



MYEZO ENVIRONMENTAL MANAGEMENT SERVICES

Environmental Stewardship

GIJIMA – ARBOR RAILWAY SIDING – BASIC ASSESSMENT REPORT

***ARBOR RAILWAY SIDING BASIC ASSESSMENT REPORT FOR PROPOSED
OPERATIONS OF A RAIL SIDING TO STORE, HANDLE AND RAIL COAL, MPUMALANGA
PROVINCE.***

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**MYEZO ENVIRONMENTAL
MANAGEMENT SERVICES**

Environmental Stewardship

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Abbreviations

AQA:	Air Quality Act, 2004 (Act No. 39 of 2004)
AEL:	Atmospheric Emission License
BBBEE:	Broad Based Black Economic Empowerment
CLO:	Community Liaison Officer
DWS:	Department of Water and Sanitation
EMP:	Environmental Management Plan (former DWAF - now Department of Water and Sanitation)
EMPr:	Environmental Management Programme report
EMS:	Environmental Management System
EA:	Environmental Auditor
EAP:	Environmental Assessment Practitioner
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
IAP:	Interested and Affected Party
IAPs:	Interested and Affected Parties
IEM	Integrated Environmental Management
MDARLA:	Mpumalanga Provincial Government Department of Agriculture and Rural Development
HRM:	Human Resource Manager
HSRA:	Health and Safety Risk Assessment
LED:	Light Emitting Diode
MDS:	Market Demand Strategy
MPRDA:	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MHSA:	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
NEMA:	National Environmental Management Act, 1998 (Act No. 104 of 1998)
NDM:	Nkangala District Municipality
OHS:	Occupational Health and Safety
OHSA:	Occupational Health and Safety Action, 1993 (Act No. 85 of 1993)
PCD:	Pollution Control Dam
PPE:	Personal Protective Equipment
SHE:	Safety, Health and Environment
SANS:	South African National Standard
SDM:	Site Development Manager
TFR:	Transnet Freight Rail
VLM	Victor Khanye Local Municipality
WUL:	Water Use License
WULA:	Water Use License Application

Acknowledgments:

This report has been compiled with the insights and input from the project team members outlined below. The input from stakeholders is captured in Section 11.

Project Proponent and Funders – Gijima Supply Chain Management Services (Pty) Ltd

- Mr Velile Ramphele
- Mr Peet Cronje
- Mr Benedictus Xesha
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- Rehabilitation Strategy Implementation Programme – Mr I Phalane
- Soil Chemistry Report – Mr B Mabuza
- Heritage Impact Assessment – Mr JA van Schalkwyk
- Biodiversity Assessment – Ms V April
- Stockpile Coal Handling Capacity – Mr FJ de Lange
- Wetland Delineation – Mr W Lubbe
- Noise Impact Assessment – Mr F Malherbe

Report Structure

Updated Basic Assessment Report (Volume 1 of 3)

Updated Environmental Management Programme Report (Volume 2 of 3)

- Specialist Study (Volume 3 of 3):
- Water Management Plan (Annexure 16.2-1),
- Integrated Water and Waste Management (Annexure 16.2-2),
- Rehabilitation Strategy Implementation Programme (Annexure 16.2-3),
- Soil Chemistry Report (Annexure 16.2-4),
- Heritage Impact Assessment (Annexure 16.2-5),
- Biodiversity Assessment (Annexure 16.2-6),

- Stockpile Coal Handling Capacity (Annexure 16.2-9),
- Wetland Delineation (Annexure 16.2-8), and
- Noise Impact Assessment (Annexure 16.2-9)

Executive Summary

Gijima Supply Chain Management Services (Pty) Ltd which is located in Delmas is planning on extending its existing operations to develop the Southern Side of the site. Currently Gijima has lease agreement with Transnet Freight Rail a Portion of Arbor Railway Siding (Northern Side). The planned expansion is aimed to present social and economic benefits for the surrounding communities. The planned expansion also seeks to implement the Transnet Road to Rail Strategy in transporting more coal to the power station, whilst reducing both costs and number of human fatalities. The expansion will transport an increased volume off coal material, which will contribute towards the increased and more stable electricity supply.

The activities which will be undertaken on the Southern Side are located within 26°02'17.57"S 28°52'44.82"E; 26°02'26.94"S 28°53'11.71"E; 26°02'32.63"S 28°53'11.62"E; and 26°02'21.32"S 28°52'42.35"E; see Figure 3.1-1 and 7.2-1.

The triggered activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998 as amended) are based on the general activities to be undertaken and as such the proposed and the activities to be undertaken under this application trigger the following activities:

- Activity 9 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 19 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 34 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 48 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 64 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 67 listed under NEMA GN R327 (Listing No. 1) dated 04 December 2014 as amended;
- Activity 14 listed under NEMA GN R325 (Listing No. 3) dated 04 December 2014 as amended.
-

The biophysical and social data was collected and analysed to understand the environmental setting of the project area, after which this data was analysed to assess the potential impacts. There was also stakeholder engagement which was conducted following the regulatory stipulations provided under Regulation 41 of NEMA. Accordingly, stakeholder input and comments on the project were sourced

from meetings (one public and focus group meetings), site notices, adverts and one-on-one engagements. The significant issues raised were investigated further to ascertain the impacts.

The specialist studies which were commissioned to be conducted included Section 16. The outcomes of these studies indicated the following:

1. Heritage Specialist

From the meeting that was held in 23 January 2019, with the Chief of Arbor Village and the local community, it was revealed that there might be graves on the southern sides of the railway siding. For this reason, a Heritage Specialist had to be engaged and the terms of reference were developed and sent to the specialist. A desktop analysis was conducted and a range of resources such as archival sources, database survey, maps and aerial imagery were used. A site survey was conducted at Arbor Railway Siding on the 28 February 2019. As such the Heritage specialist was engaged to undertake the following:

- Status Quo Analysis and reporting
- Identification of heritage and archaeological artefacts/sites to determine the existence of heritage and archaeological resources on site (as described under Section 3 of the Heritage Resources Act (HRA))
- Comment on the legislative context governing heritage sites and how the siding operation needs to cooperate and co-exist with this legislative climate and specific compliance requirements and actions with processes and procedures to be followed.
- Identification of structures older than 60 years and mapping of identified heritage and archaeological artefacts/ sites, structures older than 60 years and development of an action plan
- Impact Assessment using applicable criteria
- Recommended mitigation measures for all identified impacts
- Monitoring plan, emergency response plan and awareness plan
- Costing pertaining to any relocation that might be necessary and a detailed scope of work for those subsequent activities
- Compiling a Heritage Impact Report.

The assessment determined that no sites, features or objects of heritage significance, except for the Station building are present within the study area; see Annexure 16.2-5.

2. Bulk Handling Capacity Studies

The Northern Side of Arbor Railway Siding have reached its full capacity and considering the current contractual agreement between Transnet and Gijima, the stockpiling area has to be increased. For an informed conclusion regarding the matter, a Bulk Handling Capacity Specialist was engaged on 04 March 2018 to conduct a professional assessment and a report was produced on the 26th of March 2018 following a site visit done on 05 March 2018. The assessment was further conducted to establish where the new storage area, weighbridge and truck loading area could be located. The results of the assessment determined the total volume of storage was calculated at 20 847m³ and at a loose coal

density of 800kg/m³ which equates to a total weight of 16 678 ton. Therefore, the combined total storage capacity of both the northern and southern stockpile areas, is 47 352m³ which equates total weight of 37 882 ton. See Annexure 16.2-7 for the detailing assessment results and factors applied for presented quantities.

3. Biodiversity Management Plan

The Biodiversity management plan was aimed at indicating biodiversity important species and ecosystems within the operating area; the occurrence and diversity of flora and fauna species associated; the ecological functionality and conditions that influence the area's ecosystem interactions. This will enable the project proponent in applying its mitigation measures while enabling successful operation and biodiversity management within the site. The findings of the study indicate that the area adjacent to the operating site is mainly used for residential, agriculture and mining activities that left it in a destitute form. With regards to flora and fauna, the study site is located in Highveld part of Mpumalanga province which commonly known for its wetlands and grass plains with variety of flora species. Arbor Railway Sidings area availability of flora is restricted to alien invasive plants; thus the vegetation is transformed in edges of the site. No critical flora species of conservation importance within the site were recorded. Furthermore, with exception with random encounters with fauna, no faunal species of importance were observed or recorded within the site. With exception of one transformed wetland and dam construction to support the activity, there were no natural or functioning wetlands were observed and recorded within Arbor Railway boundary. The reader is directed to Annexure 16.2-6.

4. Wetland Assessment

The Wetland Assessment followed a series of approaches to enable an adequate description of the potential wetland habitat and so as to ensure that the wetland study conducted is applicable for both an Environmental Authorisation and Water Use Licence Application. The results of the assessment include – two hydro-geomorphic wetland types were identified and delineated within the study area and within 500m from the study area during the present study and classified into two distinct hydro-geomorphic (HGM) units, HGM 1, a hillslope seepage wetland connected to HGM 2 and HGM 2, a valley bottom wetland that was likely unchanneled historically. The Ecological Importance and Sensitivity of HGM 1 were perceived to be low as a result of anthropogenic impacts especially the dominance of invasive and terrestrial vegetative species in several sections of the wetland. HGM 2, the valley bottom wetland was assigned a very high Ecological Importance and Sensitivity as well as a result of the occurrence of species of conservation concern, status of the associated wetland vegetation type, several FEPA wetlands and wetland clusters downstream from the study areas as well as the importance of providing clean water and biodiversity support to the Wilge River. The impact assessment identified surface water pollution including sedimentation and pollution, alteration hydrological regime and poor water quality downstream as the major potential impacts, during the construction and operational phase. Several general and specific mitigation measures were proposed in order to reduce negative impacts and incorporate some potentially positive impacts from the proposed development. It is recommended that the proposed the layout plan be adapted in order to shift stockpiles slightly to the west to enable a more effective clean and dirty water separation through staying on the western side of the highest local

topographical line. Dirty water will thus be able to drain away from the seepage wetland and connectivity within the seepage wetland increased. The surface layout plan is being re-considered to cater for the presented recommendation/s.

5. Noise Impact Assessment

Following a raised concern from a registered IAP, a noise impact assessment was conducted on 07 October 2019, to ensure that any noise impact is assessed according to the prescribed thresholds and conditions. According to the study, present ambient noise levels are caused by the movement of coal trucks, this includes trucks accessing the site and external sites for which pass by the site to access their respective sites. As far as the propagation of noise is concerned, the topography for which the site falls within is flat, this providing no acoustic screening against the propagation of noise. The vegetation mainly consists of grasslands and a limited number of medium sized trees while the ground conditions are compacted. In terms of the propagation of noise over longer distances, the conditions can be described as acoustically “hard”. This means that there will only be attenuation of noise due to the absorption of sound energy. The nearest noise sensitive receptor is Arbor Village as located approximately 400m south of the railway lines. In terms of assessment parameters described in SANS 10103³, i.e. the resulting total and increase in ambient noise levels, respectively, the findings indicate that the severity of the of the noise impacts are generally low.

A reasoned opinion as to whether the proposed activity should or should not be authorised – recommendation from EAP

It is of the opinion of the EAP that any potential impacts associated with the proposed development may be mitigated through thorough planning and implementation. The proposed mitigation measures to reduce associated impact of the project are detailed in the Environmental Management Programme report (EMPr) – Volume 2 of 3. It is important to indicate that the project is based on providing social and economic value through various initiatives to empower and develop local community and further forms part of the Transnet Road to Rail strategy. Given the proposed activities, the outcomes of the Environmental Impact Assessment (EIA) and the identified impacts from the project activities would be manageable if the proposed mitigation measures are implemented; as such the environmental assessment practitioner (EAP) would motivate in favour of the proposed development.

1 INTRODUCTION

1.1 Background

Gijima Supply Chain Management Services (Pty) Ltd (Gijima) currently has a lease agreement with Transnet Freight Rail on a portion of Arbor Siding No. 740527 – Northern side (DWX1470J, DWX1468J) (see Annexure 1.4-1) and seeks to expand their operations to the Southern side (DWX1469J and DWX1471J). The proposed expansion will require developmental activities in order to maximise the operational capacity of the business.

The site is located about 5km west of the Kendal Power Station along the R555 road. It also falls within the Olifants Water Management Area (WMA 4), in the quaternary catchment B20F, draining towards the tributary of the Wilge River.

The Siding is located west of N12 and can be accessed through R555 to Ogies and will be used for loading domestic coal, as well as exporting coal onto rail wagons. The site can also be accessed through off ramping off N12 and turning right to join R545 road towards Balmoral. The next turn to the right with a signage Blesbokfontein and the Arbor and leads directly to join R555 road towards Ogies/ Delmas. The market for this service has been identified as various commodity owners as well as mines. There are no envisaged deviations regarding joining the network. Arbor will be used as a point of entry into the rail network, by road hauling coal from the identified market, stockpiling and loading coal into the rail wagons. The regional setting map is shown in Figure 1.1-1 with the local setting map of the existing Siding shown in Figure 1.1-2.

The operational Northern side of the Arbor has been servicing Eskom with 3 978 201 tons of coal over the 3-year period (June 2013 – September 2016). Eskom has renewed the contract and increased the tonnage to 9,5 000 000 tons over a 4-year period (1 October 2016 – 30 September 2020) which translates to 198 000 tons per month. The copy of the commitment from Eskom in relation to the envisaged monthly tonnage is attached as Annexure 1.3-1. The Northern side operation is said to have reached its maximum operational capacity in terms of stockpiling, receiving trucks and loading the trains. Currently only two trains are operational to service the new Eskom contract and the infrastructure is not enough to fulfil their contractual obligations. The proposed expansion will require several activities to have the Southern side operating effectively. An application for the expansion of the lease area was approved by Transnet Freight Rail (TFR) and communique in relation to that approval is attached as Annexure 1.4-1.

The proposed expansion to the operation also presents social and economic benefits for the communities surrounding the site, especially Arbor village, which is within a 1km radius south of the site. The social benefits include the job opportunities for 25 extra people to be employed for the site. The economic benefits will be realized through the implementation of Transnet Road to Rail Strategy in transporting more coal to the power station, whilst reducing both costs and number of human fatalities. The expansion will transport an increased volume of coal material, which may lead to more stable electricity supply.

The expansion is viewed to be in support of the Transnet Freight Rail Strategy which was proposed in 2012 and linked to the budget allocations for rail infrastructure development within the country. Transnet has been looking at ways of investing in new technological developments in relation to Road to Rail Strategy. They have been piloting on an idea to use truck wagons fitted with tyres that can travel on both road and railway surfaces. This would also reduce the amount of time for loading and offloading at Stockpile areas, the traffic of trucks loading and offloading at stockpile areas would be reduced, the emissions from trucks to and from the stockpile areas. The Transnet Freight Road to Rail Strategy is realized in Section 2 of this report.

This basic assessment report is designed for the Southern Side rail planned development activities and is prepared in support of an application for environmental authorisation. As such, this report intends to deal with the activities to be implemented within the Southern Side Rail siding.

The proposed Southern Side rail operations will be mirror of the Northern Side rail Siding except for a few infrastructural changes that will be highlighted in the preceding sections. Gijima received a Water Use Licence (WUL) on 8 December 2015 (Licence No. 04/B20F/G/4009) and the details of the licensed water uses is given in Section 1.3 and a copy of the licence is attached as Annexure 1.5-1.

1.2 Objectives of the Study

The objective of the basic assessment process is to ensure that the environmental aspects surrounding the proposed development and activity are protected from potential negative developmental impacts presented by the proposed additional scope of work within Arbor Railway Siding. The process also seeks, through a stakeholder consultative process, to achieve aspects outlined below:

- Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Describe the need and desirability of the proposed alternatives;
- Undertake an impact and risk assessment process inclusive of cumulative impacts which focus on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives.
- Assess the risk of the impact to determine:
 - The nature, significance, consequence, extent, duration, and probability of the impacts occurring to;
 - The degree to which these impacts can either be reversed; may cause irreplaceable loss of resources; and can be managed, avoided or mitigated;
- The impact process also seeks to rank the site sensitivities and possible impacts the activity and technology alternatives might impose on the sites and location identified.

This is done to:

- Identify and motivate a preferred site, activity and technology alternative,

- Identify suitable measures to manage, avoid or mitigate identified impacts, and
 - Identify residual risks that need to be managed and monitored.
- Compile an Environmental Management Programme (EMPr) to ensure all the potential identified impacts are mitigated, audited and monitored to protect the environment and human health.

1.3 Approach

1.3.1 Basic Assessment Report Requirements and Report Structure

The nature of related developmental impacts for the proposed project are detailed in this Basic Assessment Report (BAR). This report has been compiled in accordance with the requirements of the Environmental Impact Assessment (EIA) Regulations of December 2014 .and adheres to the requirements contained in Appendix 1 of GNR 982, as noted in Table 1.3-1., which as such, provides the BAR structure. This report has been compiled such that the structure is guided by the information required as stipulated within the Regulations. The approach adopted also ensured that literature research and information/data collection process was undertaken to feature the current the Status Quo in the impact evaluation phase. The data collection, consolidation ad validation process included consultation conducted during the compilation of the EMPr for the environmental authorisation application for the Northern side of the Arbor Railway Siding.

The supporting documents that are mentioned from each of the sections follow the specific section number and are called Annexures. The specific appendices stipulated in the Regulations are referenced as Appendix A, B, etc.

Table 1.3-1: Content of a BA Report (2014 EIA Regulations)

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
Appendix 1, Section 3 (a)	Details of – (8) The EAP who prepared the report; and the expertise of the EAP; and (ii) The expertise of the EAP, including a curriculum vitae.	Section 2
Appendix 1, Section 3 (b)	The location of the activity, including – (8) The 21-digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Section 3

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
Appendix 1, Section 3 l	<p>A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –</p> <p>(i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.</p>	Section 4
Appendix 1, Section 3 (d)	<p>A description of the scope of the proposed activity, including –</p> <p>(8) All listed and specified activities triggered;</p> <p>(ii) A description of the activities to be undertaken, including associated structures and infrastructure.</p>	Section 5, Section 7
Appendix 1, Section 3 l	<p>A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.</p>	Section 5.8
Appendix 1, Section 3 (f)	<p>A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.</p>	Section 8
Appendix 1, Section 3 (h)	<p>A full description of the process followed to reach the proposed preferred activity, site and location within the site, including-</p> <p>(8) Details of all alternatives considered;</p> <p>(ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p>	<p>Section 9</p> <p>Section 10</p> <p>Section 11</p> <p>Section 11.1, Table 11.1-2</p>

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
	<p>(iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</p> <p>(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts-</p> <p>(aa) Can be reversed;</p> <p>(bb) May cause irreplaceable loss of resources; and</p> <p>(cc) Can be avoided, managed, or mitigated.</p> <p>(vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) The possible mitigation measures that could be applied and level of residual risk;</p>	<p>Section 14</p> <p>Section 12</p> <p>Section 12</p> <p>Section 12</p>
	<p>(ix) The outcome of the site selection matrix;</p> <p>(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;</p>	<p>Section 13</p>

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
	(xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	
Appendix 1, Section 3 (i)	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-</p> <p>(8) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.</p>	Section 12
Appendix 1, Section 3 (j)	<p>An assessment of each identified potentially significant impact and risk, including-</p> <p>(8) Cumulative impacts;</p> <p>(ii) The nature, significance and consequences of the impact and risk;</p> <p>(iii) The extent and duration of the impact and risk;</p> <p>(iv) The probability of the impact and risk occurring;</p> <p>(v) The degree to which the impact and risk can be reversed;</p> <p>(vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated.</p>	Section 12
Appendix 1, Section 3 (k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and	Section 12

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
	recommendations have been included in the final report.	
Appendix 1, Section 3 (l)	<p>An environmental impact statement which contains-</p> <ul style="list-style-type: none"> (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives. 	Section 12
Appendix 1, Section 3 (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Section 12
Appendix 1, Section 3 (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	
Appendix 1, Section 3 (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 16
Appendix 1, Section 3 (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Executive Summary and Section 13
Appendix 1, Section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded,	Section 16

Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BA Report
	and the post construction monitoring requirements finalised.	
Appendix 1, Section 3 l	An undertaking under oath or affirmation by the EAP in relation to- (8) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 17
Appendix 1, Section 3 (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Annexure 12.1-1 of the updated EMPr (Volume 2 of 3)
Appendix 1, Section 3 (t)	Where applicable, any specific information required by the Competent Authority.	Section 16
Appendix 1, Section 3 (u)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	Section 16

1.3.2 Environmental Management Programme

The operations on the Northern side have an existing environmental management programme report (EMPr), which was done in terms of Section 28 of the National Environmental Management Act, to ensure that reasonable measures to realized pollution to the environment.

The EMPr that is being produced from this development will cover both the Northern side and Southern Side operations so that the pollution mitigation measures are viewed comprehensively.

The EMPr has been compiled under expert advice and input of a qualified environmentalist and to provide recommendations and guidelines to achieve sustainable development. The EMPr provides

norms and standards to which compliance and monitoring should be done in stages of the proposed project, with particular reference to the prevention and mitigation of anticipated potential environmental impacts. All stakeholders should note that obligations imposed by the EMPr are legally binding in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

The EMPr is an implementation tool that will be continuously updated to promote the principles of sustainable development and continual improvement.

The objectives of the EMP are outlined below:

- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the proposed project.
- To create management structures that addresses the concerns and complaints of IAPs with regards to the development.
- To establish a method of monitoring and auditing environmental management practices during all phases of the activity.
- Ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management (IEM).
- Ensure compliance to applicable environmental legislation such as National Water Act, 1998 (Act No. 36 of 1998)
- Be alert of the periods within which the measures contemplated in the EMP will be implemented, where appropriate.

