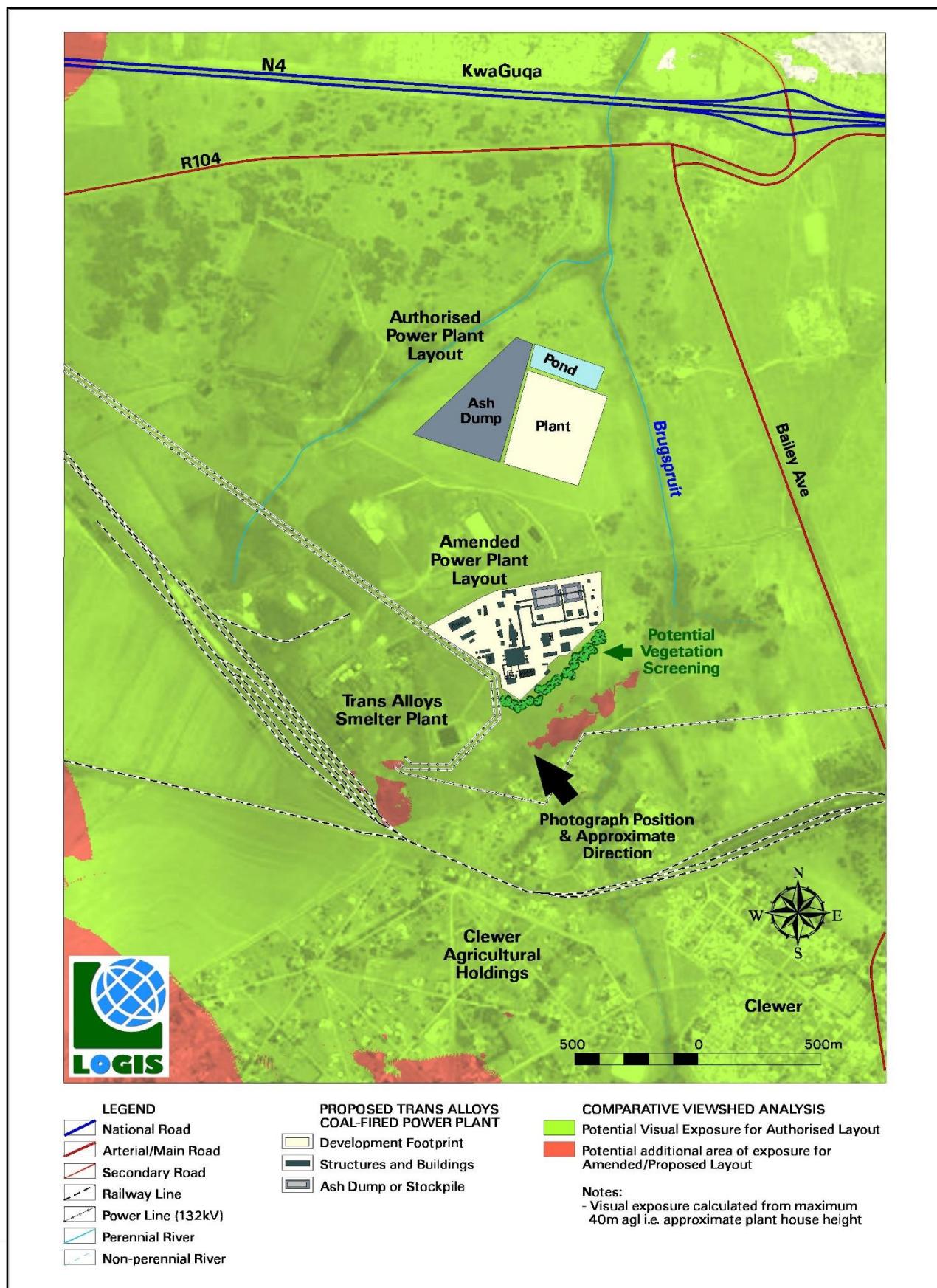
The proposed power generation activities (worst-case evaluated) will raise the noise levels in the direct vicinity of the power station with a potential to increase the noise levels slightly at the closest receptors. The significance of the potential noise impact will be low to medium without mitigation but can be mitigated to low significance.