2 FULL DETAILS OF THE EAP

2.1 EAP (EAP)

Table 2.1-1: EAP Description and Contact Information

Environmental Assessment Practitioner (EAP):	Myezo Environmental Management Services (Pty) Ltd
Contact person:	Babalwa Fatyi
Profession:	Director and EAP
Physical address:	107 Haymeadow Street, Boardwalk Office Park, Block G, Unit G8, Faerie Glen, Pretoria
Postal address:	Postnet Suite B165, Private Bag X18 Lynnwood Ridge
Telephone:	012 998 7641
Fax:	086 354 1698
Cell:	082 772 2418
E-mail:	babalwa@myezo.co.za

EAP Qualifications	Master of Science (<i>cum laude</i>): Ecology	
EAP Registrations/Associations	The South African Council for Natural Scientific Professions (SACNASP)	Institute of Environmental Management and Assessment (IEMA), Lincoln, UK
Registration Number	400123/01	(0025153)

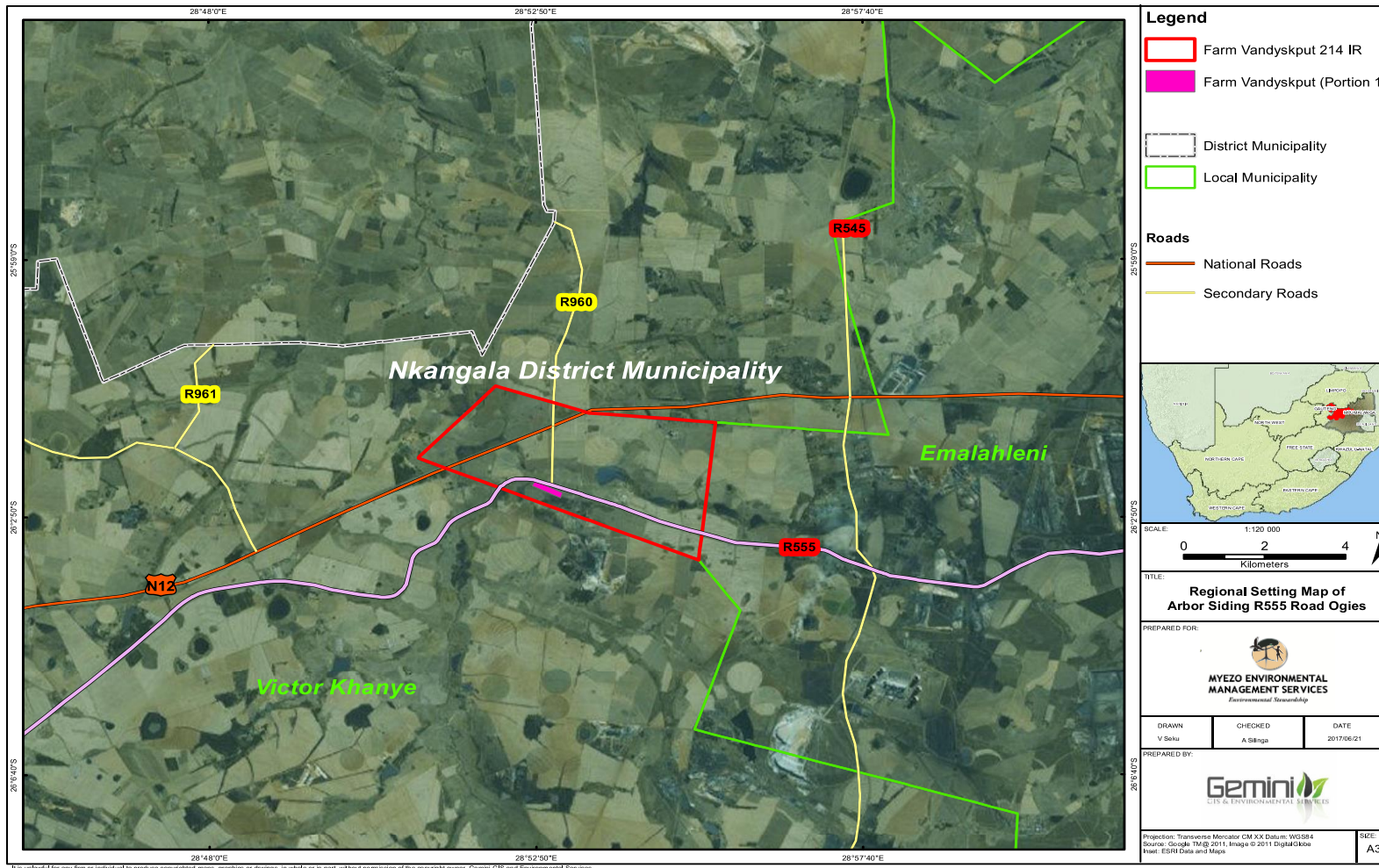


Figure 2.1-1: Regional Setting

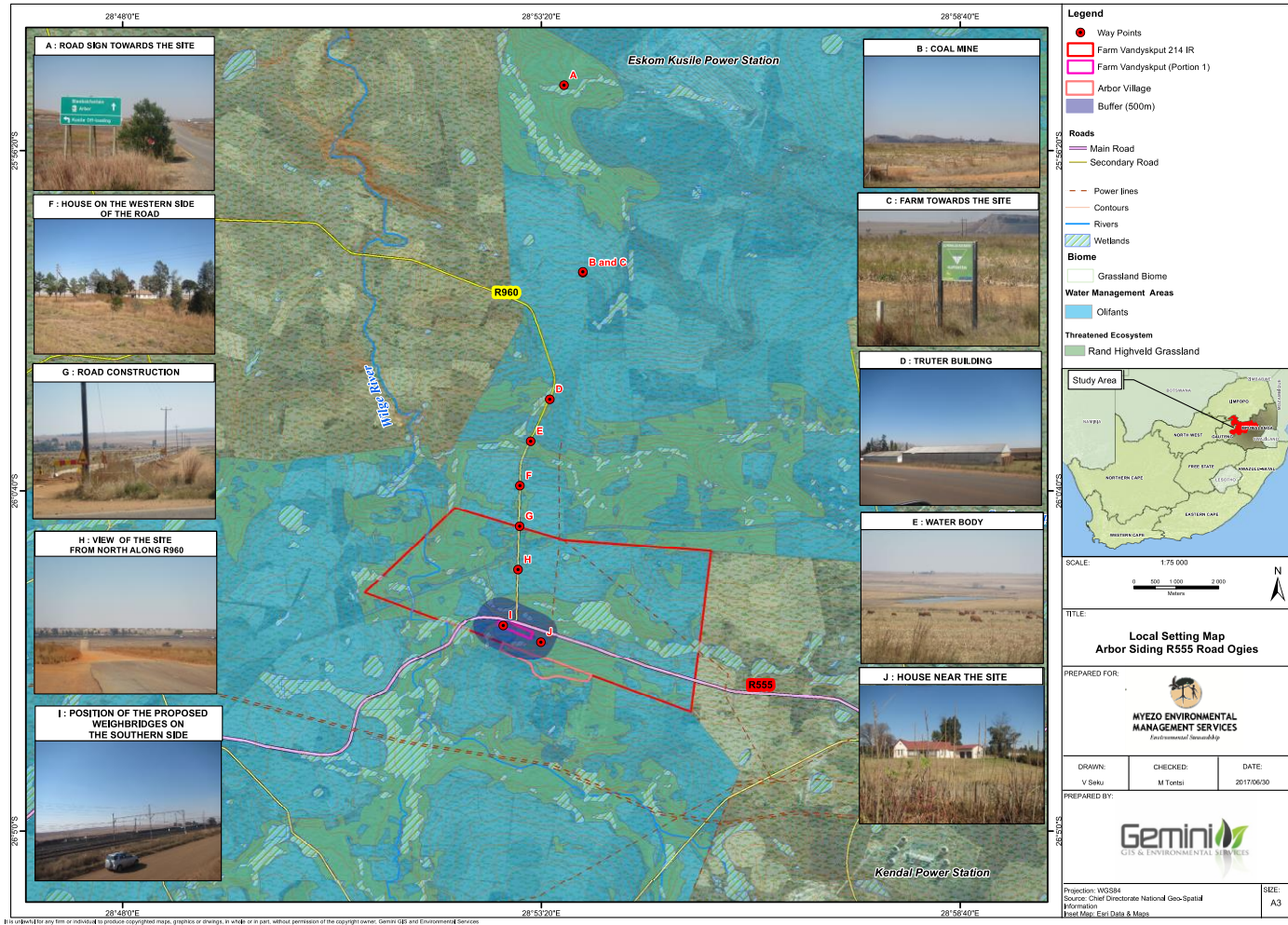


Figure 2.1-2: Local Setting

3 THE LOCATION OF THE ACTIVITY

3.1 Project Location

The site is located about 5 km west of the Kendal Power Station, along the R555. It falls within the Olifants Water Management Area (WMA 4), in the Quaternary Catchment B20F.

3.1.1 Location of the existing operation (Northern Side)

Gijima currently has a lease agreement with TFR on a portion of Arbor siding – Northern side (DWX1470J, DWX1468J) and seeks to expand their operations to the Southern side (DWX 1469J and DWX 1471J) shown in Figure 3.1 1.

The Northern side is being used as a rail siding and coal stockpile area, with existing electrical and engineering infrastructure such as railway lines, power cables, drainage infrastructure, water supply infrastructure as shown in Figure 4.1-1 below.

The proposed expansion will require developmental activities in order to maximise the operational capacity of the business. It is reported that the current lease area (Northern side) has reached its maximum operational capacity in terms of stockpiling, safely receiving of trucks and loading of trains. However, a challenge has been encountered with meeting the demand as per contractual obligations. In order to meet their contractual obligations to Eskom (Tutuka Power station) as shown in Appendix 1.3, they require 3 trains per day as opposed to the current operational 2 trains per day servicing the Northern side. The proposed expansion is seen to play a significant role in further supporting Transnet's Road to Rail initiative also linked to Eskom's Road to Rail strategy with the key objective being to divert a significant amount of tonnage from road to rail. The strategy also suggests moving into new technological developments within the industry by piloting the use of truck wagons with tyres that can travel on both road and railway track.

3.1.2 Location of the proposed operations (Southern Side)

The proposed operations for the Southern side are within the same site within Farm Portion 1 area numbers (DWX 1469J and DWX 1471J) as shown in (Figure 3.1-1). In order to prepare the Southern side for operations, there are several alternative options proposed for the establishment of the Southern side as a Coal Stockpile Area and a Loading Area.

3.1.3 Physical address and farm name

Arbor Railway Siding, which is located on Portion 1 of Farm Van Dyksput No. 214 – IR within the Victor Khanye Local Municipality (VKLM), under the Emalahleni Magisterial District, Mpumalanga Province. The farm boundaries are shown in Figure 3.1-2.

3.1.4 Site address

Arbor Siding Portion 1 of Farm Van Dyksput No. 214 – IR within the Victor Khanye Local Municipality (VKLM), under the Emalahleni Magisterial District, Mpumalanga Province.

3.1.5 Wards in Arbor

The Arbor Railway Siding is located within Ward 9 of the Victor Khanye Local Municipality.

3.1.6 The 21-Digit Surveyor General Code

T	0	I	R	0	0	0	0	0	0	0	0	0	2	1	4	0	0	0	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

3.1.7 Geographical coordinates of all external corner points of the site

Latitude	Longitude
-26.0382137298584	28.8791160583496
-26.0408172607422	28.8874206542969
-26.0423965454102	28.8865623474121
-26.0392551422119	28.8784294128418

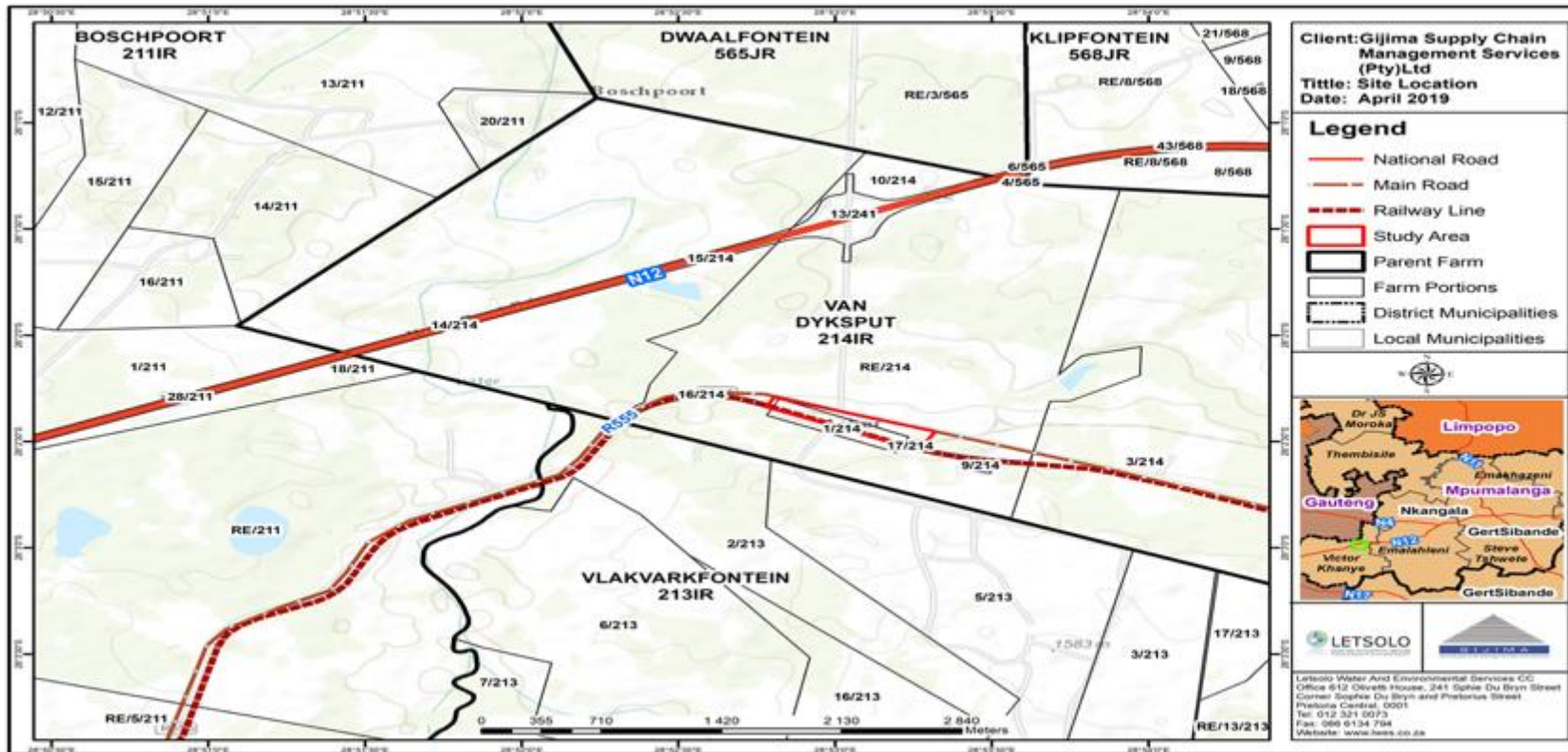


Figure 3.1-2: Farm Boundaries

4 A DETAILED DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY

4.1 Project Title

Basic Assessment Report for the increased scope of work planned at the Arbor Railway Siding.

4.2 Project Description

4.2.1 Transnet and Eskom Road and Rail Strategy Overview

The Arbor Rail Siding operations form part of a broader vision to reduce the number of trucks on the road network established by Transnet and Eskom. In summary the Road to Rail Strategy aims to achieve the following:

As such Eskom implemented a road to rail strategy in order to realized trucks carrying coal on road with the aim of addressing the safety hazards caused by trucks on the road improving the public safety on roads. The other aspect of rail strategy is to reduce logistics costs involved, which in turn influence the price of electricity.

The Transnet and Eskom Road to Rail Strategy

The Transnet Freight Rail Strategy is a 7 year Strategy that developed in 2012 after the announcement made by President Jacob Zuma during the State of the Nation Address (SONA) of allocating R300 billion in infrastructure development to rejuvenate the economy. The allocation was meant to also create jobs and address poverty including inequalities. Of the R300 billion, R200 billion would be channeled to Transnet Freight Rail (TRF) to expand the rail infrastructure to create capacity and increase cargo volumes. Transnet Freight Rail has developed and is currently implementing a new Strategy called the "Market Demand Strategy (MDS), which focuses mainly on a shift of traffic from road to rail.

In their June 2015 progress report TFR reported to have six pillars for its MDS -- market development, operational efficiency, capital investment, regional integration, safety and people. Its goals were to be among the top five railways of the world, to be financially sustainable, to be the employer of choice and to reach a "gold standard" in its operations and capital executions.

It was reported that in the next few months, from June 2015, TFR would be piloting a road-rail solution. This was a truck/trailer which had rail wheels and rubber wheels, which meant it could go on both rail and road. TFR had purchased new locomotives to the value of R250 billion, as part of the strategy was to improve the rail networks. TFR was also committed to improving cross-border traffic, focusing on the north-south corridor which would reduce the asset cycle time from 20 days to six days. It was in negotiations to move copper from Zambia to Richards Bay and Durban by rail, and was also working very closely with Eskom on customer collaboration and capacity creation for the road to rail shift.

Eskom Road to Rail Strategy

In support of the Road to Rail Strategy initiated by Transnet, Eskom reported their intention to increase the percentage of rail transportation use over the next five to ten years (Mining Online, September 2016). Mr Singh explained that the road-to-rail migration strategy is a "national strategic imperative" for several reasons. These include the following:

the need to reduce fatalities on South Africa's roads significantly;
reduce damage and congestion on limited road infrastructure; and
minimise the negative health impact of coal haulage on towns and communities near coal mining centres.

Economic advantages include reducing coal transportation costs (which will enable the optimisation of electricity tariffs), and boosting South Africa's economy through significant rail infrastructure upgrade programmes, creating many new job opportunities in the process.

The strategy is said to also have environmental benefits such as reducing carbon emissions, and eradicating spillages and the illegal dumping of coal by hauliers.

Source: Mining Online article, September 2016.

4.2.2 Activity Description

The operation process involves haulage of coal from various mines, stockpiling and loading onto railway wagons for transportation to the markets. Currently VVF mine is supplying Majuba Power Station by road.

The total storage capacity of the existing site is 21 204 tons. The current active operational side herewith, referred to the Northern Side of the Arbor Railway Siding, has been servicing Eskom with 3,8 million tons of coal, over the three-year period, which ended in September 2016.

Subsequently, Gijima targets the export market and Eskom renewed the contract and increased the tonnage to 9 5 000 000 tons over a 4-year period ending in 30 September 2020. This translates to 198 000 tons per month. There will be challenges in achieving this current contractual demand, since the current active operational area has reached its maximum operational capacity in terms of stockpiling, receiving trucks and loading the trains. Currently, only two trains are operational to service the extended Eskom contract and the current infrastructure is not enough to fulfil Gijima's contractual obligations. The operational capacity will need to be increased and as such there will be additional activities that will be undertaken such as increased stockpiling areas, and to increase the loading capacity with two trains daily. Increase in the capacity of the pollution control dam and/or have a new additional pollution control dam with a silt trap.

Gijima is applying received approval from TRF to develop the Southern Side of Arbor into a coal Loading Facility. The motivation behind this development is:

- The creation of jobs,
- Reduction in rail crossing movements
- The improvement of rail safe operations.

Currently this area is vacant and as such deemed as a wasted resource which holds a tremendous opportunity for both Transnet and the community. The development of the area has additional socio-economic benefits such as:

- Development of opportunities within Local Municipality
- Boosting of local economy through provision/creation of employment opportunities for the local community. The project envisaged to employ a total of 25 extra people excluding the already employed truck drivers and Gijima employees
- Positive effect on the broader value chain extending to suppliers of goods and services from nearby towns.
- The operation will contribute positively on livelihoods leading to an increase in the standards of living while causing a reduction in poverty.
- The coal beneficiation industry has a positive impact of regional and local economic setup. The local economy will benefit through salaries paid to employees and tax revenues paid to Government.

In addition to the socio-economic benefits, the proposed development presents some benefits of the land use in respect of rail and these are outlined below.

- TFR's growth strategy can be realised because a minimum of 90 000 tons per month of Eskom coal will be loaded on rail;
- Export clients might use Arbor Trail Siding with a production output of planned 60 000 – 100 000 t/month
- This business further supports the road to rail initiative as outlined above;
- where road haulage will be reduced significantly; increased safety on road
- Reduce truck movements over the railway crossing significantly! (VVF mine will then load at Arbor Southern side, instead of crossing the railway, by road to Majuba) – 5000 rail crossings per month. This is a major Safety improvement for TFR and the community!
- TFR's Objective is to increase shareholders worth, and the natural way of achieving this is by increasing volumes. Our Strategy of growing the tonnages is in support of TFR strategies.

4.3 Project Scope

Gijima intends to increase the scope of their current activities at the Arbor Railway Siding, which is located on Portion 1 of Farm Van Dyksput No. 214 – IR within the Victor Khanye Local Municipality (VKLM), under the Emalahleni Magisterial District, Mpumalanga Province.

4.4 Associated Infrastructure

4.4.1 Current surface infrastructure on site

The presented surface layout plan which derived from the Wetland Delineation Assessment and further acted as a recommendation for implementation, see Figure 4.1-1. The current infrastructure is shown below as illustrated in Photograph 4.4-1 to Photograph 4.4-2 and entails the aspects detailed below.

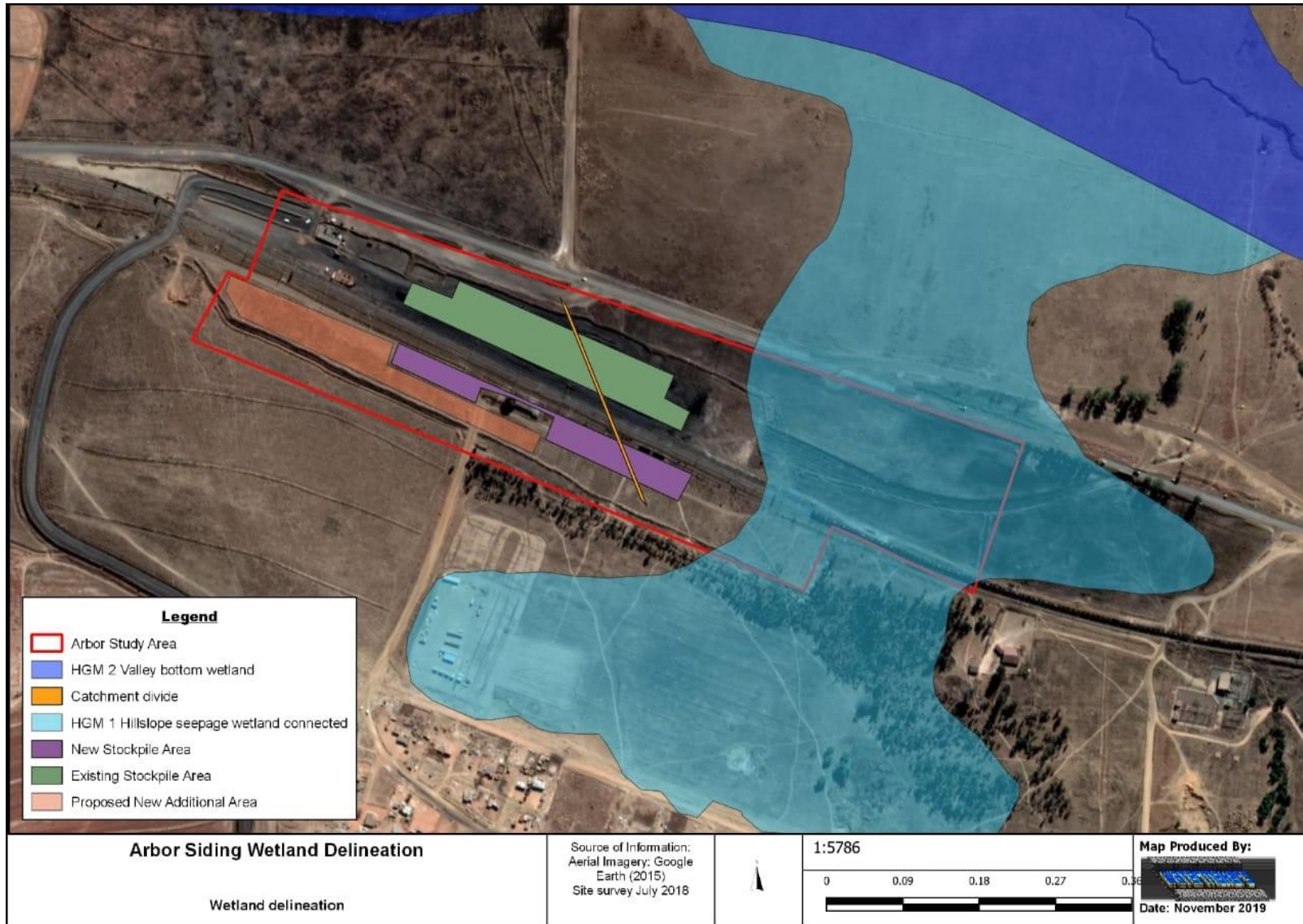


Figure 4.1-1: Surface Layout Plan

4.4.1.1 Weighbridge area

A weighbridge is installed next to the office block in the Northern Side and trucks go through it before offloading and after offloading at the stockpile area. Records of tonnage brought in daily are kept in the office for monitoring and reporting purposes.

4.4.1.2 Pollution Control Dam (PCD)

- The PCD is set as dirty water catchment area at the siding, to collect and contain dirty stormwater runoff.
- Poor water quality is expected from the monitoring point as this is a dirty water management facility.

4.4.1.3 Office Block and Ablution Facility

There is an office block close to the Weighbridge area. The office block has ablution facilities as well.

4.4.1.4 Upstream Borehole (U/S Borehole)

The boreholes are used for water quality monitoring. Upstream borehole is situated south of the siding.

- This borehole is not covered and therefore suspended solids are usually picked up during monitoring.

4.4.1.5 Downstream Borehole (D/S Borehole)

- A community in the northwest of Arbor Siding uses water from this point for domestic purposes.
- It is a well-protected borehole with clear good quality water.



Photograph 4.4-1: The infrastructure and machinery on the current operations within the Northern side. The Container is an office and storage, the diesel storage tank and heavy machinery – front end loaders parked behind the soil berm. The Pollution Control Dam (PCD) is also visible fenced in at far-right hand side.



Photograph 4.4-2: The Northern side infrastructure showing the office block, the railway, the trucks exiting the Arbor. (Photo taken from the proposed Southern side of the siding).

4.4.2 Current and Proposed Surface infrastructure on site

To provide an overview of the site and differences between the current northern side operations and the proposed operations, Table 4.1-1 below presents this comparison.

Table 4.4-1: The Current and proposed infrastructure for the Northern and Southern side of the site.

Current Operations Infrastructure (Northern Side)	Proposed Operations Infrastructure (Southern Side)
Weighbridge	2 x Rail weighbridges
Office Block	Station Building as Site Offices/ Administration buildings
Parking area	Parking area
Ablution Facility	Ablution Facilities
Diesel storage tank	
Heavy front end loading machinery: <ul style="list-style-type: none"> • 3 x Front end Loaders with weighcells (front end scoop caterpillar) • 1 x water horse truck • 1 x 2 ton Bakkies • 1 x Water bowser • Grader (to hire when necessary) 	Heavy front end loading machinery: <ul style="list-style-type: none"> • 3 x Front end Loaders with weighcells (front end scoop caterpillar) • 1 x water horse truck • 1 x 2 ton Bakkies • 1 x Water bowser • Grader (to hire when necessary)
Railway infrastructure	Railway infrastructure

Current Operations Infrastructure (Northern Side)	Proposed Operations Infrastructure (Southern Side)
2 Trains of 50 wagons with a capacity of 2 x 27 tons containers per day	3 Trains of 50 wagons with a capacity of 2 x 27 tons containers per day
Pollution Control Dam	New Evaporation Dam
Coal stockpile area	Coal stockpile area
Train slipper stockpile area	Train slipper stockpile area
Waste Storage area	Waste Storage area
Stockpile areas	Stockpile areas
Loading areas	Loading areas
Pipelines and culverts	Pipelines and culverts

4.4.3 Proposed Construction Activities at the Arbor Rail Siding Southern Side

The proposed site for development (Southern side) is currently vacant and is deemed as a wasted resource which holds a tremendous opportunity for both Transnet and the community. The land adjacent to the site is mainly used for residential, mining and coal washing and Poultry farming. The area adjacent to the operating site is mainly used for residential, agriculture and mining activities. The neighbouring area is realized by several power generation stations including Kendal and New Kusile power stations. There are no major buildings except old derelict Transnet buildings that are on site, which is mentioned under the discussion of the heritage specialist investigation in Section 15. From the Heritage Study conducted the Arbor Station building has been identified as a significant heritage resource.

The proposed development within the Southern side is a mirror image of the Northern side. The view of the proposed Stockpile areas and the use of the Station Building as an office are shown in Photograph 4.4-3.

In order to create space to construct the loading area, an area with a 31000 m² (50m x 620m) footprint is proposed for the development of the Southern Side and the following activities will be undertaken:

- Divert and extend the storm water drainage channel. Construct a berm wall on the station side of the channel with the excavated material.
- Backfill and compact the old channel where required.
- Remove the building rubble from the site.
- Remove the Over Head TE from the platform line.
- Extend the existing storm water culvert for the full width of the loading area and connect it to the new storm water cut-off drain.
- Construct new evaporation dams.
- 2 x Weighbridges to be installed.



Photograph 4.4-3: Vacant land/site for the – Southern side where clearing was done for the activities which do not trigger listing as part of the existing lease area developments



Photograph 4.4-4: View of the areas that were identified for some of the development activities.

5 PROPOSED OPERATIONAL ACTIVITIES AT THE ARBOR RAIL SIDING - SOUTHERN SIDE

5.1 Haulage of coal

The operational activities in the Southern Side of the Siding are presented below.

Gijima's operations from the Southern Side will include haulage of coal from various mines. The coal will be trucked to the siding using 32-ton trucks. Coal is trucked from the nearby mines and off loaded

on site where it will be stockpiled for no more than three days. It will then be stockpiled at the rail siding at a delineated loading area, after which it will then be loaded into the wagons for transportation by train and transported to markets such as the Eskom power stations.

5.2 Coal Stockpiling area

The existing Northern Side loading area is approximately 9000 square metres. Approximately three stockpiles are placed along the rail length to load a train of ± 60 carriages carrying tons of coal. Coal is being stock-piled until train arrives. The Southern side siding operation will entail offloading, stockpiling of coal and loading it on the wagons for transportation, with 5,400 tonnage of coal to be moved per day.

5.3 Dirty Water Channel

A dirty water channel will collect runoff contaminated with coal to the Pollution Control Dam (PCD) as shown in Photograph 5.2.3-1 below. There is currently a channel of approximately 360m long to capture contaminated water on site and to discharge the water into the PCD on the Northern Side. The change in elevation for this channel is approximately 6m. The channel is designed to collect a peak flow of $1.611\text{m}^3/\text{s}$ without spilling for the Northern Side. The dirty water from the Southern Side will require that a new Pollution Control Dam be constructed which in turn will require application for a Water Use Licence. Another option is to realize the existing channel system to divert the dirty water from the Southern Side to the Northern Side through the channel system that is designed under the railway line. The later option would require details designs and Environmental assessment studies to ensure that the high risk environmental impacts are realized and mitigated.



Photograph 5.3-1: Pollution Control Dam on site.

5.4 Site Operational Timelines

5.4.1 Frequency of Operations

It is expected that the Southern Side siding will be a 24/hour operation, with three men shifts and anticipated that there will be more than 2 train-stock-holding to be held at the siding at any given time. Wagon loads of 5 400 tonnage of coal will be moved per day. This means 2 x train loads per day (1 train will be carry about 50-60 wagons with 2 x 27 tons containers).

5.4.2 Safety of Operations

- Arbor Siding operations will be planned and operated using TFR guidelines and will adhere to the safe working procedures drafted by TFR;
- All safety and security measures to be applied at all times;
- The train will be placed by TFR in the designated siding as per instructions of the safe working procedures drafted by TFR;
- Shunting, loading and removal of wagons, will be done according to instructions set out in the TFR`s safe working procedure document;

5.5 Project Proposed Timelines

5.5.1 Short-term goals:

In the short term, TFR has already done a safety assessment of the Operations on the Southern side of Arbor, a test train was placed and operated safely during 2016. Trains can be loaded and both Gijima and TFR have been working on this site to ensure safe working operations.

5.5.2 Medium to Long-term goals:

- For drainage purposes, there is a longitudinal fall of about 5m over the length of the siding that gives a slope of about 1:120 which is ideal. However, the specification for staging lines is a max of 1: 800 and it is assumed that the slope of the existing railway lines through the station does conform to that standard.
- The existing average ground level of the loading area is 1m above the top of the rail level of the platform line at any given point.
- Enough good material will be recovered from the excavations to use as a sub-base layer on the loading area and the formation layer works.
- There are no other hidden services which will need relocation.
- Facilities for earthworks plant will not be required as the use of the existing ones will be sufficient.
- In the long term there are plans to include an Evaporation Dam in the Southern Side of the Siding and a water use licence application is being undertaken concurrently with this application for environmental authorisation.

5.6 Waste Quantities

Solid construction waste will be expected from the removal of the existing construction rubble on site, the removal of OHTE, the removal of cleared vegetation for site establishment and for construction. The generated waste will be transported by a registered contractor to the approved disposal facility

The waste generated can be divided into groups as realized in paragraph below.

Waste is categorized as either general or hazardous. Within these two categories, waste is categorized according to its source, namely domestic, commercial and industrial. General waste is sub-divided into paper, metals, glass, plastic, organic, and inert materials (which include builder's rubble). Due to its composition and characteristics, general waste does not pose a significant threat to public health or the environment, if managed properly.

5.6.1 Waste Stream Identification

The waste generated can be divided into four groups as realized in paragraph below.

5.6.2 Waste Stream Characterisation

Waste is characterised as follows:

5.6.2.1 Hazardous Waste

Hazardous wastes could be generated primarily through the emergency repairs of vehicles and equipment breaking down on site. The wastes to be managed include:

- Oils or other material containing hydrocarbons.
- Residual chemicals and chemical containers used while repairing vehicles on site

5.6.3 Industrial Waste

Industrial waste on site include various consumables from emergency vehicle and machines repair activities including used tyres and scrap metal (not contaminated by hydrocarbons). The waste includes:

- Scrap metal
- Used tyres

5.7 Waste Management

5.7.1 Domestic Waste

Domestic waste is generated on site, primarily at the temporal office associated with the consumption of food or drink on site. Normal office type waste is also generated. Typical general waste includes:

- General compactable and non-compactable wastes being primarily cans, paper, plastic packets, food scraps and packaging materials

5.7.2 Mine waste

No mine waste is anticipated or currently generated on site.

5.7.3 Waste Management

Domestic waste is removed and disposed by a contractor and disposed-off to a licensed local municipality site waste disposal site. There is also contractual arrangement with Eskom for the waste to be collected to the nearby power station where it is then properly disposed with the general waste from the power station.

5.7.4 Waste recovery and Reduction

Correct storage of a particular waste type reduces the risk of environmental impacts and limits the risks of pollution. Waste separation at source is recommended. The proposed methodology is as follows:

- The waste company is contacted when a container is close to full.
- The waste is collected within 48 hours of notification. The full container is replaced with an empty one.
- The contractor separates the waste and transports it to the appropriate licensed facility for disposal. Domestic waste is separated on site and recyclable materials are removed.
- In order to promote waste management awareness and implementation on site all siding workers will be provided with separation of waste at source during environmental awareness training and the clearly labelled waste bins will be strategically labelled for easier and effective use.

5.7.5 Wastewater management

Wastewater is used for dust suppression and also for the construction phase of the proposed expansion.

5.7.6 Emissions into the atmosphere

Measurement of air pollution in the country is governed by various South African legislation including the South African Constitution, which states that everyone has the right:-

- (a) To an environment that is not harmful to their health or well-being; and
- (b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:-
 - (i) Prevent pollution and ecological degradation;
 - (ii) Promote conservation; and
 - (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Additional South African legislation and guidelines that deal with environmental management and air quality:-

- The National Environmental Management Act, Air Quality Act (NEMAQA) (Act No. 39 of 2004)
- Schedule 2: The Act includes margins of tolerance, compliance time frames and permissible frequencies by which the standards may be exceeded;
- The South African National Standard 1929 of 2011, Ambient Air Quality – Limits for Common Pollutants;
- The South African National Standards (SANS) were established in order to assist the Department of Environmental Affairs and Tourism (DEAT) to develop ambient air quality

standards for seven pollutants of concern. These include sulphur dioxide, nitrogen dioxide, carbon monoxide, particulate matter (PM10), ozone, lead and benzene (DEAT, 2006) emission standards, pertaining to inter alia construction and operation activities.

- There is a need for monitoring and evaluation of air-related health impacts as well. Air pollution comprises of outdoor (ambient) pollution (i.e. fossil fuel burning or cars, industrial non-fossil fuel emissions; natural emissions; pesticides etc) and indoor pollution (i.e. burning coal, wood, paraffin for heating, cooking and lighting). Adverse health effects range from nausea, difficulty breathing, ARTIs, pneumonia, birth defects and, immunosuppressant and cancer).

NEMAQA 39 of 2004 Listed Activities (2010)

The Minister signed into law the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on environment including health, social conditions, economic conditions, ecological conditions or cultural heritage. As a results their impact should be monitored and an Atmospheric Emission License be applied should the air quality standards be triggered by the proposed or existing operation.

Highveld Airshed Priority Area Air Quality Management Plan

- The Highveld Airshed was declared the second priority area by the minister at the end of 2007. This requires that an Air Quality Management Plan for the area be developed. The plan includes the establishment of an emissions reduction strategies and intervention programmes based on the findings of a baseline characterisation of the area. The implication of this is that all contributing sources in the area will be assessed to determine the emission reduction targets to be achieved over the following few years. The Arbor Siding operation falls within the HPA demarcated footprint and as a result emission reduction strategy is required and will be included for the numerous coal mines in the area with specific targets associated with it.
- There will be dust generated during the site establishment, construction and decommissioning phase of the proposed activity:
- At site establishment phase with the clearance of vegetation and removal of trees and concrete/building rubble.
- At construction phase from the offloading of coal onto the stockpile area and loading of coal into the train wagons.
- At rehabilitation and decommissioning phase from the demolition of all infrastructure on site.
- Dust emissions are likely to occur due to vehicular movement as the access roads are gravel. The severity of this impact is anticipated to be low, if mitigation measures such as dampening of the gravel road and adherence to speed limits are observed. Furthermore, the traffic volume is
- anticipated to be low during this phase of the project, in comparison with the Operational Phase.

- Wind-blown dust also contributes to the dust at the site. Wind-blown dust from unpaved road surface also plays a major role in contributing on the amount of dust and atmospheric emission experienced at the study site.
- Air pollution emanating from vehicular emissions is also anticipated to be low if the mitigation measures prescribed in this Environmental Management Plan are adhered to. The cumulative impacts of dust in the overall area within a 1km radius of the Siding must be noted as there are a number of trucks travelling on the gravel road towards R555 Ogies road. There is also an increase in traffic on the R555 road including taxis and private cars.
- Additional air pollution sources such as PM10, SO₂, CO and VOC (i.e. Nox) that occur in the region include the following: -
 - Eskom power stations,
 - Industrial emissions (i.e. commercial farming),
 - Blasting operations at mines and
 - Spontaneous combustion, and
 - Vehicle exhausts emissions.
- Various local and far-a-field sources are expected to contribute to the suspended fine particulate concentrations in the region. Local sources include:
 - Wind erosion from exposed areas,
 - Fugitive dust from agricultural and mining operations,
 - Particulate releases from industrial operations,
 - Vehicle entrainment from roadways and
 - Household fuel burning also constitutes a significant local source of low-level emissions

5.7.6.1 Ambient Quality

The Ambient Air Quality study undertaken reported the main sources likely to contribute to cumulative PM10, SO₂, CO and VOC air quality impact are vehicle entrainment on unpaved road surfaces and during loading and off-loading of coal at the site (i.e. mining activity). The predominant wind direction within the site is from the west- northwest on which during day time there is an increase in these winds velocity. Less frequent winds are from the southern directions.

5.7.7 Generation of Noise

The Noise Impact Assessment was conducted on Monday, 07 October 2019 and the summary of the findings are tabulated in Table 5.7-1. The findings indicated that, there will be noise from the increased traffic along R555 road used by the trucks from various operations that share the entrance to the Arbor Siding. The R555 road is also used by taxis and private cars towards Delmas and Ogies. The various project phases for which noise is expected to be emitted are indicated below.

- Site establishment phase

- There will be vehicular movement of heavy machinery during site establishment and clearing of site.
 - It is expected that there will be noise from the front-end graders, trucks offloading construction material and loading site establishment rubble for disposal.
 - Additionally, there is expected noise from the construction workers and site personnel.
- Construction phase
 - The expected noise sources are from: the vehicular movement of heavy machinery during construction of site infrastructure, noise from the front-end graders, trucks offloading construction material and loading construction rubble for disposal and noise from the construction workers and site personnel.
 - Operational phase
 - The expected noise sources are from trucks offloading coal at stockpile area and the loading into train wagons by front-end caterpillar with weight cells. Additionally, the movement of the train in and out of the loading zone is an identified source.
 - Rehabilitation/Decommission phase
 - The demolition of all infrastructure on the site and the noise from site workers.

The construction of the structures will only cause a temporal increase in ambient noise levels during construction and decommissioning phase. The noise will only be limited to construction activities. The expected noise caused by these construction vehicles is however, foreseen to be low, as the expected noise will be from the truck engine and generators. The noise will only be experienced during the day and only during construction phase. Therefore, probability of excessive noise is low and will have low intensity. It is anticipated that the noise levels will increase during the operational phase as the trucks offload to stockpile and the front-end caterpillars load coal into the train wagons and at Decommissioning phase with all the demolition of site infrastructure. In summary, the resulting total and increase in ambient noise levels, respectively, indicate that the severity of the of the noise impacts are generally low. As a result, the introduction of specific noise mitigation measures are not necessary

Table 5.7-1: Summary of findings from the conducted Noise Impact Assessment

Phase	Severity of the noise impact				Community Reaction **	Estimated Overall Severity
	Resulting total noise level		Increase in noise level			
	Day * Criterion 55 dBA	Night * Criterion 45 dBA	Day	Night		
1 Present	Farmsteads and Arbor village well within criterion level	Farmsteads and Arbor village well within criterion level	-	-	-	-
2 Construction	Farmsteads and Arbor village well within criterion level	-	< 3 dB Insignificant	-	'Little with sporadic complaints'	Low Day-time only

3 Operations N & S	Farmsteads and Arbor village well within criterion level	Farmsteads and Arbor village well within criterion level	< 3 dB Insignificant	< 3 dB Insignificant	'Little with sporadic complaints'	Low Some activities probably audible
4 Closure	Farmsteads and Arbor village well within criterion level	-	< 1 dB Negligible	-	'No response'	Very Low Day-time only

5.8 Socio-economic value of the activity

The social benefits for the proposed development include positive contribution towards development of opportunities within the Municipality. The local economy will be boosted through provision/creation of employment opportunities for the local community. These opportunities will have a positive effect on the broader value chain extending to suppliers of goods and services from nearby towns. Gijima has a supplier development plan which commits to poverty alleviation.