While the projected noise level is higher than the recommended noise limit for residential use, it is the specialist's opinion that the increase in noise levels due to the amendment is not a fatal flaw. It is therefore the recommendation that the amendment be authorized from a noise impact perspective.

## 5.7. Visual Impact Assessment

The initial Visual Impact Assessment (VIA) for the initial EIA process was conducted in November 2014, for the proposed 150MW power station by MetroGIS. The Visual Impact Assessment has been updated by LOGIS (June 2019) to consider the impacts of the proposed amendment changes. The updated assessment conducted in April 2019 addressed the potential changes in the visual impact significance in terms of the proposed amendment by comparison with the original assessment undertaken in November 2014. The original Visual Impact Assessment (VIA) for the proposed Transalloys Coal Fired Power Station was based on a 150MW power station and the featured the authorised layout (2015). The visual significance rating after mitigation at the time was **moderate** (post mitigation measures) given the proximity of the power station to the surrounding road networks and residential areas. Environmental Authorisation (02 March 2016) was subsequently granted for the 55MW Transalloys coal fired power plant and associated infrastructure.

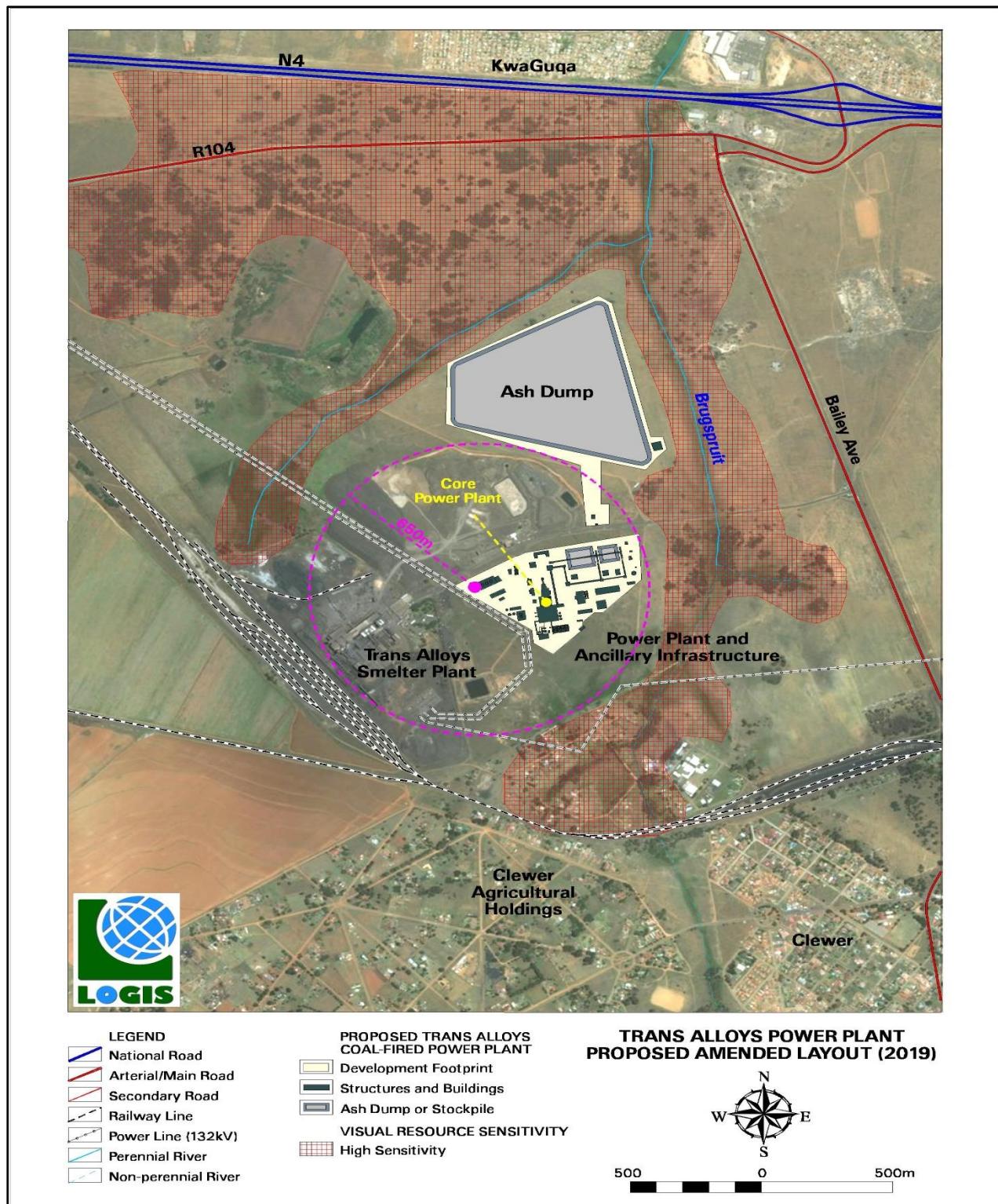
A comparative viewshed analysis carried out from the respective layouts' plant infrastructure provides an indication of the potential visual exposure within this relatively flat landscape. There is a negligible difference in the areas of visual exposure, especially within closer proximity to the plant infrastructure.