The positive business impact is provided by skills development, poverty alleviation, through job creation and preservation, as well as rural and regional integration projects is detailed under the company's supplier development plan. Either than the plan, Gijima is already working towards enterprise development goals by being involved in the following activities:

- Computer literacy training for the community; and
- Mentoring and training of future/potential weighbridge computer officers.

As introduced above, the focus on job creation and the organisation's business impact analysis in this respect is outlined below.

- Provide job opportunities for approximately 35 employees, inclusive of Family funeral cover/life cover/provident savings scheme.
- Demographics of Arbor employment:
 - Black – 00%
 - Female – 30% (target 50%) and male 70%

The ultimate aim is to impact the youth and create responsible change agents in communities and empower women to play a role in creating wealth, advancing opportunities for employability and stimulating socio-economic growth within their own communities.

Gijima intends to continue identifying a project which will be in line with the objectives of integrated development plan, whose focus would be on helping us to realise our vision of contribution towards poverty alleviation within the area in which we operate. We have currently been able to contribute positively in our local community through community social investments outlined below.

- Donate groceries for four families on a monthly basis: R120 000.00 per annum.
- Donations for Art and Culture for secondary schools and under privilege: R30 000.00.
- Sponsorships for Arbor primary School – sporting events/art and culture awards: R30 000.00.
- Sponsorships for the Arbor community leaders/community-based organisations events: R10 000.00

5.8.1 Temporal and permanent jobs

- The proposed expansion will employ approximately 25 new jobs at Arbor:
- 1 x Siding Supervisor responsible for planning, leading and execution of the siding operations on a daily basis;
- 4 x team leaders;
- 4 x front-end loader drivers
- 4 x security guards
- 4 x admin clerks/weighbridge operators
- 4 x traffic controllers
- 4 x general worker

The personnel breakdown excludes the already employed truck drivers and Gijima employees. Considering that each employee provides for approximately 5 extra people it then calls to reason the approximately 25 lives will be improved. The operation will contribute positively on livelihoods leading to an increase in the standards of living while causing a reduction in poverty. The economical benefits include coal beneficiation industry with a positive impact of regional and local economic setup. The local economy will benefit through salaries paid to employees and tax revenues paid to Government. At a regional level, Gijima supplies Eskom with coal and thus has to meet the growing demand in order for Eskom to produce electricity. New coal reserves need to be exploited to supply the growing needs of Eskom as there are serious socioeconomic impacts associated with unreliable and interrupted electrical supply as observed during the regular power outages experienced in previous years and recent months in 2019.

5.9 Competence to operate site

5.9.1 Technical Competence and Site Management

The site currently has a Siding Manager and a team of personnel overseeing the operational management of the site and also the environmental legal compliance including monitoring as prescribed in both the EMP conditions and the WUL conditions.

Monthly internal performance assessment audits are undertaken and external environmental performance assessment audits are also conducted by Eskom on a regular basis. Records of monthly progress reports with audit checklists and corrective action registers are kept on site.

Name of responsible person – Mr Velile Ramphele

Competence and short resume

Velile Ramphele

Gijima Supply Chain Executive Chairman
Management (Pty) Ltd.

Arbor Siding,
Portion 1 of the Farm Vandykspuit,
Delmas,
Mpumalanga Province,
South Africa.
Cellphone: 072 434 5436
e-mail :
veliler@gijimasupplychains.co.za

Velile Ramphela is the Chairman and Operational Director, however, the site has appointed an Operational Manager – Benedictus Xesha. Benedictus Xesha is responsible for overseeing the site’s environmental matters. A summary of his competency is provided below.

Operational Manager:	Gijima Supply Chain Management Services (Pty) Ltd
Contact Person:	Benedictus Xesha
Position:	Operations Manager
Years in Organisation:	6 years
Role and Responsibilities:	Environmental Compliance Obligations Safety, Health and Environmental Compliance Lead Site Supervisor
Address:	Arbor Siding, Portion 1 of the Farm Van Dyksput, Delmas, Mpumalanga Province, South Africa
Email:	benny@gijima-arbor.co.za
Cell:	074 348 3436
Qualifications:	Matric
Competence Training Attained:	<ul style="list-style-type: none"> • Incident Investigator • Risk Assessor • First Aider • First Fighter • Occupational Health and Safety Act, 1993 (Act No. 85 of 1998) • Environmental Training

5.10 Environmental Authorisation and Legal Compliance

The required and existing environmental authorisations for the site are outlined in Table 5.8-1. Gijima will continuously assess any planned developments or expansions to ensure that any triggered environmental listed activities are addressed, should there be any. The Environmental screening table outlines the listed activities that may be triggered by the planned expansion to the Siding. The Siding is already operational on the Northern side of the site and has been granted a lease agreement to operate on the Southern Side. Before the operations may commence on the Southern Side, an environmental authorisation must be applied for should the planned activities trigger any of the listed activities and that is the reason this basic assessment report was compiled. The legislative framework focuses on the Southern Side activities which trigger a need for environmental authorisation. The current operational lease agreement issued by Transnet considers the Arbor Railway Siding both the Southern Side and the Northern Side in its entirety as one development footprint and as such the legislative framework is done for the site. From an environmental perspective, any planned additions, upgrades or expansion will continuously be analyzed against the listed activities to determine if there are any triggered listed activities. The new triggered listed activities for the entire site (Northern Side and Southern Side) are outlined in Table 5.8-2, which demonstrate that there is a requirement to apply for environmental authorisation by undertaking a Basic Assessment as per the Regulation No. 327 (GN 983) Listing Notice 1 as amended in April 2017.

5.10.1 Listed and specific activities triggered

The planned activities to increase the scope of operations on site include the following (Please refer to Figure 7.1-1 and 7.1-2):

- a) Upgrade to the existing railway infrastructure.
- b) Extend line 5.
- c) Divert and extend Line 6.
- d) Remove OHTE and platform.
- e) Upgrade to the existing canals as part of the storm water management system for the site. This will include diverting and extending the storm water drainage channel. A berm wall will be constructed on the station side of the channel with the excavated material.
- f) Extend the existing storm water culvert for the full width of the loading area and connect it to the new storm water cut-off drain.
- g) Backfill and compact the old channel where required.
- h) Construct new PCD with an estimated capacity of 2 300 m³ and a silt trap. Alternatively, upgrade to the existing canals as part of the storm water management system for the site and divert dirty water from the proposed new site, the Southern side, to existing pollution control dam on the Northern side. In this option polluted water will be guided to the existing culvert underneath the rail way line. The PCD will be sealed with HDPE liner and such the target is to comply with “class C” specification for landfills. The silt trap will also be sealed with a 200 mm thick concrete slab.
- i) The new storm water cut-off drain. Subsurface and drains will be lined with 1.5 mm HDPE liner

5.10.2 Basic Assessment Process

The activities to be undertaken under this planned application which are triggered under NEMA Regulations include Listed Activities 9(i)(ii), 19(i) 34 (i), 48 (i) (ii) (iv) (i) (ii) – (a) (c), 64 (iii), 67 (ii) (Under Listing Notice - GN R983, as amended in 2017 under GN R327) and Listed Activity 14 [(i) (ii) (iv) (xii)] (i) – (a) (c) (under Listing Notice 3 – GN R985, as amended in 2017 under GN R324 and therefore, basic assessment procedures will be followed. The triggered listed activities are outlined in Table 5.8-2 below.

5.11 EMPr Authorisation

The Railway Siding currently has an EMPr environmental authorisation from the Mpumalanga Department of Agriculture and Land Administration granted on 08 December 2010. A copy of the authorisation is attached as Annexure 5.8-1.

5.11.1 Water Use Licence Existing Authorisations and Licences

Gijima has a Water Use Licence (WUL) on 08 December 2015 (Licence No. 04/B20F/G/4009) and accepted on the 6 January 2016 by Gijima team. The WULA conditions listed within the licence include the following:

- General Conditions of the Licence
- Conditions for Construction and Operation
- Dust Suppression
- Pollution Control Dam
- Quality of Waste Water to be disposed of the Waste Water Containment Facility
- Monitoring of Waste Water, Surface Water Quality and Groundwater Quality
- Storm Water Management
- Access Control
- Contingencies
- Reporting
- Auditing
- Integrated Water and Waste Management (IWWMP) and Rehabilitation Strategy and Implementation Programme (RSIP).

The comprehensive conditions of compliance for the WULA are provided within the licence is attached as Annexure5.8-2.

Table 5.11-1: Applicable legislation and guidelines

Title of legislation, policy or guideline	Administering Authority	Approvals and licences which might be required by authorities	Applicable to Project
Constitution of the Republic of South Africa (Act 108 of 1996, Section 24)	National & Provincial Department of Justice and Constitutional Development	No licence but general respect for the environment and people's rights to a healthy and clean environment during construction and operation of the site.	Every employer and employee have a right to a healthy and clean environment. The management and employees of the railway siding have the responsibility to protect the environment and their own health by keeping their workplace and surrounding environment healthy, safe and clean.
National Environmental Management Act, (Act 107 of 1998)	National and Provincial Department of Environmental Affairs (DEA)	Environmental authorisation was issued to ensure environmental protection and mitigation against negative impacts the development or rehabilitation might present (Annexure 5.8-1 for a copy of the existing environmental authorisation). The EMPr compiled to ensure overall protection of the environment including the monitoring plan for the site operations. An environmental authorisation is required for the activities which trigger listed activities in terms of the EIA regulations.	Environmental authorisation is required for the identified listed activities triggered by the project. The Impacts of planned activities will affect various environmental aspects such as the soil during the establishment and clearing of vegetation, dust generation, noise levels, water quality, water use and energy use.
National Environmental Management: Air Quality Act (Act 39 of 2004)	National and Provincial Department of Environmental Affairs (DEA)	No licence is required.	Stockpile storage capacity study illustrating status in relation to legislated threshold.was undertaken.
National Waste Act (Act 59 of 2008)	National and Provincial Department of Environmental Affairs (DEA)	.	There is not requirement for a waste licence. Improper waste management and disposal behaviour or lack of proper waste management processes and systems will be mitigated in the EMPr. There will be waste generation,

Title of legislation, policy or guideline	Administering Authority	Approvals and licences which might be required by authorities	Applicable to Project
			management and disposal for the establishment, operational, decommissioning and rehabilitation phases of the projects.
National Environmental Management: Biodiversity Act (Act 10 of 2004.)	National and Provincial Department of Environmental Affairs (DEA)		There is a need to develop mitigation measures to minimise potential disturbance to the existing artificial wetland located on the Northern Side of the railway siding.
National Forest Act(Act of 84 of 1998)	National and Provincial Department of Environmental Affairs (DEA)	Tree cutting permit should there be listed trees identified on site.	The triggered activities will be undertaken on an area that has already been cleared as part of the existing operations on site.
National Water Act (Act 36 of 1998)	National and Provincial Department of Water and Sanitation (DWS)	There is an existing water use licence which was issued to provide for aspects relating to water use and coal stockpiling, to take reasonable measures to prevent any pollution of water resources. EMPr compiled to ensure overall protection of the environment and water resources including the monitoring plan for the site operations.	Planned upgrade to the existing pollution control dam on the Northern Side and the construction of the new pollution control dam on the Southern Side will require a water use licence.

Table 5.11-2: List of Activities (Yellow shaded sections, refer to the listed activities which are being applied for under that specific activity number)

Act	Number and date of relevant Notice (Regulations)	Activity No.	Listed activity and described in the regulations (highlighted sections indicate the triggered activities)	Implications for site or motivation/reason for interpretation
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 9:	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.	Development of infrastructure. The length of the storm water drain and the canals to be connected might exceed 1 000 metres in length.
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 19:	The infilling or depositing of any material of more than [5] 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than [5] 10 cubic metres from [—(i) a watercourse; [(ii) the seashore; or (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or estuary, whichever distance is the greater—] but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; [or] (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	The proximity of the watercourse to the PCD located on the Northern side triggers the activity 19 (i)
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 34	The expansion [or changes to] of existing facilities or infrastructure for any process or activity where such expansion [or changes] will result in the need for a permit or	A water use licence will be required for release of pollution.

Act	Number and date of relevant Notice (Regulations)	Activity No.	Listed activity and described in the regulations (highlighted sections indicate the triggered activities)	Implications for site or motivation/reason for interpretation
1998			licence or an amended permit or licence in terms of national or provincial legislation governing the release of emissions, effluent or pollution, excluding— (i) where the facility, infrastructure, process or activity is included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies	
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 48:	The expansion of— [(i) canals where the canal is expanded by 100 square metres or more in size; (ii) channels where the channel is expanded by 100 square metres or more in size; (iii) bridges where the bridge is expanded by 100 square metres or more in size; (iv) dams, where the dam, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (v) weirs, where the weir, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (vi) bulk storm water outlet structures where the bulk storm water outlet structure is expanded by 100 square metres or more in size; or (vii) marinas where the marina is expanded by 100 square metres or more in size;] (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion [or expansion and related operation] occurs— within a watercourse; setback; or ment Listing (b) in front of a development (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding— (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the develop footprint of the port or harbour;	The expansion of the canals for connecting the Northern and Southern side might or might not exceed the threshold of 100 m ² or more in size. Activity 48 (iv) is triggered due to the planned expansion of the existing pollution control dam from 90 m ² to 450 m ² in size. The activity is also triggered due to the existence of the watercourse on the Northern side of the site adjacent to the PCD.

Act	Number and date of relevant Notice (Regulations)	Activity No.	Listed activity and described in the regulations (highlighted sections indicate the triggered activities)	Implications for site or motivation/reason for interpretation
			<p>This gazette is also</p> <p>(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such expansion occurs within an urban area; or where such expansion occurs within existing roads, road reserves or railway line reserves.</p>	
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 64:	<p>The expansion of railway lines, stations or shunting yards where there will be an increased development footprint, excluding—</p> <p>(i) railway lines, shunting yards and railway stations in industrial complexes or zones;</p> <p>underground railway lines in mines; or (iii) additional railway lines within the railway line reserve.</p>	Upgrade of existing railway line infrastructure: Addition of Line 6 and extension of Line 5 and others.
National Environmental Management Act, Act 107 of 1998	GN R 327 (GN R983) as amended in April 2017 (Listing Notice 1)	Activity 67:	<p>Phased activities for all activities—</p> <p>(8) listed in this Notice, which commenced on or after the effective date of this</p> <p>Notice</p> <p>[;] or [(ii)] similarly listed in any of the previous NEMA notices, which commenced</p> <p>on or after the effective date of such previous NEMA Notices; [where any phase of the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold;] excluding the following activities listed in this Notice- 17(i)(a-d);</p> <p>17(ii)(a-d);</p> <p>17(iii)(a-d);</p> <p>17(iv)(a-d);</p> <p>17(v)(a-d);</p> <p>20; 21; 22; 24(i);</p> <p>29; 30; 31; 32; 34;</p> <p>54(i)(a-d); 54(ii)(a-d);</p> <p>54(iii)(a-d); 54(iv)(a-d);</p> <p>54(v)(a-d); 55; 61; [62;]</p>	<p>The existing operations on the Northern side will be implemented as Phase 2 on the Southern side as part of the planned upgrade activities. The upgrade to the existing pollution control dam and the connection of canals are some of the activities that make this a phased development.</p> <p>The existing PCD is currently 90 m2 and is planned to be upgraded to 450 m2 which exceeds the threshold of 100 m2 for Activity 12.</p>

Act	Number and date of relevant Notice (Regulations)	Activity No.	Listed activity and described in the regulations (highlighted sections indicate the triggered activities)	Implications for site or motivation/reason for interpretation
			64; and 65; or (8) listed as activities 5, 7, 8(ii), 11, 13, 16, 27(i) or 27(ii) in Listing Notice 2 of 2014 or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.	
National Environmental Management Act, Act 107 of 1998	GN R 324 (GN R985) as amended in April 2017 (Listing Notice 3)	Activity 14:	Activity 14: The development of- [(i) canals exceeding 10 square metres in size; (ii) channels exceeding 10 square metres in size; (iii) bridges exceeding 10 square metres in size; (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size; (v) weirs, where the weir, including infrastructure and water surface area exceeds 10 square metres in size; (vi) bulk storm water outlet structures exceeding 10 square metres in size; (vii) marinas exceeding 10 square metres in size; (viii) jetties exceeding 10 square metres in size; (ix) slipways exceeding 10 square metres in size; (x) buildings exceeding 10 square metres in size; (xi) boardwalks exceeding 10 square metres in size; or (xii) infrastructure or structures with a physical footprint of 10 square metres or more;] (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (8) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within	The planned activities are within an area delineated as artificial wetlands which is a watercourse. For Mpumalanga, in areas outside urban areas, dd) Sensitive areas as identified in an environmental management framework. And (ee) applicable as wetlands are sites /areas listed in terms of Ramsar Convention 1971.

Act	Number and date of relevant Notice (Regulations)	Activity No.	Listed activity and described in the regulations (highlighted sections indicate the triggered activities)	Implications for site or motivation/reason for interpretation
			<p>existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>f. Mpumalanga i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an international convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>Core areas in biosphere reserves; or (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise</p> <p>indigenous vegetation; or ii. Inside urban areas: (aa) Areas zoned for use as public open space; or</p> <p>6. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose.</p>	

6 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN INCLUDING ASSOCIATED STRUCTURES AND INFRASTRUCTURES

6.1 Site Access

6.1.1 Access road to site

The siding is located west of N12 and can be accessed through R555 to Ogies.



Photograph 6.1-1: Site Entrance



Photograph 6.1-2: View of Site Activities

7 CURRENT LAND-USE AND ENVIRONMENTAL SETTING OF THE SITE

7.1 Current Land Use

The land adjacent to the site (north, north east, east, north west and west) is currently being used for variety of purposes. The area in which the site calls within is zoned as Agricultural; see Annexure 7.1-1 for the Zoning Certificate. The land use settings discussed in this section are also illustrated in Photographs 6.1-1 to 6.1-18. There were previous disturbances on this site in the past 10 years (buildings as can also be viewed from historical data images). A road has previously been constructed to access the Arbor Community and berm wall form the road construction stockpiled adjacent to the road over a portion of the land in question. There was also rail maintenance works which necessitated. The area was previously disturbed and there is evidence of the houses that were built by Transnet as indicated in the attached illustration in Figure 7.1-1.

The activities observed range from farming i.e. maize crop production (as shown in Photograph 6.1-1 below), cattle breeding and farming on the north east of the site (as shown in Photograph 6.1-2) i.e. JC Prinsloo Boerdery and Truter on the north western side of the site (as shown as Photograph 6.1-3). There is residential area close to the farming community (as shown in Photograph 6.1-6). The other land uses that occur within a 2 km radius northwards from the site include a Conference Resort (Khaya Resort and Conference Centre, north east of the site (as shown in Photograph 6.1-4), Kusile Power Station, north east of site (as shown in Photograph 6.1-7), new coal mine Operations (i.e. Iyanga Mining – Klipfontein Mine)(as shown in Photograph 6.1-9 – 6.1-10). There is also an established network and infrastructure in terms of electricity power lines and telephone lines within the area (as shown in Photographs 6.1-11) and road infrastructure upgrade by the Mpumalanga Provincial Government Department of Public Works, Roads and Transport in Nkangala is in progress (as shown in Photograph 6.1-12). The road works have created an unpleasant sight by impeding on the wetland with the disposal of soil and rubble on the edges of the wetland (as shown in Photograph 6.1-15). The wetland still supports fauna and flora species observed during the site visit as shown in Photograph 6.1-16, however, no identification of the species were undertaken.

The land use activities within the vicinity of the site will be also considered in the terms of cumulative environmental impacts that might result to the additional proposed expansion of the operation within the Arbor Siding. For example, the number of trucks travelling on the R960 road towards the Arbor Siding, create a lot of dust within the incomplete road works project (gravel road) as shown in Photograph 6.1-13 towards the T-junction before the site. The cumulative effect of the dust pollution in the area will need to be addressed.



Photograph 7.1-1: Farming i.e. maize crop production. (25° 57' 887" S; 0,28° 53' 862" E).



Photograph 7.1-2: Cattle breeding and farming on the north east of the site (JC Prinsloo Boerdery)



Photograph 7.1-3(A & B): TRUTER Boerdery on the north western side of the site (25° 59' 500" S; 0,28° 53' 441" E).



Photograph 7.1-4: Livestock grazing close to the Truter Boerdery and a natural water body in the background on the north western side of the site.



Photograph 7.1-5: Natural Water Body along the road on the north east side of the site.



Photograph 7.1-6: Residential area close to the farming community (26° 00' 602" S; 0,28° 53' 061" E).



Photograph 7.1-7: Khaya Resort and Conference Centre (26° 01' 118" S; 0,28° 53' 057" E).



Photograph 7.1-8: Kusile Power Station north east of the Arbor Siding (25° 59' 073" S; 0,28° 53' 063" E).



Photograph 7.1-9: New Coal Mine Operations i.e. Iyanga Mining – Klipfontein Mine (25° 59' 073" S; 0,28° 53' 063" E).



Photograph 7.1-10: View of the Operations of a Coal Mine (Iyanga Mining – Klipfontein Mine).



Photographs 7.1-11: Eskom electricity power lines and telephone within the area – north western side of the site along R960 road.



Photograph 7.1-12: Road infrastructure upgrade by the Mpumalanga Provincial Government Department of Public Works, Roads and Transport in Nkangala (26° 01' 118" S; 0,28° 53' 058" E).

Photograph 7.1-13: The view of the Arbor Siding about 200m away. The beginning of the gravel road stretch towards the Site



Photograph 7.1-14: A close up view of the truck entering and exiting the Arbor Siding (26° 01' 671" S; 0,28° 53' 038" E).



Photograph 7.1-15: The road works by the Mpumalanga Provincial Government Department of Public Works, Roads and Transport in Nkangala have created a visual intrusion and impeding on the wetland with the disposal of soil and rubble on the edges of the as wetland (north east side) (26° 02' 097" S; 0,28° 53' 027" E).



Photograph 7.1-16: The road works by the Mpumalanga Provincial Government Department of Public Works, Roads and Transport in Nkangala have created an unpleasant sight in the impeding of the wetland with the disposal of soil and rubble on the edges of the as wetland.



Photograph 7.1-17: The T-Junction section before the entrance to the Arbor Siding on the R555 road to Delmas (to the right) or Ogies (to the left) (26° 02' 343" S; 0,28° 53' 020" E).



Photograph 7.1-18: The entrance to the Arbor Siding on the R555 road towards Delmas.

2010 Image



2018 Image



Figure 7.1-1: Preliminary Results on Changes Detected on area of Interest between 2010 and 2018

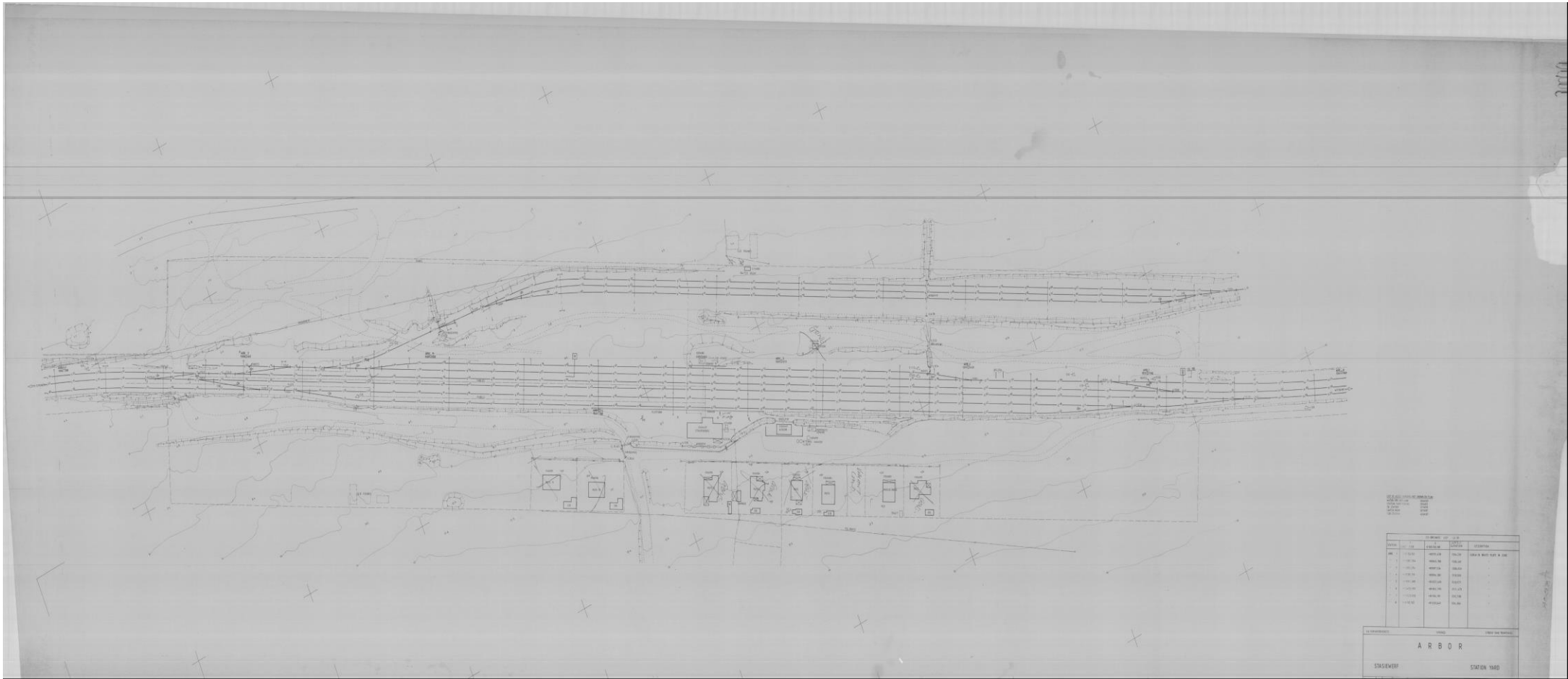


Figure 7.1-2: Preliminary area map

7.2 Other planned land use within the neighbouring area

There are currently plans to establish the current Arbor village to a formal established township.

According to the draft Scoping Report compiled by Adi Environmental (2018), the Victor Khanye Local Municipality (VKLM) has intention to formalize the existing informal settlement (currently known as the Arbor Village) located on a portion of Portion 5 of the farm Vlakvarkfontein 213 IR. Arbor Village is located south of the N12 national road and Arbor Siding, ±20km north east of Delmas and 7km north west of Kendal Power Station. The village is located adjacent to Vlakvarkfontein Colliery belonging to Ntshovelo Mining Resources (Pty) Ltd. Figure 7.2-1 shows the locality of the Arbor village in relation to Arbor Railway siding.

The proposed outcomes of the project are to provide additional residential stands and a cemetery on a portion of the Remaining Extent of the farm Van Dyksput 214 IR, located directly adjacent to the existing village, and belonging to Truter Boerdery Trust. Ntshovelo Mining Resources (Pty) Ltd and Truter Boerdery Trust intend to donate the said properties to the Victor Khanye Local Municipality for the purposes of the said rural village.

The proposed development (including public open space) is estimated to be around ±138ha in extent and will comprise of: residential stands, business stands, municipal stands, a cemetery, a school, community facilities and public open spaces. The necessary services (water, sewage, electricity, etc.) will also be provided. Access to the site will be obtained from the R555 provincial road using an existing road extending over the railway line.

The planned development in the neighbouring Arbor village and the planned increase in scope within Arbor Siding are aligned to ensure that the potential impacts and cumulative impacts are identified, addressed and proper mitigation measures proposed.

Consultations between Arbor Siding and Adi Environmental, the EAP for the Vlakvarkfontein proposed Arbor village development have been held. A meeting was convened at the Arbor Siding on the 7th November 2018 and minutes of the meeting are attached as Annexure 6.1-1 and comments to the BID and Scoping report are attached as Annexure 6.1-2.

The issues discussed during the meeting are outlined in Section 11.4.2 and listed in Table 11.4-2 with the minutes of the meeting attached as Appendix 6.1-1 of the draft Scoping Report for the development of a rural village on a portion of Portion 5 of the Vlakvarkfontein 213 IR and a portion of the remaining extent of Vandyksput 214 IR, Kendal compiled by Adi Environmental cc in November 2018. The issues discussed during the meeting and as outlined in Section 6.4.2 of the Adi Environmental 2018 draft Scoping Report are realized as follows:

Gijima Supply Chain Management Services (Pty) Ltd leases the Arbor Siding area from Transnet Ltd for their coal loading operation. A meeting was held (7 November 2018) with Gijima Supply Chain Management (Pty) Ltd and their appointed environmental consultant, Myezo Environmental Services (Pty) Ltd, in order to:

- Discuss the proposed Arbor Rural Village development;

- Record any issues of concern with regards to the proposed development;
- Obtain information regarding the current and proposed activities at Arbor Siding.

A copy of the agenda, attendance register and minutes of the meeting are provided in Appendix 6. Table 6.3 provides a summary of issues recorded during the meeting of 7 November 2018.

During this meeting, the following was indicated with regards to the Arbor Siding expansion plans:

- Currently, waiting for Transnet to sign the new lease agreement. The siding is however, operational on the northern side. Eskom will advise shortly when loading operations will commence.
- The existing siding does have an environmental authorisation in the form of a Section 28 EMP approval that was issued by Mpumalanga DARDLEA.
- An environmental authorisation must however, still be obtained for the triggered activities associated with the expansion, which is why the siding on the southern side is not operational yet. Myezo Environmental Management Services was appointed to conduct the Environmental Impact Assessment. A water use licence application will be submitted for the pollution control dam. It is still being discussed with DWS whether this should be an amendment to the existing water use licence or an integrated licence encompassing already authorised activities.
- Dust suppression measures are in place. An ambient air quality study was done, focusing on the operational activities of the siding. A stockpile handling capacity study was also conducted.
- The trucks from Vlakvarkfontein Colliery and Wescoal are mainly responsible for the dust. The siding itself does not create a lot of dust. It is thus an indirect issue affecting their operations and monitoring results.
- There is a possibility that coal could be obtained from Vlakvarkfontein Colliery. This would reduce the number of trucks on the road as the trucks will only travel from the mine to the siding resulting in a shorter haul. This would have a positive impact in terms of dust and traffic. Arbor Siding currently employs 30+ people from the local community. The presence of the siding is therefore of benefit to the community. The expansion of the siding will result in more employment opportunities. An agreement is in place with the community to employ community members if they have the required skills. Training is currently given in basic PC knowledge and operating front-end loaders and the weighbridge. We are a small company, but we endeavor to do what we can for the community.
- Discussions have taken place with the Arbor community leadership structures.

The additional issues, comments and proposed mitigation measures discussed from the meeting are outlined in detail in Table 10.5-2.

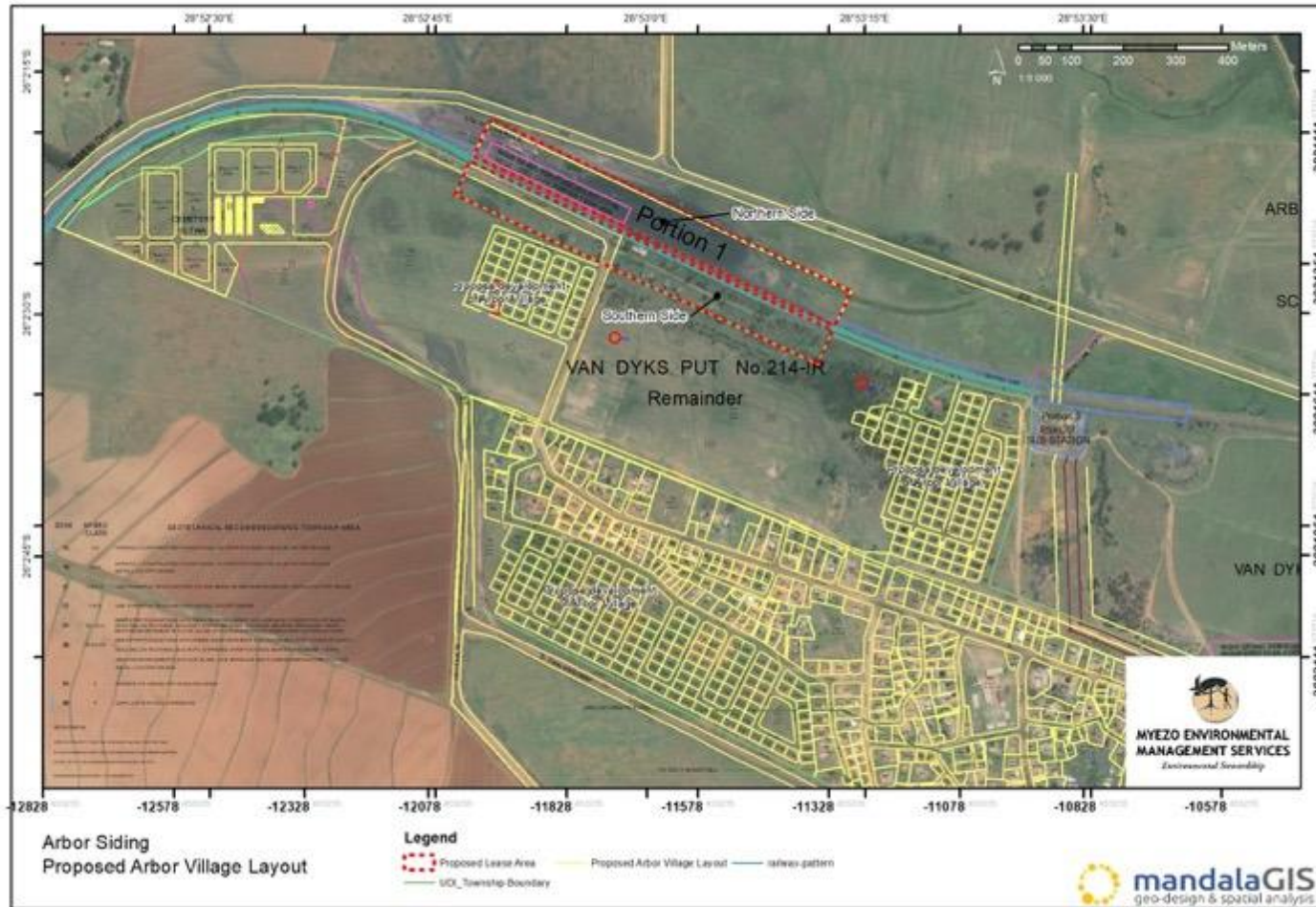


Figure 7.2-1: The locality of Arbor village in relation to Arbor Siding.

7.3 Climate

Summers are at their hottest during January with temperatures reaching 30°C. Winters are realized by low temperatures falling below 20°C sometimes. The mean daily maximum temperature exceeds 25 °C between November and March, the hottest months. Average maximum temperatures in the winter months (May-August) range from 18.0°C to 21.3°C. The mean minimum summer temperatures range from 11.7°C (March) to 14.2°C (January) with winter mean minima ranging from –1.6°C to 2.9°C. An extreme maximum temperature of 33.8°C was recorded at Ogies, on 12 November 1990 and an extreme minimum temperature of –8.8°C on 9 June 1988.

The average annual rainfall is 700mm with a maximum of 800mm while the minimum is 600mm. The site falls in a summer rainfall region with high rainfall events between November and March. The rainfall occurs mainly as showers and thunderstorms are a common phenomenon. Winters are generally realized by dry weather. The nearest reliable rainfall station is station Delmas Pannar station located about 20 km south of the proposed Klipfontein wash plant. The calculated Mean Annual Precipitation (Map) for this rainfall station is 705mm. Evaporation data for site was obtained using the WR90 manual. Mean annual evaporation is 1,400mm and is more than twice the MAP of the project area. The high evaporation rates will result in high losses of water from the pollution control dams within the site. High levels of evaporation will serve as major water loss mechanism.

7.4 Geology and Soil

The site is characterised by sandstone, shales and coal beds of the Vryheid formation of the Karoo Supergroup. Intercalations of siltstone and mudstone are common in the sandstone especially in the upper part of the formation. Lenses of calcareous sandstone and sandy limestone are also common. The Karoo Supergroup consists of a sedimentary succession that overlies a glaciated pre-Karoo basement known as the Dwyka overlain by the Ecca and Beaufort Groups. There is no evidence of linear geological structures in the immediate vicinity of the site. The soils found on site are generally fertile with very low water-soluble metal concentrations (most metals were below the detection limit). The implication in terms of the mining activities is that if soils are correctly stripped ahead of mining and the topsoil adequately managed, the stockpiled material has the potential to be an adequate growth medium in areas where it is replaced during rehabilitation. The land capability associated with the site is defined as arable, with the soils in the landscape having the potential to support agriculture. The conducted monitoring of soil resources which was conducted presented results which revealed that the samples returned acceptable parameter levels for pH, EC and Na levels. The results showed the samples to either mildly acid or neutral pH, moderate electrical conductivity and sodium levels.

Hydrology

The study area falls within Water Management Area 4 (WMA4), Olifants, specifically along the watershed between the quaternary catchments B20F (Wilge River). The Olifants River is the most significant River in WMA4 and one of the main tributaries of the Limpopo River. The Olifants Catchment covers about 54 570 km². The upper reaches of the Olifants River Catchment are characterized mainly by mining, agricultural and nature conservation activities. The mean annual runoff (MAR) for the WMA4

is 2 042 million m³/a. Several surface and underground monitoring points were sampled and their water quality assessed. The monitoring points assessed are shown in Figure 7.5-1 below. The uncontrolled stormwater from the Arbor Siding activities present potential impacts to the sensitive ecosystems adjacent to the site. Some of the impacts are discussed in detail in Section 4 of this report. The current water use at the Northern Side include a coal stockpile area, a dirty water catchment and two pollution control dams.

The stockpile area has two sections; a section for coal that is transported locally and for coal that is exported. The area results in a huge amount of dust. Water from the Pollution Control Dam (PCD) is used for dust suppression.

The dirty water channel is a channel of approximately 360m long to capture contaminated water on site and to discharge the water into the PCD. The change in elevation for this channel is approximately 6m. The channel is designed to collect a peak flow of 1.611m³/s without spilling.

The Pollution Control Dams has sufficient capacity to handle all dirty water emanating from the dirty water areas of the siding. The PCD is designed to hold the 1 in 50-year storm event and allow for a 0.8 m freeboard and is lined. A silt trap has been constructed upstream of the PCD to prevent silt build-up in the pollution control dam.

7.4.1 Surface Water

The site is located in the B20E quaternary catchment of the Olifants Water Management Area. There are no tributaries traverse the site. The water quality monitoring points are shown in Figure 6.4-1 below and are positioned as follows

Table 7.5-1: Location of monitoring point

ID	Longitude	Latitude	Frequency
Jojo Tank	28.88116947	-26.03881167	Monthly
SW1	28.92417436	-26.04450349	Monthly
SW2	28.88386559	-26.03501712	Monthly
SW3	28.8735138	-26.02875944	Monthly
PCD	28.88166875	-26.03907795	Monthly

Water quality on the Northern Side of the site was assessed and the generic findings are realized as follows:

- The annual average concentration for the Jojo Tank indicates good water quality; no excessive contaminations analysed throughout the year and water quality fall within the standards set for domestic usages.
- The Pollution Control Dam is operated as a dirty water catchment area within the site and therefore poor water quality might be expected but the sampling parameters still average within the targeted water guidelines for the respective uses.

- The concentration for all surface monitoring points is slightly acidic, neutral and slightly alkaline, ranging from a Ph of 6 to 8. The South African Water Quality Guideline for Domestic Use shows the targeted water quality range is between 6.0 – 9.0 and 6.5 – 8.4 for Irrigational Use.



Figure 0-1: Water Quality Monitoring Points Map.

7.4.2 Groundwater

The area is dominated by gentle undulating topography with elevation generally reducing to the east and south, with small valleys drainage in mainly an easterly direction towards the northward flowing Wilge River. The general elevation of the study area varies roughly between 1525 mamsl, on the eastern boundary of the study area (W. Lubbe, 2019 as sourced from the conducted Wetland Delineation Assessment). The geological setting determines the types of aquifers present in an area. Only one aquifer system had been determined within the local hydrogeological environment namely: - Intergranular and fractured aquifers within the Vryheid formation. According to Vegter (2001) this area falls within the Eastern Highveld Hydrogeological Region that predominantly fractures argillaceous and arenaceous deposits. Its principal water bearing rocks are of a secondary nature. In general groundwater accumulation occurs in intergranular and fractured aquifers overlying most of the area. Groundwater accumulation is related to joints, fractures and faults in competent arenaceous rocks. The groundwater development potential is considered low to medium with borehole yields averaging between 0.1 and 0.5 l/s according to the South African Hydrogeological Map series, (1999). According to the Groundwater Resources Map of South Africa (1995) the general groundwater level depth ranges between 10m and 25m below surface.

According to the findings of a Groundwater investigations, quality does not change as rapid as surface water quality. Groundwater contains minerals dissolved from soil particles, sediments, and rocks as the water flows at different directions along aquifers. Some other forms of ground water contaminations come from improper disposal of chemical wastes, leachates from solid waste disposal sites and infiltration of storm water discharges. Samples were collected from both the Upstream and Downstream Boreholes for analyses of the quality. These boreholes supply portable water to the communities around Arbor Siding.

The findings are summarized as follows:

- The water quality from both boreholes is very good, there is no contamination related to activities at the Siding.
- The average Ph concentration is neutral to slightly alkaline for the two boreholes ranging between 6.2 to 8.2 mg/l, falling within standards set for domestic, agricultural and livestock use.
- All variables analysed to determine the water quality fall within the standards set by the Department of Water Affairs and Forestry (DWAF) South African Water Quality Guidelines.
- No microbiological monitoring was conducted at all the boreholes.

7.4.3 Groundwater Recharge

Recharge represents the portion of rainfall reaching an aquifer regardless of which pathways it follows (Bredenkamp et. Al. 1995). It occurs either through preferential pathways (fractures), drainage through soil or infiltration from river channels and “stationary” water bodies. The key benefit in groundwater

recharge investigations is an acquisition of a better understanding of patterns of infiltration and processes thereof.

Recharge often shows more importance in aspects of groundwater supply, aquifer management as well as mining activities like mine dewatering. It plays a crucial role as a controlling factor in alleviating environmental problems resulting in groundwater pollution, by acting as a natural dilution process normally over prolonged periods of time. Best recharge results are most achievable with a good data set preferably collected over long periods.

7.4.4 Wetlands

The sites exists within two hydro-geomorphic wetland types were identified and delineated within the study area and within 500m from the study area during the present study and classified into two distinct hydro-geomorphic (HGM) units, HGM 1, a hillslope seepage wetland connected to HGM 2 and HGM 2, a valley bottom wetland that was likely unchanneled historically. The Ecological Important and Sensitivity of HGM 1 were perceived to be low as a result of anthropogenic impacts especially the dominance of invasive and terrestrial vegetative species in several sections of the wetland. HGM 2, the valley bottom wetland was assigned a very high Ecological Importance and Sensitivity as well as a result of the occurrence of species of conservation concern, status of the associated wetland vegetation type, several FEPA wetlands and wetland clusters downstream from the study areas as well as the importance of providing clean water and biodiversity support to the Wilge River. The impact assessment identified surface water pollution including sedimentation and pollution, altered hydrological regime and decreased water quality downstream as the major impacts during the construction and operational phase. Several general and specific mitigation measures were proposed in order to reduce negative impacts and incorporate some potentially positive impacts from the proposed development.