**Figure 11:** Comparative Viewshed Analysis.

The proposed amended layout will however place the power plant structures in closer proximity to potential sensitive visual receptors at the Clewer agricultural holdings, especially those located north of the railway line. The line of sight distance from the closest homestead/dwelling to the closest power plant structure is measured at 360m. This has the potential to aggravate the visual impact of the power plant on observers residing at these homesteads, potentially culminating in a visual impact of **high** significance. This visual impact could however be mitigated to **moderate** (as indicated in the original VIA) by establishing vegetation barriers or landscaped berms along the southern boundary of the development footprint. It is expected that the vegetation screening in question would be highly effective in shielding the bulk of the power plant structures from these receptors, except possibly a 120m tall smoke stack that may protrude above the vegetation.

### 5.7.1. Comparative Assessment



**Figure 12:** Transalloys Power Plant – Proposed Amended Layout for 120MW – 150MW (2019).

The amended layout option is expected to be visible within the study area. According to the specialist the proposed amendment to the Transalloys Power Plant location and the associated modifications to the plant

layout and ancillary infrastructure is not expected to significantly alter the influence of the plant in areas of higher viewer incidence (observers traveling along major roads within the region) or potential sensitive visual receptors (residents of home-steeds in close proximity to the power plant) and is consequently not expected to significantly influence the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment).

The proposed power plant will also be located in closer proximity to the Transalloys Smelter Plant, an existing visual disturbance, thereby effectively consolidating the industrial infrastructure in this locality. This is considered an advantage. Overall it should be kept in mind that this area already has a significant amount of visual clutter (e.g. the Highveld Steel Plant, the Smelter Plant, overhead power lines and railway line infrastructure) that has set the trend for industrial development within the region.

The proposed amendment is consequently not expected to significantly influence the anticipated visual impact, as stated in the original VIA report (i.e. the visual impact is expected to occur regardless of the amendment). This relates specifically to the assessment of the visual impact within a 2.5km radius of the power plant structures and ancillary infrastructure (potentially high significance that may be mitigated to moderate), but also generally applies to potentially **moderate to low** visual impacts at distances exceeding 2.5km.

Strong emphasis for the amendment is placed on the implementation of mitigation measures (in the form of vegetation screening along the southern perimeter of the power plant), in order to shield residents located in the Clewer Agricultural Holdings from the infrastructure. Failing this, the significance of this potential impact will remain **high**.

No new mitigation measures were required by the specialist for this amendment. However, emphasis on implementation of the mitigation measures as per the previous specialist study and EMPr was highlighted by the specialist (re-emphasis of the vegetation screen recommendation).

#### **5.7.2. Conclusion**

The proposed amendment to the Transalloys Power Plant location and the associated modifications to the plant layout and ancillary infrastructure is **not expected to significantly alter** the influence of the plant on areas of higher viewer incidence. The proposed amendment is consequently **not expected to significantly influence** the anticipated visual impact, as stated in the original VIA report. The proposed power plant will also be located in closer proximity to the Transalloys Smelter Plant, an existing visual disturbance, thereby effectively consolidating the industrial infrastructure in this locality. From a visual perspective, the proposed amendment will **therefore require no (zero) changes to the significance rating** within the original visual impact assessment report that was used to inform the approved power plant layout and may thus be authorised from a visual impact perspective.

## **6. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS**

In terms of Regulation 32(1)(a)(ii), this section provides details of the advantages and disadvantages of the proposed amendment.

**Table 7:** Advantages and disadvantages of the amendment

<b>Advantages of the amendment</b>	<b>Disadvantages of the amendment</b>
<b>General</b>	
The increase in production capacity from 55MW to a range of 120MW-150MW will allow for the full potential of the plant to be realised.	None
The production capacity range of 120MW- 150MW will increase power production and decrease the reliance on the National Grid to a greater extent than the approved 55MW output capacity.	
The amendment to the approved layout - by swapping of ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR) - will allow the location of the ash dump to become technically feasible and allow for the continuation of power generation.  Where this amendment is not approved, the footprint allocated under the originally approved layout will be insufficient at the 55MW production capacity.	None
The request to change the holder of the EA will ensure that the project can be implemented and that all identified positive impacts are realised.	None
The extension of validity period has no environmental ramifications will ensure that the project can be implemented and that all identified positive impacts are realised.	None
<b>Ecological</b>	
From the original ecological impact assessment (March 2014), the proposed amendments will not result in a change (increase) in the development footprint.	From the DEA approved 55 MW layout the new amendment will result in an increase in the development footprint. However, the 2019 ecological report indicated no increase in impact severity due to this change as the area assessed within the EIA did not differ from that proposed for the amended layout.
The Alien Invasive Management Plan will be incorporated into the Environmental Management Programme and will need to be implemented during the operational phase of the power station. This will facilitate the management of alien invasive species which are currently encroaching on the development site.	None
The project footprint will be located within Vegetation Unit 3 which was confirmed to be Low Sensitive	None
<b>Heritage</b>	
The proposed amended layout and output capacity of the Power Station has an identical impact (Low Significance) to the heritage impacts to the original layout and 55MW output capacity that was authorised, whilst allowing for a much larger production capacity.	None.
<b>Social</b>	

<b>Advantages of the amendment</b>	<b>Disadvantages of the amendment</b>
The amended layout has identical impacts and significance ratings to the original layout (and output capacity of 55MW) that was subsequently authorised in 2016. The 120 MW- 150 MW however contains more employment opportunities.	None
<b>Air Quality</b>	
The proposed amendment to the layout (power plant and ash dump localities), change in technology and the amendment to the range in output capacity (120 MW to 150 MW) did not result in any significant change to the pollutants impact rating assessed in the 2014 study.	None
<b>Surface Water</b>	
Positive impacts should be experienced, such as rehabilitation of the catchment and an increase in the water table from the implementation of mitigation measures and recommendations of the EMPr for the construction, operational and eventual decommissioning of the power plant.	None
<b>Aquatic &amp; Wetland</b>	
A 110m buffer for the wetland systems has now been recommended as opposed to the 100m buffer that was previously recommended to enable a greater distance between any construction and operational activities for the amendment and prevent wetland destruction.	None.
Aquatic biomonitoring will be required to take place bi-annually (once every 6 months) to determine any trends in ecology and hydrology. This allows for the monitoring and management of impacts on the catchment which are largely unmanaged at this stage.	None
Within the amended layout all No-Go areas and High Sensitive features (associated with the wetland and watercourse bodies) will be avoided by the developer and incorporated into the layout. .	None
<b>Visual</b>	
The overall development footprint and the dimensions of the infrastructure are generally reduced when compared to the authorised layout.	None
The amended position of the power plant is more contained and in closer proximity to the Transalloys Smelter Plant, aiding in consolidating the power plant and smelter infrastructure from a visual perspective, to some degree	None
<b>Noise</b>	
None	None

Based on the above, it can be concluded that the advantages of the proposed change outweigh the disadvantages from an environmental and technical perspective.