7.5 Water Management

7.5.1 Water Balance

A water balance was prepared in order to determine the amount of water required to sustain the operation. It is also key towards identification of areas of high water consumption and definition of water management strategies. Individual water management units were broken down into individual subcategories for better expression of water uses. These include the

- Domestic water intake systems
- Process water intake systems
- Effluent disposal systems
- Pollution control dams
- Dust suppression

7.5.1.1 Potable Water supply

Potable water will be sourced from a Transnet mains connection

7.5.1.2 Process water supply

There will be no process water abstraction as the operation will entail only coal stockpiling

7.5.1.3 Pollution control dam

Dirty water from that runs off the stockpiling area will be realized to a pollution control dam. The pollution control dam will also act an evaporation pond. Taking into account that the area falls within a pollution control dam is 9000 square meters. It is expected that a volume of 700 m³ will evaporate from the pollution control dam.

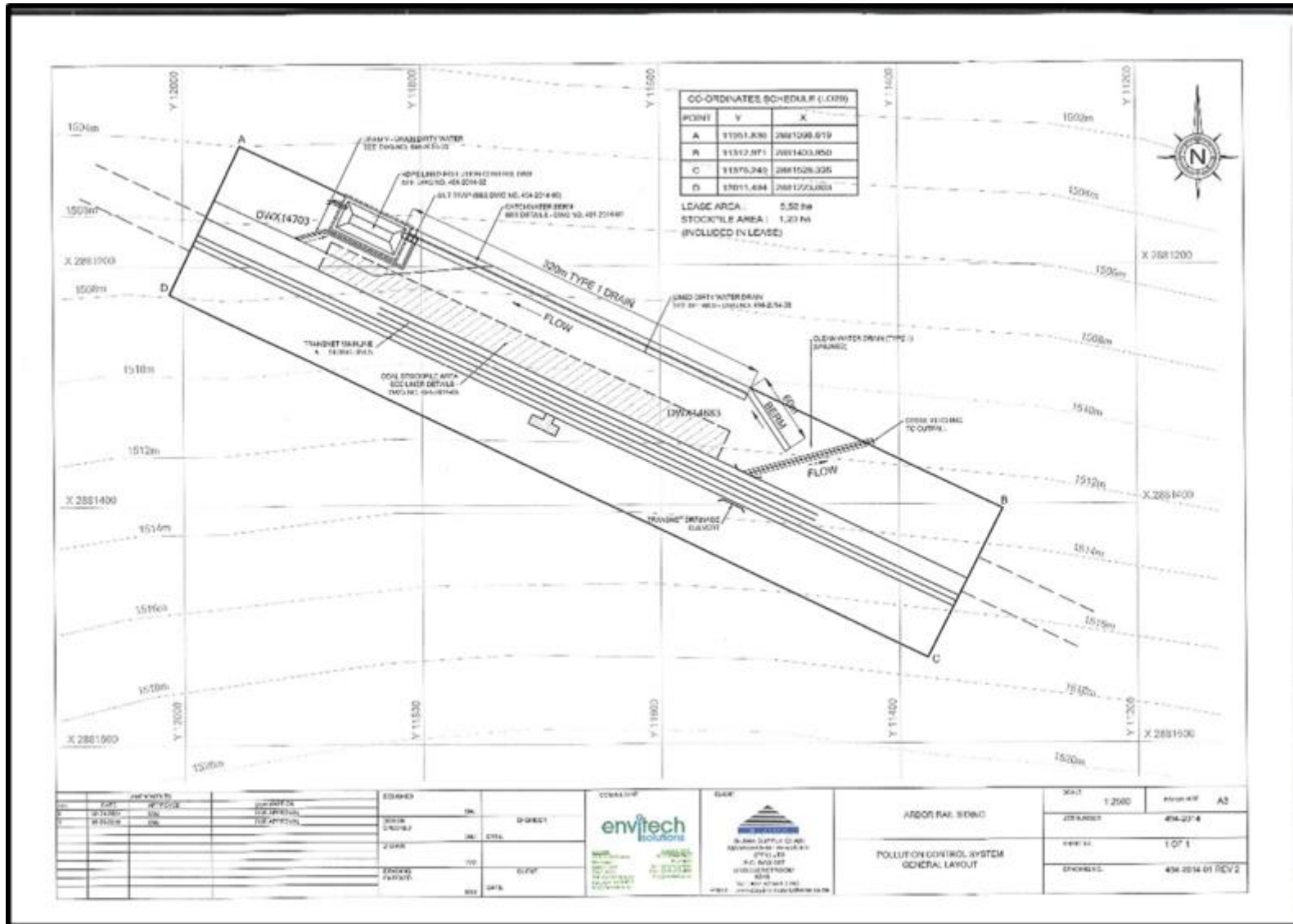


Figure 7.5-1: A pollution control dam site layout for the operational site

7.6 Topography

Arbor is located within the Eastern Highveld Grassland within the grassland biome of South Africa. The grassland biome is one of the most threatened biomes due to agriculture and mining activities with 60% of the grassland biome already having been transformed and only 2% under formal conservation. The Eastern Highveld Grassland is described as occurring on slightly to moderately undulating plains including some low hills and pan depressions. The vegetation is short dense grassland dominated by the usual highveld grass composition with small scattered rocky outcrops with wiry sour grasses and some woody species. This vegetation unit is considered to be endangered. The proposed project site is lying in the B20 tertiary drainage region the area is drained by the Olifants river and is characterized by a gently rolling topography on a slope of about 1: 120.

7.7 Flora and Fauna

The site was assessed for fauna and flora ecosystems occurring on the site. Faunal species were observed visually and avi-fauna observed was verified using a checklist obtained from a desktop studies and also used the Sasol Birds of Southern Africa (Sinclair et. Al., 2002), South African Bird Atlas Phase 2 and Bird Life South Africa for Avian species occurring in the area for further identification. Animals and small mammals were identified within the study site using observation, spoor, tracks, signs and droppings as well as burrows and nesting sites on the ground where feasible. Arbor Siding is highly disturbed and transformed due to the coal handling and storage operation. The study site is located in a Highveld part of Mpumalanga province which commonly known for its wetlands and grass plains with variety of flora species. The Grassland biome is the heavily impacted and disturbed biome in the country and its associated wetlands and rivers continually get affected as a result. Within the Arbor Siding area, the availability of flora is restricted to alien invasive plants, thus the vegetation is transformed in the edges of the site. No critical flora species of conservation importance within the site was recorded. Furthermore, with the exception of random encounters with fauna, no faunal species of importance were observed or recorded within the site as the site is highly disturbed to carry faunal species. With the exception of one transformed wetland and dam constructed to support the activity, there were no natural or functioning wetlands observed and recorded within Arbor Siding boundary. The operational site is highly transformed and with exception of Eucalyptus species randomly occurring on the boundaries of the site and serve as screening method; the site is unable to carry and sustain any flora species as a habitat due to coal dust footprint. However, outside the boundaries of the study site on the east side there are thriving ecosystems such as wetlands and rivers located on the north of the site. These ecosystem supports variety of species such as Grass Owl. Arbor Siding activities only affect these ecosystems due to the uncontrolled storm water as a result it is recommended that the proponent put in place proper storm water measures that could prevent it from draining into the nearest freshwater ecosystems.

Vandykput 214 IR Portion 1 Environmental Sensitivity Map

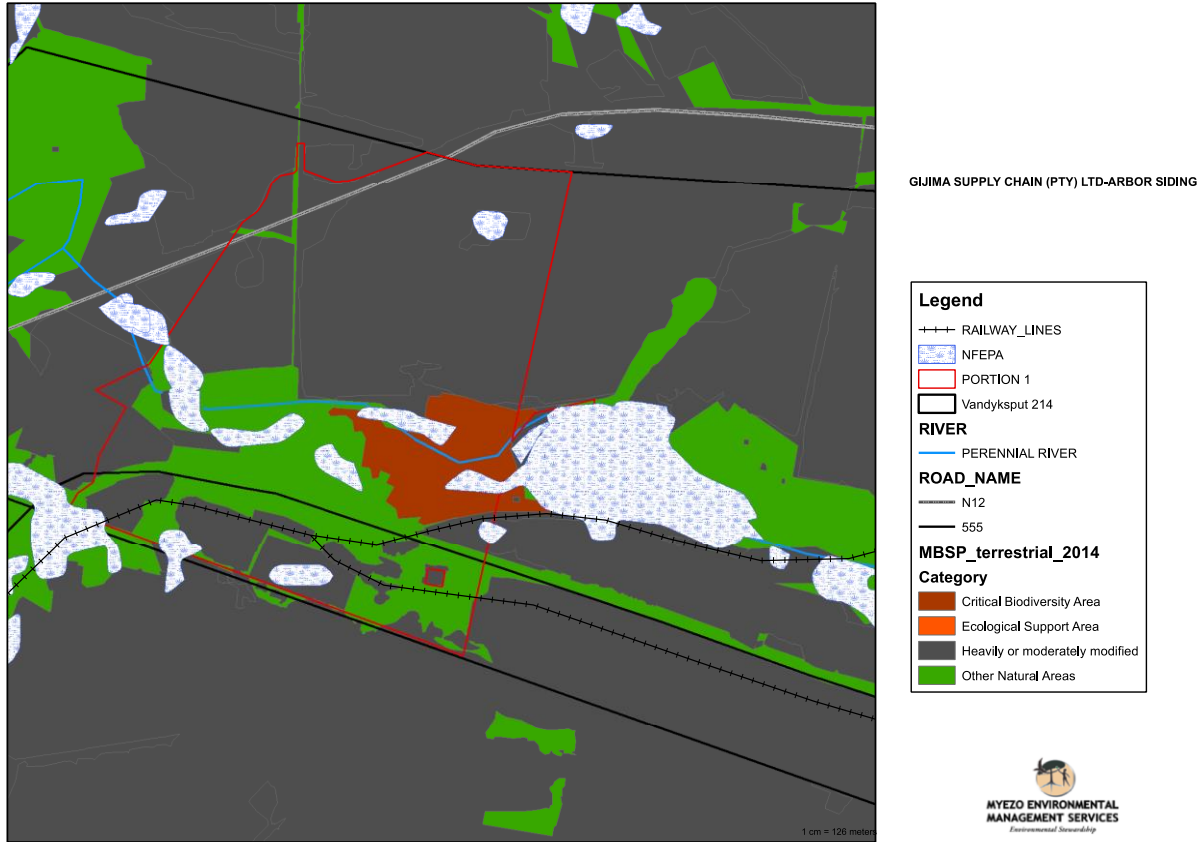


Figure 7.7-1: Environmental Sensitivity Map

7.8 Ambient Air Quality

The Ambient Air Quality study undertaken comprised of a baseline description and impact assessment study. The baseline study encompassed the analysis of meteorological data such as local temperature, relative humidity, rainfall, wind speed and wind direction. The impact assessment study investigated the pollution particulate concentrations that represent the main pollutant of concern given the nature of the operations. The assessed pollutants were classified as criteria pollutants, with ambient air quality guidelines and standards having been established by various countries to regulate ambient concentrations.

The limitations and assumptions of the study included:

- The study was restricted to the Gijima Supply Chain Arbor Siding operations and surrounding operation within the proponent’s operational site.
- The information required for calculating emissions from fugitive dust sources for the operation were assumed to be correct and accurate to model routine emission for the site.
- It is recommended that a minimum of one year of meteorological data is be used in atmospheric dispersion modelling for air quality impact assessment purposes.

- The assessment at Arbor operational siding was limited to airborne particulates which are the total suspended particulates (TSP) and particulate matter of less than 10µm in diameter (PM10).

The main findings from the baseline assessment were as follows:

- The main sources likely to contribute to cumulative PM10, SO2, CO and VOC air quality impact are vehicle entrainment on unpaved road surfaces and during loading and off-loading of coal at the site (i.e. mining activity);
- The predominant wind direction within the site is from the west- northwest on which during day time there is an increase in these winds velocity. Less frequent winds are from the southern directions.
- With exception of Sulphur dioxide, the pollutants recorded within the site falls within the NAAQ air quality threshold targets.
- Recorded ambient air quality results shows that Sulphur dioxide levels exceeds the target threshold as determined by AQA and SANA 1929:2005 standards in all four sites.
- Modelled ambient PM10 concentrations exceed the daily NAAQ PM10 limit applicable from 1 January 2015.

For cumulative impacts, the contribution of Arbor Siding operations is intermediate with cumulative impacts really due to baseline conditions of the site as such that the SO2 concentrations for cumulative impacts were high and in non-compliance with NAAQ.

Recommendations from the study:

1. It is recommended that four dust buckets stands be strategically erected to the main areas or sensitive receptor area to verify predicted cumulative impacts and refine controls accordingly. Dust samples from the dust buckets will be taken to analyse the Gravimetric Dust Fallout content,
2. The PM10, SO2, CO and VOC concentrations determined through active sampling in order to measure these variables against national ambient air quality guidelines should be conducted in a monthly basis in order verify predicted cumulative impacts and refine the operational site impacts with the aim of lowering the exceeding SO2 concentrations.
3. Dust suppression in the form of water spraying the areas of frequent vehicular movement should be done in a three hours interval to minimize the generated dust whilst avoiding water accumulation to the surface.

The four (4) buckets are strategically placed as follows:

SAMPLING POINT	SOUTH			EAST		
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS
NORTH	26	2	18.72	28	52	45.14
EAST	26	2	19.03	28	52	50.98

SAMPLING POINT	SOUTH			EAST		
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS
SOUTH	26	2	27.80	28	53	6.80
WEST	26	2	25.22	28	52	57.96

The recent air quality scheduled monitoring and report for the site for April/May revealed the following:

The results of this monitoring are within DAE targets, which is good, however exceeds the National SANS 1929 Standards. This means that once this becomes a regular occurrence on the monitorings, Gijima will be required to do an Air Quality Licence. The current monitoring results are higher than the 2016 monitoring results, this means the 2016 Aug/Sept recorded average was 512 mg/m²/day and the 2017 April/May recorded average is 736.33 mg/m²/day. One of the common reasons why there is an increase, is due to the winter beginning in May in Mpumalanga and therefore the monitoring occurred in a windy and dry season. The other reason is that the access road (R960 road) going towards Eskom Kusile Power Station, this impacts negatively on the results because that access road generates a lot of dust from the vehicular movement of other road users including trucks.

Please also note that the West point results were not taken and not included in the analysis due to last year's incident where the pole and bucket were stolen, but the South point also caters for the West activities which are the off-loading and loading of coal. The West equipment need to be replaced so that on the next air quality monitoring, we than have the results for West side alone.

Even though the monitoring was within the DAE target and exceeded the National SANS 1929 standards as shown in Table 6.8-1 below, it is recommended that the applicant obtain an Atmospheric Emission Licence (AEL) permit due to the likelihood that the dust generated at the site will reach the ALERT threshold that will require notification of Authorities and subsequent permit application.

Table 7.8-1: Dust fallout comparison from 2015 – 2018 for Arbor Railway Siding

Monitoring Point	Dust levels measured in mg/m ² /day					DEA AQ targets	SANS 1929:2011 targets	ACTIONS OR CONDITIONS OF THE GUIDELINES TO SOUGHT OUT AEL
	Aug/Sept 2015	Aug/Sept 2016	Apr/May 2017	Dec'17-Jan'18	Aug/Sept 18			
North	789	609	712	896	436	600<D<1200	300<D<600	Three within any year not two Sequential months
East	418	648	682	695	537	600<D<1200	300<D<600	
South	665	279	815	776	576	600<D<1200	300<D<600	
West	Equipment stolen					600<D<1200	300<D<600	
Average	624	512	736.33	789	516			
Residential	624	512	736.33	789	516	D<600	600	Three within any year not two Sequential months. However, it is recommended that the applicant obtain an Atmospheric Emission Licence (AEL) permit due to likelihood that the dust generated at the site will reach the ALERT threshold that will require notification of Authorities and subsequent permit application.
Industrial						600<D<1200	1 200	

8 PROJECT ACTIVITIES

8.1 Planned project activities

An overview of the planned project activities is provided in this section. It should be noted that the environmental authorisation application does not include all the activities as shown in Figure 8.1-1. Some of the activities were implemented, for example, the vegetation clearance is already done as part of the existing operations. The new application is for only the activities that are triggered. The activities in this figure must be read in conjunction with Table 8.1-1 and Figure 8.1-2. Nevertheless, please note the picture used for areas indicated for loading was pre-existing operation interventions and the site might not currently resemble this picture.

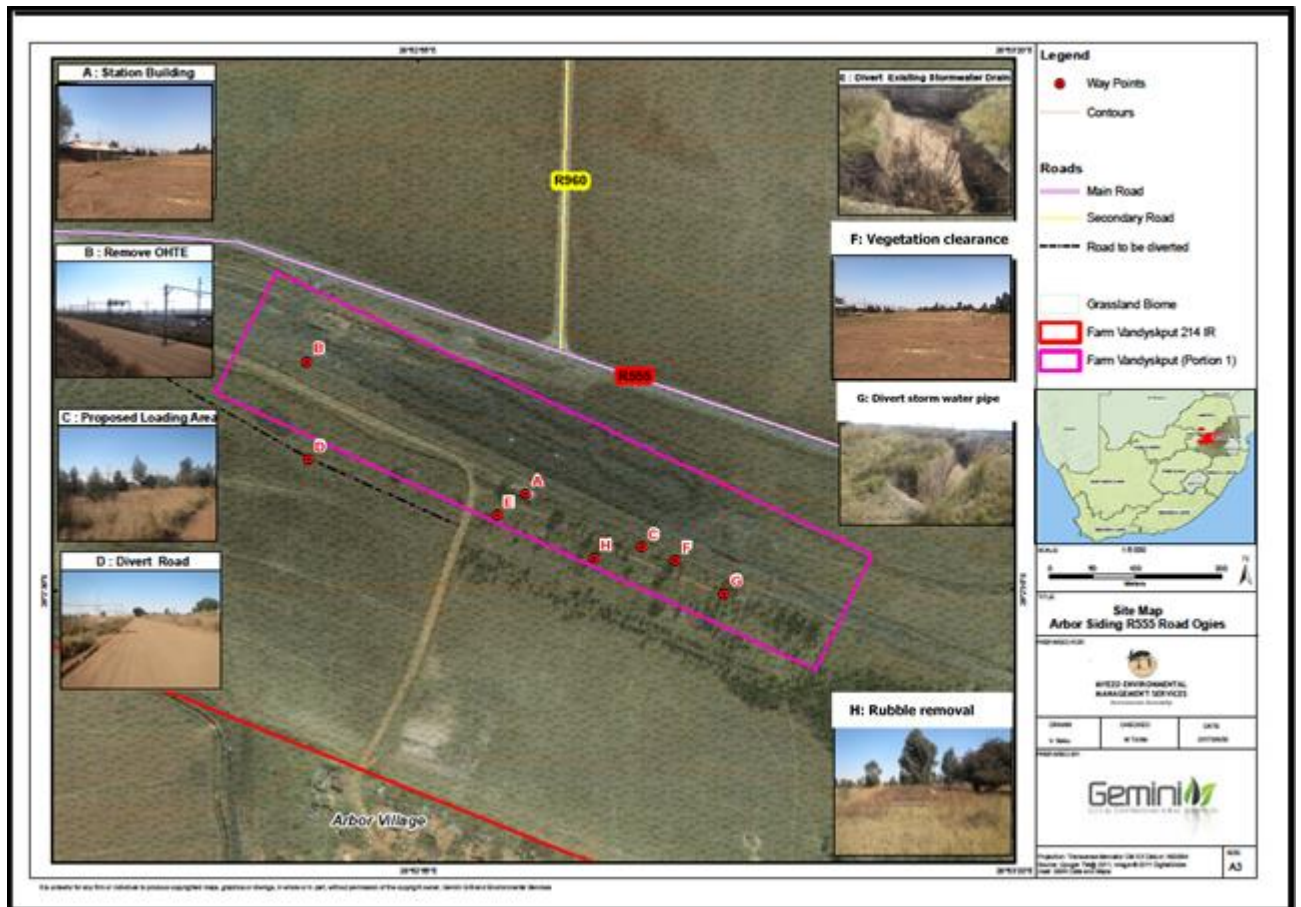


Figure 8.1-1: An overview of project activities for the site

Table 8.1-1: List of proposed Activities for the Southern Side and the photo references.

Activity No.	Proposed Activity	Photo Reference Figure 7.1-1
	Remove the OHTE from the platform line. For detail on the planned diversion and extension of Line 5 and Line 6 including the deviation and extension of Line 4 refer to the topographic illustration of the planned activities in Figure 7.1-2).	B
2.	Establish loading area	C
3.	Divert gravel road	D
	Divert existing storm water drain and extend the storm water drainage channel. Construct a berm wall on the station side of the channel with the excavated material.	E
4.	Backfill and compact the old channel where required.	E
5.	Clearance of vegetation	F
5.	Divert storm water pipe	G
4.	Remove the entire existing concrete drainage infrastructure.	F, G
5.	Extend the existing storm water culvert for the full width of the loading area and connect it to the new storm water cut-off drain.	F, G
	Rubble Removal	H
7.	Construct new evaporation dam.	



Figure 8.1-2: Propose activities for increasing the scope at the Siding



Figure 8.1-3: Proposed new activities which will be undertaken as Phase 2 of the Arbor Railway Siding operations (This environmental authorisation application)



Figure 8.1-4: Proposed new infrastructure to be undertaken as part of this environmental authorisation application (Phase 3)

8.1.1 Water management plan

The water management plan highlights the planned activities from a water management perspective and is summarized as follows:

Planned Activities

The design of the proposed activities was investigated by a specialist engineer in July 2018 and the water management plan for the proposed expansion of the Arbor Siding is attached as Annexure 16.1-1.

The proposed site for the increased scope of the operations include the utilization of two lines next to the existing platform (indicated in red and yellow line in Figure 8.1-5).



Figure 8.1-5: Proposed site for the future increase in scope of the existing railway siding.

8.2 Phasing in of the infrastructure:

The planned intention is to initially use the infrastructure “as is” with the minimum construction possible to modify the site in order to stockpile the coal and load it on to the trains. For the sake of the ease of reference this stage will be referred to as “Phase 1”. The infrastructure which will be constructed in phase 1 will be in line with the future infrastructure requirement for phase 2.