## 7. REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENTS

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As required in terms of Regulation 32(1)(a)(iii), consideration was given to the requirement for additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed change. From the specialist inputs provided into this amendment motivation, it is concluded that the mitigation measures proposed within the EIA would be sufficient to manage potential impacts within acceptable levels. Updated mitigation measures are however provided by the specialists as provided, as follows:

### **Aquatic Ecological & Wetland Assessment Additional Mitigation Measures:**

- » Any topsoil removed from the project footprint must be stockpiled separately from subsoil material and be stored suitably for use in rehabilitation activities;
- » Materials or the plant and plant infrastructure, other than sourced from the approved quarries/pits, must be sourced from a licensed commercial source.
- » No washing of any construction equipment in close proximity to the Brugspruit or any wetlands is permitted.
- » No releases of any substances that could be toxic to fauna or faunal habitats within the Brugspruit or any wetland areas is permitted.
- » Do not locate the construction camp or any depot for any substance within a distance of 250 m from the wetland systems or 100 m from any drainage channels.
- » Portable toilets must be placed on impervious level surfaces that are lipped to prevent spillage. The general consensus is that they should be within 30 m to 50 m of a work face.
- » Cut-off trenches must be constructed to prevent any harmful substances from entering the wetland areas.
- » Materials needed for construction must be stored in a construction camp in the applicable manner i.e. hazardous substances must be stored in bunded areas; sand and stone in such a manner to reduce wind and water pollution, etc.
- » Education of workers is key to establishing good pollution prevention practices. Training programs must provide information on material handling and spill prevention and response, to better prepare employees in case of an emergency.
- » Signs should also be placed at appropriate locations to remind workers of good housekeeping practices including litter and pollution control.
- » The proper storage and handling of hazardous substances (hydrocarbons and chemicals) needs to be ensured. All employees handling fuels and other hazardous materials are to be properly trained. Storage containers must be regularly inspected so as to prevent leaks.
- » Ensure that any rubbish/litter is cleared once a month as to minimise litter near the wetland areas. These will need to be cleaned out in accordance with a regular maintenance programme.
- » Do not allow surface water or stormwater to be concentrated, or to flow down cut or fill slopes without erosion protection measures being in place.
- » Bank erosion must be monitored at regular intervals during the construction/establishment (and operational) phase in order to assess whether further river bank protection/stabilisation works are required.
- » If erosion has taken place, rehabilitation will commence as soon as possible.
- » All roads need to be maintained and any erosion ditches forming along the road filled and compacted.

- » Berms/ earthen walls should be vegetated in order to avoid erosion and sedimentation.
- » Vegetation clearing must be undertaken as and when necessary in phases. The entire area must not be stripped of vegetation prior to commencing construction/establishment activities.
- » Herbicides must be carefully applied, in order to prevent any chemicals from entering the river. Spraying of herbicides within or near to the wetland areas is strictly forbidden.
- » A 110 m buffer should be implemented for the wetland systems.
- » Runoff water from the waste dumps, stockpiles and contaminated stormwater will be channelled into pollution control dams to avoid effects on the aquatic ecosystem.
- » Stabilise, re-shape and rehabilitate disturbed areas as soon as practically possible (within 3 weeks of disturbance) with indigenous wetland and riparian vegetation. Such rehabilitation should be informed by a suitable replanting and re-vegetation programme, sand bags, silt fencing, etc. A mix of rapidly germinating indigenous vegetation must be used.
- » Demarcated and bunded stockpiles and waste dumps will also be placed in areas where groundwater and surface water pollution can be avoided.
- » The runoff will be routinely monitored for acidity and salinity as an early warning for potential increases in salinity or acidic drainage water.
- » Long term attenuation measures, such as attenuation/infiltration trenches, swales must be established to control stormwater from hardened surfaces so as to Sustainable Urban Drainage Systems (SUDS): All storm water runoff from the site must be supplemented by an appropriate road drainage system that must include open, grass-lined channels/swales rather than simply relying on underground piped systems or concrete V-drains. SUDS will encourage infiltration across the site, provide for the filtration and removal of pollutants and provide for some degree of flow attenuation by reducing the energy and velocity of storm water flows through increased roughness when compared with pipes and concrete V-drains.
- » Aquatic biomonitoring (SASS 5 and habitat assessments) where/if flow conditions allow for effective sampling) must take place bi-annually to determine any trends in ecology and hydrology.
- » Ongoing alien plant control must be undertaken during the construction/establishment and operational phase and particularly in the disturbed areas as these areas will quickly be colonised by invasive alien species, especially in the riparian zone, which is particularly sensitive to AIP infestation.
- » Attenuation structures must be placed between the development and associated infrastructure and the river.

#### **Heritage Impact Assessment Additional Mitigation Measures:**

- » Implementation of a chance find procedure: This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

#### **Air Quality Assessment Additional Mitigation Measures:**

- » Air quality impacts during construction could be reduced through basic control measures such as limiting the speed of haul trucks and mobile equipment; limiting unnecessary travelling of vehicles on untreated roads; and applying water sprays on regularly travelled, unpaved sections.
- » When haul trucks need to use public roads, the vehicles need to be cleaned of all mud and haul material covered to minimise any fly-off dust. The access road to the Project also needs to be kept clean to minimise carry-through of mud on to public roads.
- » A stack emission measurement campaign be conducted once the proposed power project is fully operational. This is to confirm that the emissions fall within their required standards

- » Ensure compliance with NAAQS at both the existing Transalloys ferro-metal plant boundary and the proposed Transalloys Power Project (when operational).

#### **Noise Assessment Additional Mitigation Measures:**

- » "The developer must implement a line of communication (i.e. a Grievance Mechanism) whereby complaints can be lodged. All potential sensitive receptors should be made aware of this mechanism"

#### **Ecological Impact Assessment Additional Mitigation Measures:**

- » An Alien Invasive Plant Management Plan for the proposed development must be compiled by a qualified specialist, addressing the monitoring and eradication of such listed AIPs (especially C. macrocephalum) during construction and operational phase.
- » Regular monitoring for alien plants at the site must occur and could be conducted simultaneously with erosion monitoring.
- » When alien plants are detected, these must be controlled and cleared using the recommended control measures for each species to ensure that the problem is not exacerbated or does not re-occur.
- » Clearing methods must aim to keep disturbance to a minimum.
- » No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose must be allowed.
- » Eradication of C. macrocephalum:
  - » Chemical Control:
    - Registered herbicides: Plenum, Access and Climax
    - Herbicide mixture: 5% Glyphogan 360 SL herbicide liquid with 1.5% Power Up adjuvant ammonium sulphate liquid (1l of Glyphogan and 300ml of Power Up) mixed into 20l of water.
    - The flowerheads should be cut off and placed in plastic bags (for later burning) a week after chemical application.
    - Optimal application/spray period are between December and February. After February chemical control reduces significantly in effectiveness.
    - It is imperative that only registered, selective, broadleaf herbicides are used in grasslands.
    - Non-selective herbicides should never be used to control pompom weed in the veld or along grassy road reserves.
    - Non-selective herbicides should only be used where pompom weed occurs in croplands and industrial situations, e.g. concrete drains, pavements etc.
    - Selective broadleaf herbicides will damage all broad-leaved plants exposed to the spray including native forbs and shrubs, so spot spraying is advised rather than indiscriminate broadcast applications.
    - Each area sprayed must be revisited for the next seven years to neutralise the soil seedbank.
  - » Physical control:
    - Uprooting and burning of plant
    - It is not advisable to plough or grade lands with pompom weed, as this will damage the rootstock, stimulating further vegetative growth and denser stands.