The water management calculations were done for the proposed Phase 2 which will represent the completed works to stockpile 17 000 tons of coal and a throughput of about 72 000 tons per month.

8.2.1. Proposed Layout for Phase 1

The terrain will only be cleared and leveled and some minor earthworks will be required to enable the front-end loaders to get to the rail track structure to load the trains. Figure 8.2-1 gives the proposed startup layout for phase 1.

A storm water drain and berm wall will also be installed on the TFR boundary line to divert the runoff storm water away from the siding in order to separate the clean and dirty water systems.

The terrain will only be cleared and leveled and some minor earthworks will be required to enable the front-end loaders to get to the rail track structure to load the trains. Figure 8.2-3 gives the proposed startup layout for phase 1.

A storm water drain and berm wall will also be installed on the TFR boundary line to divert the runoff storm water away from the siding in order to separate the clean and dirty water systems.



Figure 8.2-1: Layout for Phase 1

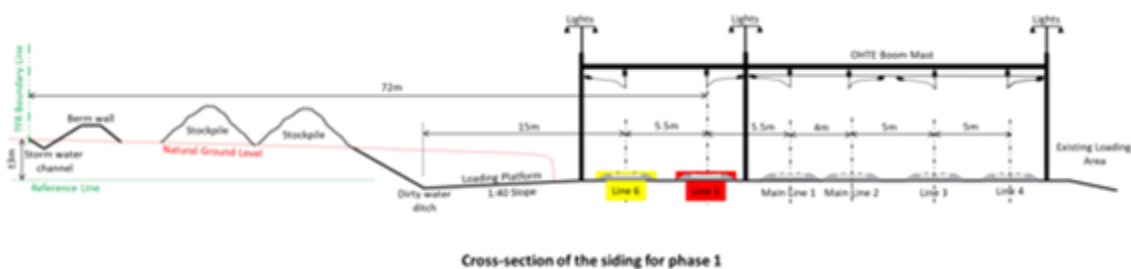


Figure 8.2-1: Cross Section for Phase 1

8.3 Proposed Layout for Phase 2

Line 6 will be moved to the TFR boundary which will then encapsulate the dirty area between line 5 and line 6. In order to manage and contain the polluted runoff the following items are added to the basic layout design as illustrated in Figure 8.3-1.

- Redirecting the contaminated water flow
- Adding a silt trap
- Adding a Pollution Control Dam (PCD)



Figure 8.3-1: Layout for Phase 1

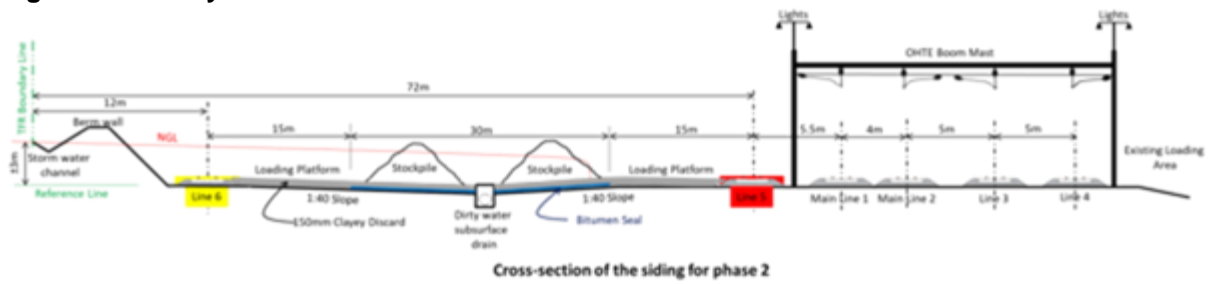


Figure 8.3-2: Cross Section for Phase 2

Water Management Strategy

The proposed water management strategy is summarized as follows:

- Storm water runoff from the catchment area will be guided around the siding by means of the storm water drain and the berm wall.
- For phase 1 the polluted water will be guided to the existing culvert underneath the railway tracks on the eastern side of the siding. From there the existing dirty water channel will discharge it into the existing PCD.
- After completion of phase 2 the entire siding will slope westwards with a fall of 1:100 and then the polluted water will flow that way by means of drainage channels and culverts to be discharged into the silt trap and the new PCD.
- Water will be extracted from the PCD at a rate of 90 000 litres per day (about 27 000m³ per year) for mainly dust suppression purposes.
- There is no need for the supply of potable water due to the infrastructure which already exists on the northern siding.

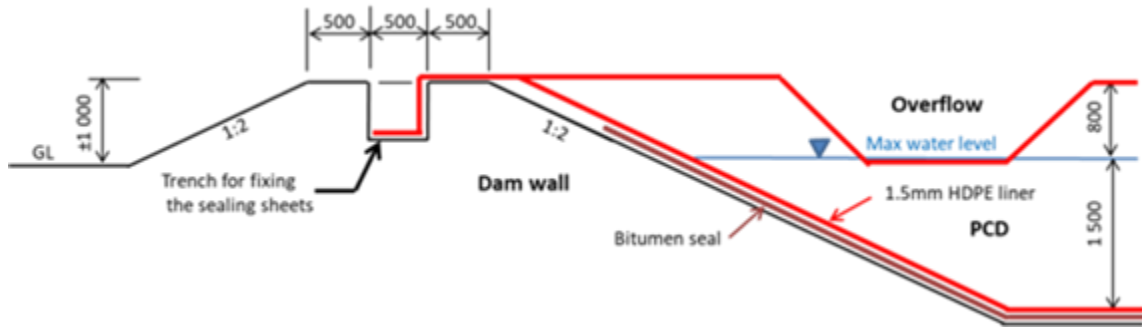
Soil sealing arrangements

No soil sealing will be performed for the phase 1 layout because this setup will only be in place temporarily. Any pollution that might occur during this period will physically be removed when the phase 2 layout is being constructed. This is evident when comparing the natural ground level line (red line) with the stockpile levels on Figures 8.3-3 and Figure 8.3-4.

The following methodologies will be used for the phase 2 layout in order to comply with the “Class C” specification for landfills in providing a double seal:

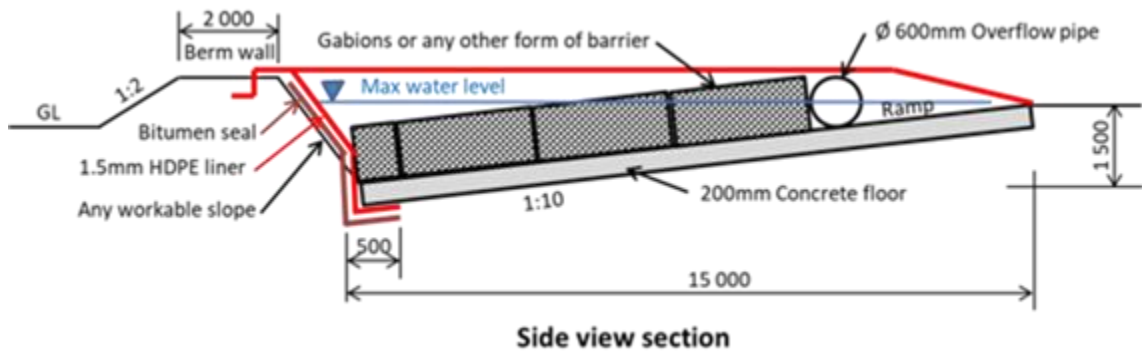
The Pollution Control Dam (PCD):

Spray a 1mm thick bitumen emulsion seal / binder on the floor and the sidewalls and then cover it with a 1.5mm thick HDPE membrane. The advantage of this methodology is that the bitumen will “glue” to the HDPE liner and thereby strengthen it. Due to its “gluing” effect it will also localize and inhibits any leakage through the plastic liner.



**Figure 8.3-3: Sealing arrangement for the PCD
 The Silt trap**

Sealing the silt trap is similar to the PCD except that the floor or ramp will be covered with a 200mm thick concrete slab.



**Figure 8.3-4: Sealing arrangements for the silt trap
 The Stockpile areas**

Spray a 1mm thick bitumen layer on top of the prepared surface area for the stockpiles and cover it with a 150mm low permeable material (such as a clayey discard layer). As soon as water is added (which will be daily) the very fine particles will settle at the bottom of the layer to form a very effective natural seal. This seal will “grow” over time as the vehicle wheels pulverize the surface particles and the seal will become even more effective.

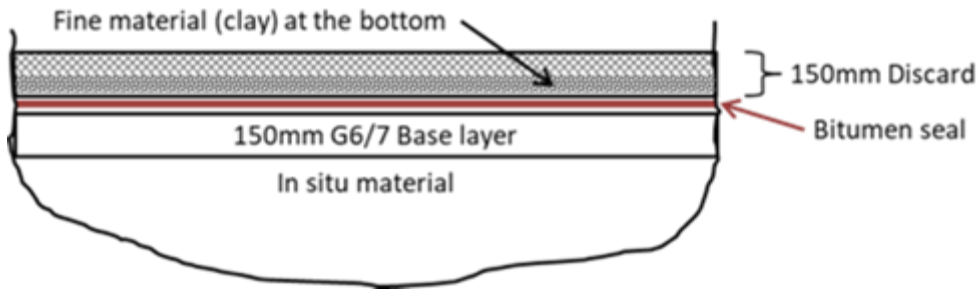


Figure 8.3-5: Sealing arrangement for the stockpiles

The dirty water channels:

Subsurface drains:

Unfortunately, the dirty water catchment drains have to run through the centre line of the stockpile areas for this specific kind of loading area layout. For maintenance and safety reasons it would be better to install subsurface drains to collect and discharge the dirty water in this case.

The subsurface drains will effectively be 500mm x 500mm in size. The drains will be lined with a 1.5mm HDPE liner and the water will permeate to the drainpipe by means of a thick geo-fabric and a coarse sand fill at the top as shown in Figure 7.1-13. The slope of all the subsurface drains will be 1:1000.

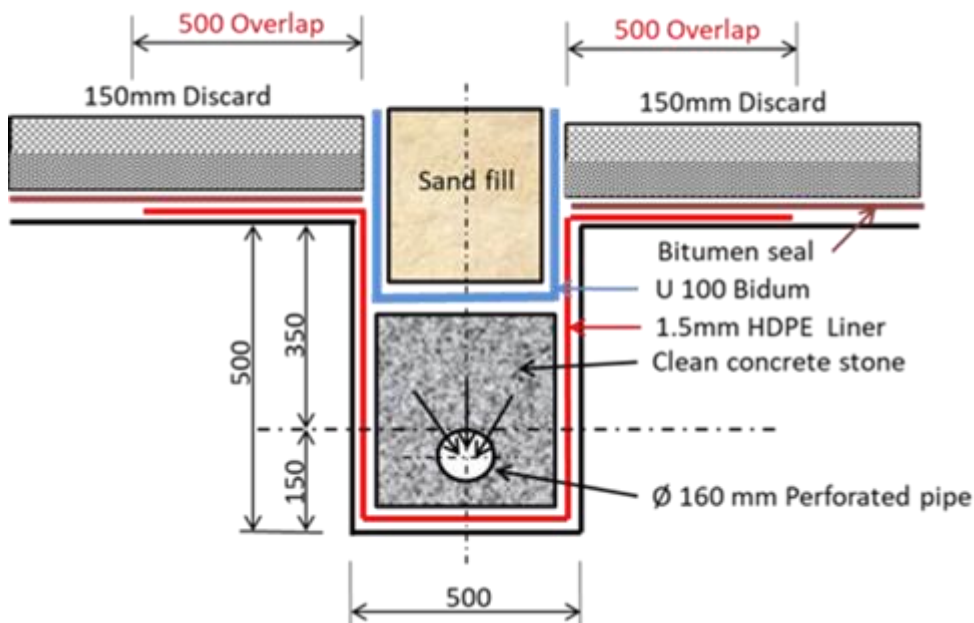


Figure 8.3-6: Layout for the subsurface drains

Surface drains:

Open drains will be lined with a 1.5mm HDPE liner and weighed down at the bottom by means of either sand bags, hand stone or even coarse gravel.

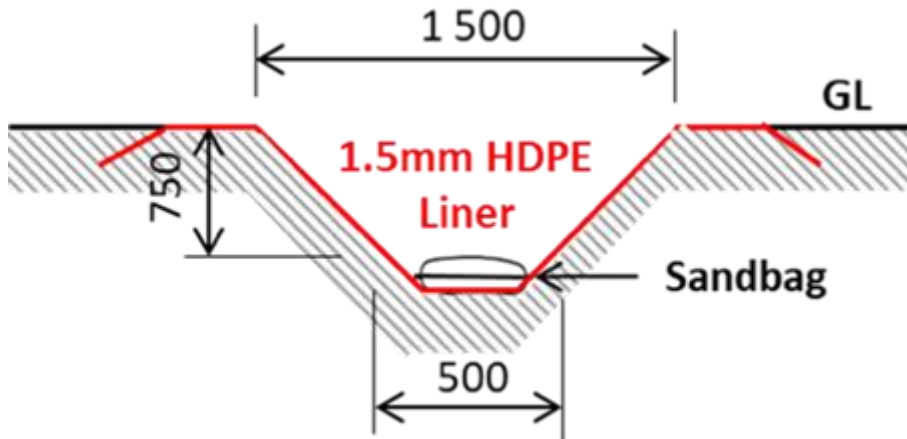


Figure 8.3-7: Sealing of the open drains
Underfloor drainage:

According to the “Class C” specification for landfills subsurface drains have to be installed below the floor of the PCD for monitoring purposes. Due to the relatively small size of the PCD a single ring drain at the floor edges will suffice (Figure 7.1-15). Although the final ground levels for phase 2 are yet unknown it will be assumed that the outlet of the ring drain will daylight inside the storm water channel. These drains are indicated on Figure 7.1-16 by the red lines.

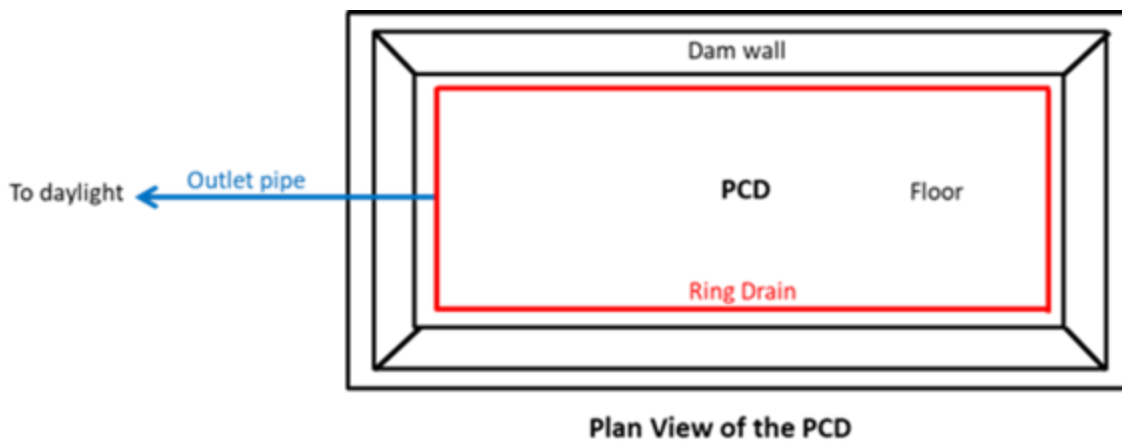


Figure 8.3-8: Layout of the underfloor drains

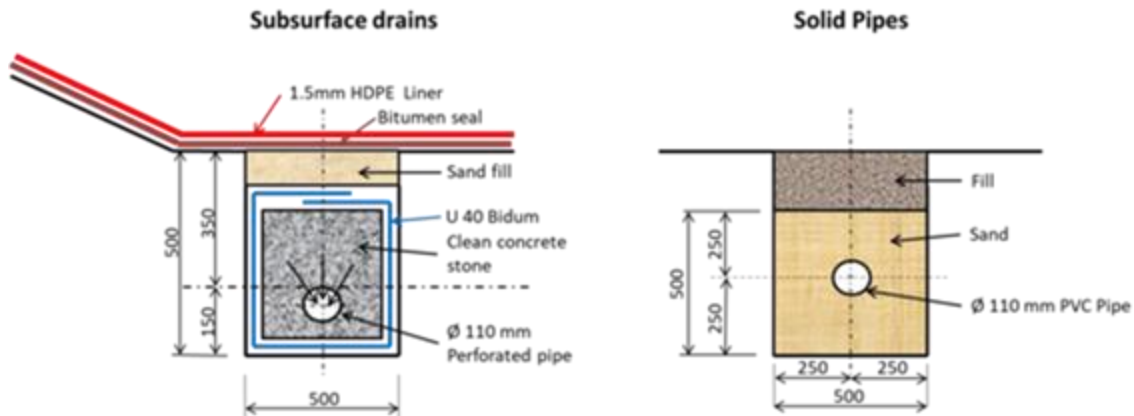


Figure 8.3-9: Layout of the drains and pipes

8.3.1 Energy Use

A diesel truck arrives on site to refuel the Water Bowser and equipment on site. There is no diesel storage tank on site. Use of generator for use during normal services maintenance or load shedding schedules from Eskom.

Metrological data:

The following metrological data were used to calculate the expected runoff volumes for the relevant areas and infrastructure:

- Rainstorm with a 1:50 year return period
- 2-hour storm duration
- Precipitation of 650mm per year
- Evaporation = $1.5 \times \text{Area} \times \text{temperature} / 20$ in m^3 per year
- Average temperature is 18°C
- Runoff factor of 0.2 for the storm water due the agricultural nature for most of the catchment area
- Runoff factor of 0.4 for the dirty water runoff on the siding

Water runoff calculations:

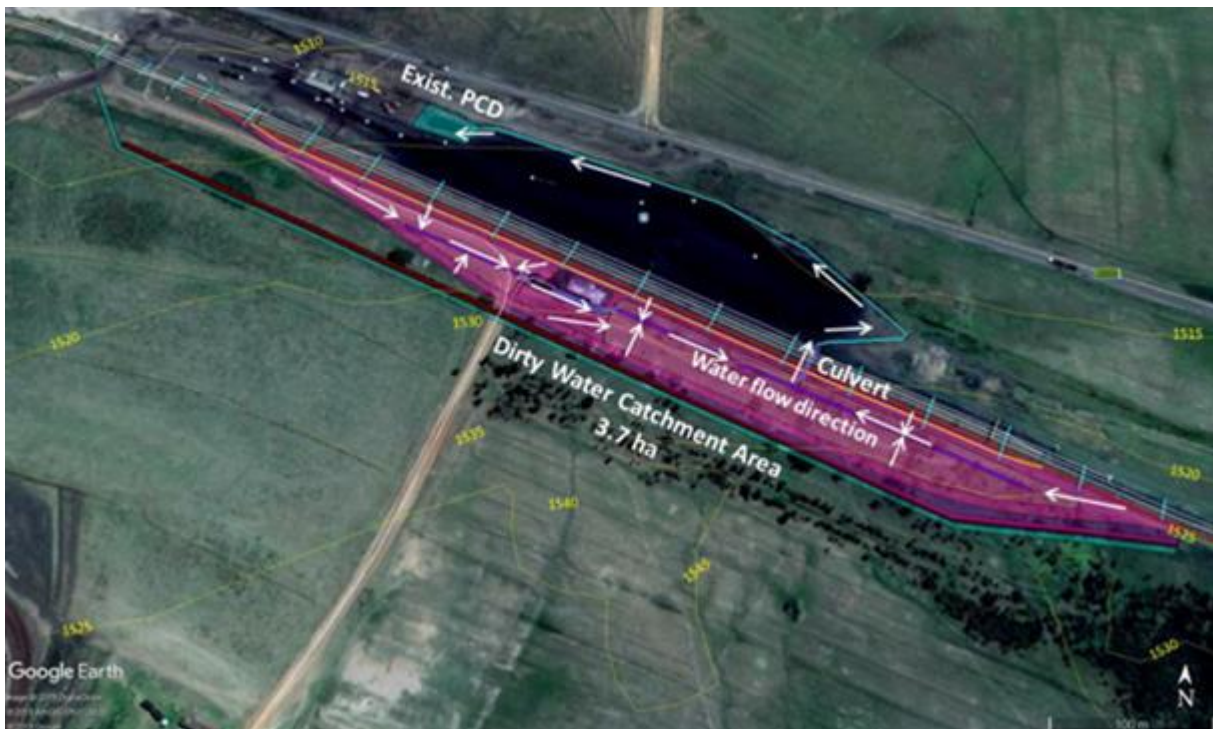
Storm water catchment area:

The size of the catchment area according to Google Earth is about 49.6ha – see the blue shaded area on Figure 8.3-10.



**Figure 8.3-10: Storm water catchment area
Dirty water catchment area for phase 1:**

The size of the polluted area will be about 3.8ha – see purple shaded area on Figure 8.3-11.



**Figure 8.3-11: Polluted area for phase 1
Dirty water catchment area for phase 2:**

The size of the polluted area will be about 5.0ha – see purple shaded area on Figure 8.3-12.



Figure 8.3-12: Polluted area for phase 2

9 MOTIVATION FOR THE NEED AND DESIRABILITY FOR THE PROPOSED DEVELOPMENT

The total storage capacity of the existing site is 21 204 tons. The current active operational side herewith, referred to the Northern Side of the Arbor Railway Siding, has been servicing Eskom with 3,8 million tons of coal, over the three-year period, which ended in September 2016.

Subsequently, Gijima targets the export market and Eskom renewed the contract and increased the tonnage to 95 000 000 tons over a 4-year period ending in 30 September 2020. This translates to 198 000 tons per month. There will be challenges in achieving this current contractual demand, since the current active operational area has reached its maximum operational capacity in terms of stockpiling, receiving trucks and loading the trains. Currently, only two trains are operational to service the extended Eskom contract and the current infrastructure is not enough to fulfil Gijima's contractual obligations. The operational capacity will need to be increased and as such there will be additional activities that will be undertaken such as increased stockpiling areas, and to increase the loading capacity with two trains daily. Increase in the capacity of the pollution control dam and/or have a new additional pollution control dam with a silt trap.