No novel mitigation measures are introduced from the other specialists. The above additional mitigation measures are recommended based on the layout update, specifically the swapping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR) and the minor changes in receiving environment due to changes on site since the initial EIA was conducted. **These updated mitigation measures have been included within the approved project EMPr (refer to Appendix K).**

## 8. PUBLIC PARTICIPATION

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A public participation process is being conducted in support of a Part 2 application for amendment of the Environmental Authorisation for the Transalloys coal fired power plant and associated infrastructure near Emalaheni, Mpumalanga Province. This public participation includes:

- » The draft motivation report is available for public review period on [www.savannahsa.com](http://www.savannahsa.com) from **21 June 2019 to 22 July 2019**.
- » Written notification to registered I&APs regarding the proposed amendment and the availability of the amendment motivation report was distributed on **12 June 2019** (refer to **Appendix G2**).
- » Advertisements were placed in the Witbank News newspaper on **21 June 2019** (refer to **Appendix I**).
- » Site notices were placed at the site on **29 of March 2019** (refer to **Appendix I**).

Comments received during the public review period will be included in the final submission to the DEA for consideration in the decision-making process. Comments will be included and responded to in the Comments and Responses Report (to be included as **Appendix I**). Proof of attempts made to obtain comments from relevant Organs of State and key stakeholders will also be included in **Appendix I**.

## 9. CONCLUSION

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Based on the specialist findings, it is concluded that the proposed amendments to the Transalloys coal fired power plant are not expected to result in an increase to the significance ratings for the identified potential impacts, apart from the increase in impact rating from low to medium (without mitigation) change for night time operational noise levels. This change is acceptably mitigated through the existing (2014) mitigation measures. Most of the specialist studies revealed that the qualitative category (i.e. Low, Medium, High) of the significance ratings after the implementation of mitigation measures has not changed. No reduction in impact ratings was found due to the proposed amendment. In addition, all no-go areas and buffer areas were reassessed for the proposed amendment and incorporated into the EMPr for implementation and this motivation report for evaluation. An assessment of the advantages and disadvantages of the proposed amendments further indicated a greater overall advantage to the project by authorisation of this amendment than compared to the disadvantages. Key advantages identified include the increase in generation capacity and reduced reliance on the already strained national energy grid.

The proposed amendments in themselves do not constitute a listed activity. The mitigation measures described in the original EIA document and the additional measures proposed by the updated specialist studies are adequate to manage the expected impacts for the project. In accordance with the findings of Ecology Assessment, Surface water Assessment, Visual Impact Assessment, Heritage Impact Assessment, Air Quality Assessment and Social Impact Assessment the significance of the impacts regarding the amendments applied for are identical to the significance of the previous activities that were authorised in 2016. The Noise Impact Assessment has indicated that the amendment will result in increased night time noise levels during the operation phase. Additional mitigation measures have been recommended by the Ecology specialist, Heritage specialist, Aquatic & Wetland specialists, Air Quality and Noise Specialist and have been included within the updated EMPr (refer to Appendix K).

Given the above, Transalloys (Pty) Ltd requests the following:

1. An increase in output capacity from 55MW to: A range between 120MW – 150MW;
2. An amended layout, with specific mention of the swapping of the ash dam and power station parcels (Site 1 and Site 2 as per the original final EIR);
3. An update of the contact person details (holder of the EA); and
4. An update of the validity of the EA, to extend by an additional 5 (five) years from the expiry date of the original EA.
5. An amendment of the project description as provided in Table 1.

This requested amendment will result in an optimisation and efficiency of the plant layout and operation, and achieve economic competitiveness and feasibility of the power station. As required in terms of Condition 3.6 of the EA, any changes to, or deviations from, the project description set out within the Environmental Authorisation must follow the processes as per the NEMA EIA Regulations 2017 (as amended) and be approved by the Department before such changes and deviations can be made. Further information in the form of this motivation report and the appendices A - J have been provided for the Department to evaluate the significance and impacts of the proposed changes to the Transalloys coal fired power plant and associated infrastructure.

Taking into consideration the conclusions of the studies undertaken for the proposed amendments associated with the revised coal fired power plant and updated layout (as detailed in Appendix A – J), **it is concluded that these amendments are considered acceptable from an environmental perspective, provided that the original and additional mitigation measures stipulated herein are implemented.**