The proposed expansion to the operation also presents social and economic benefits for the communities surrounding the site, especially Arbor village, which is within a 1 km radius south of the site. The social benefits include the job opportunities for 25 extra people to be employed for the site. The economic benefits will be realized through the implementation of Transnet Road to Rail Strategy in transporting more coal to the power station, whilst reducing both costs and number of human fatalities. The expansion will transport an increased volume of coal material, which may lead to more stable electricity supply.

The expansion is viewed to be in support of the Transnet Freight Rail Strategy which was proposed in 2012 and linked to the budget allocations for rail infrastructure development within the country. Transnet has been looking at ways of investing in new technological developments in relation to Road to Rail Strategy. They have been piloting on an idea to use truck wagons fitted with tyres that can travel on both road and railway surfaces. This would also reduce the amount of time for loading and offloading at Stockpile areas, the traffic of trucks loading and offloading at stockpile areas would be reduced, the emissions from trucks to and from the stockpile areas. The Transnet Freight Road to Rail Strategy is realized in Section 2 of this report.

10 MOTIVATION FOR THE PREFERRED SITE, ACTIVITY AND TECHNOLOGY ALTERNATIVE

10.1 Alternatives

10.1.1 Design alternatives

There are several proposed alternatives considered for the site, particularly for the Pollution Control Dam:

- The Construction of a Pollution control dam on the Southern side. This will require a Water Use Licence.
- Divert all the dirty water from the Southern side to the Northern side. An environmental impact assessment to be conducted base on the Engineering designs and layout plans to be finalised and approved.
- Impact assessment of both alternatives to be conducted and mitigation measures to be recommended as per of the monitoring plan for the site.

10.1.2 Technology Alternatives

Technology Alternatives

There are several options considered for the proposed increase in scope for the operations at the Arbor Siding.

Technology Alternative T1 (preferred technology method)

In order to prepare the Southern side for operations, there are several alternative options proposed for the establishment of the Southern side as a Coal Stock Pile Area and a Loading Area. The proposals are as follows:

Option 1:

The plan in to keep the existing track work as is and cut away the loading area with a slope of 1:40 away from the track. Install a dirty water channel at the back end which will tie up with the evaporation dams. The layer works will consist of the compacted in situ material, 150mm sub-base layer and 150mm of sacrificial coal. A typical cross section of the loading area as proposed is shown in Figure 9.1-1 below.

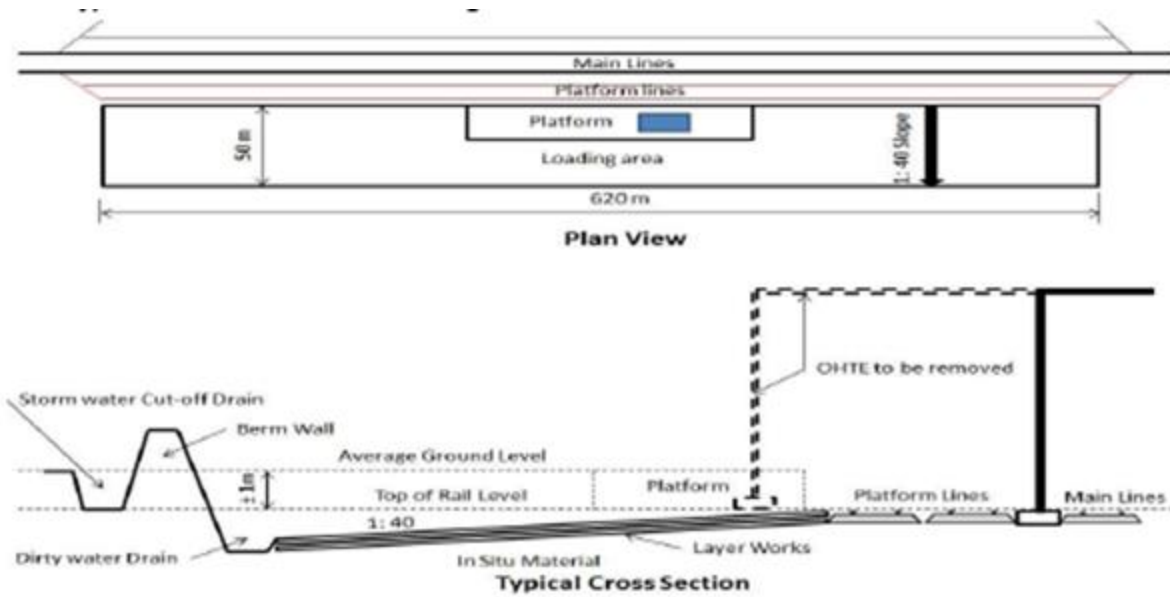


Figure 10.1-1: Option 1 for the Establishment of Loading Area for Southern side.

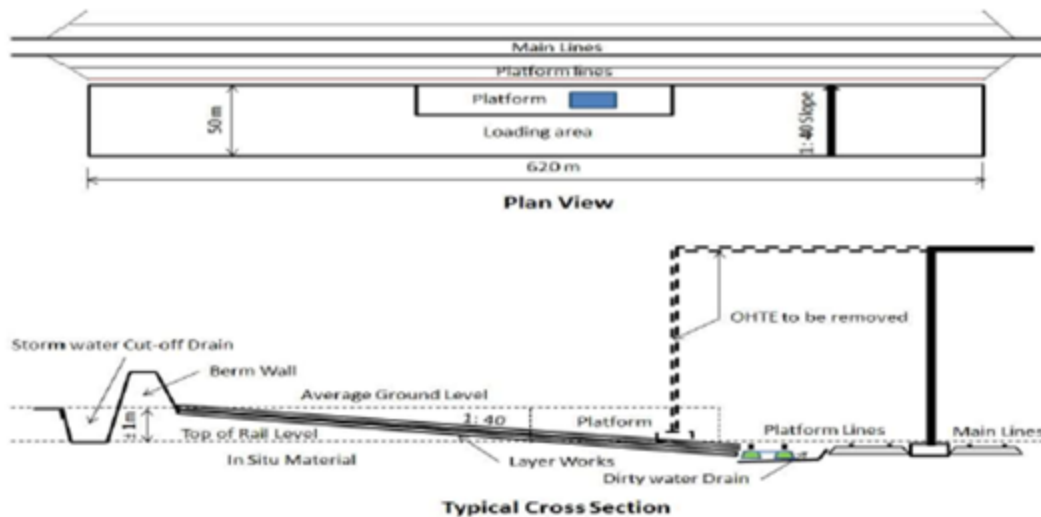


Figure 10.1-2: Option 2 for the Establishment of Loading Area for Southern side.
 Option 2:

This option involves the replacement of the platform line with a Tubular Track System. Cut the loading area with a slope of 1:40 towards the track along the natural ground level. The space between the tubular track beams and the adjacent track structure can be utilized as the dirty water drain. This drain will have to be connected to the evaporation dam at the Delmas end of the siding. The layer works will consist of the compacted in situ material, 150mm sub-base layer and 150mm of sacrificial coal. A typical cross section of the loading area with the tubular track system is shown in the Figure 9.1-2 below.

Option 3:

This option entails the diversion of the existing platform line around the platform and cut away the loading area with a slope of 1:40 away from the track. Install a dirty water channel at the back end which will tie up with the evaporation dams. The layer works for the loading area will consist of the compacted in situ material, 150mm sub-base layer and 150mm of sacrificial coal. The 5m wide formation will consist of 150mm sub-base material (G4), then a 200mm A-layer (G6) followed by a 350mm B-layer (G8). The typical cross section is shown in Figure 9.1-3.

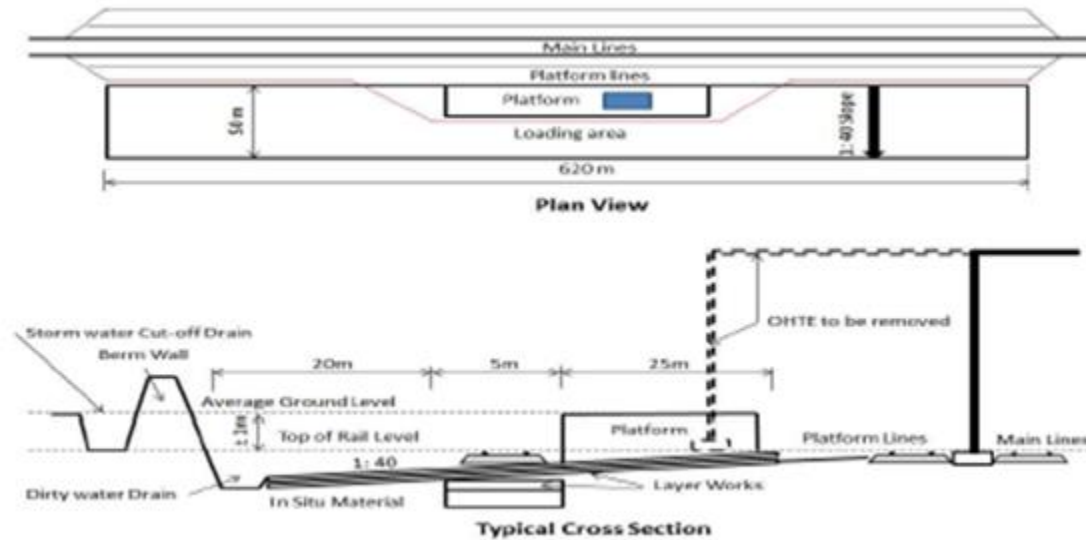


Figure 10.1-3: Option 3 for the Establishment of Loading Area for Southern side.

For all the above mentioned proposed options, there needs to be clear potential impacts for each and mitigation measures for the proposed design. Currently there is one Pollution Control Dam on the Northern side and all the proposed options are on the Southern side are in line with the proposed establishment of an Evaporation dam on the Southern side. However, should the alternative be to link up with the Pollution Control Dam within the Northern side through the use of water channels going under the railway, the designs, impacts and mitigation measures on groundwater will be formulated to ensure minimization of negative impacts to the environment.

Option 4:

Replace the existing platform line with the Tubular Track System and divert it around the platform. Cut away the loading area with a slope of 1: 40 towards the track. Install a dirty water channel between the two platform lines and tie it up with the evaporation dam on the Delmas side of the siding. The layer works for the loading area will consist of the compacted in situ material, 150mm sub-base layer and 150 mm of sacrificial coal. The 4m wide formation will consist of 150mm sub-base material (G4), then a 250mm A-layer (G6) followed by a 400mm B-layer (G8).

10.1.3 No-Go Alternative

Should the development not be approved the benefit discussed under Section 4.2-1 and 4.2-2 will not materialize.

Critically, since the new triggered listed activities are about increasing capacity to meet the Eskom contractual obligations and demand, the efficient delivery of coal to the power stations to ensure electricity generation will be affected and this will impact on the south African economy which is powered by access to energy.

10.2 Details of all the alternative considered

10.2.1 Site Alternatives

All site alternatives that have been considered as the proposed increase in scope are located within the Transnet's land as per the agreed and signed lease agreement with Gijima. The detailed discussion of consideration for the preferred site alternative are provided under Section 11 of this report.

11. PUBLIC PARTICIPATION PROCESS

Public participation is a process that is designed to enable all Interested and Affected Parties (IAPs) to voice their opinions and concerns that enable the practitioner to evaluate all aspects of the proposed development, with the objective of improving the project by maximizing its benefits while minimizing the adverse effects. IAPs include all interested stakeholders, technical specialists, and the various relevant government departments to work together to produce better decisions. The projected milestones for the PPP and the progress to date is provided in Table 10.1-1 below.

11.1 Stakeholder Involvement - Stakeholder Engagement for EMP Environmental Authorisation – Northern Side

11.1.1 Authorities

The Mpumalanga Department of Agriculture, Rural Development and Land Administration (MDARLA) has been consulted, and preliminary meetings were held with them.

An application for environmental authorization enquiry was lodged with the Mpumalanga Department of Agriculture, Rural Development and Land Administration, on which they responded on 8 December 2010, that the EMP to undertake 50 000 tons coal loading operations of Portion 1 of the Fam Vandykspruit 214 1R was no longer a listed activity not require an environmental authorization. However, even though the EMP was approved, the application for the WULA was advised. Observation of heritage and cultural significance material were to be reported to SAHRA. The letter also stated the responsibility to comply with the provision for "Duty of Care" and remediation of damage contained in Section 28 of NEMA.

The Ward Councillor was firstly informed about the operation in a letter dated 20 August 2013. The letter also served to update was provided on the developments relating to the operations at the siding. The update also highlighted the approval of the EMP by the then Mpumalanga Department of Agriculture, Rural Development and Land Administration and the application for a Water use licence. A

follow up later was sent to Ward Councillor Mkhabela on the 5th June 2015 to provide an update on the operations.

On the 4th June 2015, communication was sent to Department of Economic, Development, Environment and Tourism to inform them about the commencement of the operations at the facility.

The Mpumalanga Department of Agriculture, Rural Development and Land and Environmental Affairs was consulted in a letter dated 6 April 2016, to inform them about the extension of the operational footprint at the existing Arbor Railway Siding Coal Loading on Portion 1 of Farm Vandyk 214 IR, Kendal/Ogies. This letter forwarded the intention of the client to extend the operational footprint area. The approved EMP and the approval of the Water Use Licence Application on the 18 Dec 2015 was also included.

11.1.2 Interested and affected parties

The activities pertaining to the identification of the I&AP's and adjacent landowners/occupants as identified in Table 11.1.2-1 are detailed below.

Table 11.1.2-1: Activities undertaken

Site	I&AP Identification	Date	Challenges
Arbor Railway Siding (Southern Side)	WinDeed Search	October 2018	The limited property details regarding the full property description of the bridges. The political climate.
	On site identification of I&AP (walking and driving door-to-door)	15 and 29 November 2018	Getting a hold of residents due to the hours in which the site identification was conducted. Getting a hold of the household representative. Language.
	I&AP's referrals	15 and 29 November 2018	Getting a hold of a variety of participants contrary to being directed by the preliminarily registered I&AP's/ Bias.
	I&AP's registration	15 and 29 November 2018	Not reaching all the I&AP's as a result to further property layout and subdivision.

Meetings

The details of the held meetings; focus group meetings and public meetings are provided in Table 11.1.2-2.

Table 11.1.2-2: Meeting details

Meeting No.	Description	Date	Location
1	Informal Focus Group Meeting: Principal	15 November 2018	Arbor Primary School
2	Focus Group Meeting: Ward Councillor	15 November 2018	Local Municipal Offices

3	Public Meeting	23 January 2019	Arbor Primary School
4	Focus Group Meeting: Chief Simon Mahlangu	23 January 2019	Arbor Railway Siding
5	Focus Group Meeting: Adjacent Landowner – Ntshovelo (Mbuyelo Coal) and Truter	25 February 2019	Arbor Railway Siding

Notification

The notification to all adjacent landowners was conducted on 15 and 29 November 2018. Where site notices were placed at the respective strategic places; Arbor Railway Siding, Arbor Primary School, local tuckshops and local notice boards. A notification email was sent out to all IAPs on 21 Jun 2019 notifying all IAPs of the available draft BAR.

The key stages of the public participation which were followed involve:

- Compilation of stakeholder database.
- Consultation with key stakeholders.
- Distribution of project related information to key stakeholders, IAPs, Ward Councillor, landowner and adjacent landowners.

11.1.3 Stakeholder Involvement - Stakeholder Engagement for Environmental Authorisation – whole site

11.1.3.1 Compilation of Public Participation Report

The stakeholder engagement was initiated from the 15 November 2018 to provide the stakeholders with an opportunity to register as IAPs, raise their concerns and review the Background Information Document (BID). The stakeholder engagement is an ongoing process with the outcomes of the engagements conducted to date provided as Annexure 11.

The objective of the public participation process was to:

- Confirm the key stakeholders to include in the process, municipal departments, businesses, NGOs and the communities within the Victor Khanye Local Municipality (VLKM) and Arbor Village community;
- Compilation and maintenance of the stakeholder database for the duration of the project as well as the newspaper advert, site notices and background information document;
- Introduce the project to the stakeholders to obtain their inputs in the proposed mitigation measures;
- Communicate with the stakeholders at all key applicable project stages;
- Take into consideration all inputs and comments made during engagement sessions for input into the reports to be generated;
- Hold public meetings in the vicinity of the affected areas (Arbor Village), as necessary.

Activity/Task	Objectives	Execution Process	Deliverable
	<ul style="list-style-type: none"> • Community development and social service (e.g. municipalities), Non- Governmental Organisations (NGO's). • Relevant private companies. 	<p>and their conservation status in the area.</p> <ul style="list-style-type: none"> • Information sourced from specialist studies undertaken in the area. • Analysis and review of applicable legislation; • Utilising regional and local setting maps to identify: • Landowners, adjacent landowners and occupiers of land adjacent to the proposed mining activities and associated processing areas; • Municipal Councillors of Victor Khanye Local Municipality and Arbor village community, which is the ward in which the project activities are located, as well as the municipalities in which has jurisdiction in the area. • National and provincial government departments were sourced from previous experience and knowledge of the government departments, who administer law relating to matters affecting the environmental aspects relevant to an application for this environmental authorisation. As such the Departments of Agriculture, Forestry, and Fisheries (DAFF); Department of Environment, Department of Environmental Affairs (DEA), 	<ul style="list-style-type: none"> • Preliminary engagement emails.

Activity/Task	Objectives	Execution Process	Deliverable
		<p>Department of Public Works, Department of Agriculture, Transport and Roads (DPWTR) and Department of Water and Sanitation (DWS) were preliminarily identified as well as other government structures such as the Competent Authority, Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA), statutory bodies such as the South African National Biodiversity Institute (SANBI) and National and regional South African Heritage Resource Agency (SAHRA), Non-profit government organisations and community based organisations, and business and industry. Therefore, care was taken to include organs of the state, which have jurisdiction in respect of the activity to which the application relates.</p>	
1.1 Data Verification	<ul style="list-style-type: none"> To validate the preliminary collected data and check credibility to ensure that the relevant Stakeholders and IAPs are contacted 	<ul style="list-style-type: none"> Validation of collated information was done and will still be done through the next project stages such as screening and data analysis through literature review of existing documents and reports including the Municipal IDP, existing Environmental Management Programmes 	

Activity/Task	Objectives	Execution Process	Deliverable
		(EMPr), Social Impact Assessment studies and Social and Labour Plans. <ul style="list-style-type: none"> • Contacting key stakeholders to preliminarily introduce the project and verify collected data. 	
2. Stakeholder engagement: The information collected during stakeholder profiling was used to determine the best engagement strategies. The literacy levels and circumstances that could hinder effective participation had been noted during these stages. As such it was determined that the common language isiZulu is the main language to engage the community. It was discovered that not all community members understand isiZulu and to cater for all community members, Setswana translated leaflets were also distributed.	The main objectives of the stakeholder engagement were as follows: <ul style="list-style-type: none"> • To inform stakeholder authorities about the proposed project; • To clarify legislative and administrative requirements; • To gather issues and concerns regarding the project and ensure that they are addressed in the Basic Assessment Report; • To facilitate review and informed input into the scoping report; • To organise meeting and do a presentation of the project to the stakeholders; • To compile the minutes of the meeting; 	The strategy for stakeholder engagement is planned as follows: <ul style="list-style-type: none"> • Pre-consultation meetings before submission of the application form; • Adverts and site notices to engage stake holders during the scoping process; • Notification of stakeholders about the report and adverts during the BAR phase. • To date the activities outlined below were executed: <ul style="list-style-type: none"> ➢ There were pre-consultation meetings held with key stakeholder. The meetings were held as follows: <ul style="list-style-type: none"> ✓ Ward Councillor on 15 November 2018 and ✓ Arbor Primary School Principal on 29 November 2018. 	<ul style="list-style-type: none"> • Submitted written issues and concerns. • Agendas of meetings • Outcomes of the stakeholder meetings as shown in Annexure 11.1-2 (Outcomes of Stakeholders Meetings). The minutes of the meeting with Ward Councillor (Annexure 11.1-2a) and school principal (Annexure 11.1-2b). • Site Notices (English, isiZulu and Setswana translation) as shown in Annexure 11.2-1. • Background Information Document as shown in Annexure 11.3-1.

Activity/Task	Objectives	Execution Process	Deliverable
	<ul style="list-style-type: none"> To ensure incorporation of issues in the draft and final BAR and EMPr; To facilitate compilation of Comments and Response Report. 	<ul style="list-style-type: none"> The meeting organisation entailed telephonic communication to organise meetings, sending emails to confirm the dates and confirmation of meetings. The ward councillors were preliminary notified about the project via telephonic contact and subsequent emails and were engaged as well during the distribution of the BID and Site notices. 	
3. Notification of stakeholders (adverts and site notices)	<ul style="list-style-type: none"> To ensure that stakeholders are notified about the project and as such are given an opportunity to provide comments and suggested solutions for some of the identified issues. To ensure that the BID and BAR and EMPr are reviewed by the stakeholders 	<p>The advert proof sheet was received on 15 Nov 2018 and the final advert was published in the Witbank News on the 16 November 2018.</p> <p>A 610 mm x 420 mm main Site Notice (vinyl print applied to an ABS Board) and A3 sized site notices were printed, laminated and placed on site on the 15 Nov 2018. Site notices were strategically placed on communal notice boards, on the perimeter fence of the site office for the mobile clinic and two Zola Mini markets on the 15 Nov 2018. Additional site notices were</p>	<ul style="list-style-type: none"> Proof of advert (Annexure 11.5-1). Proof of site notices (Annexure 11.5-2). Reply slip (English) (Annexure 11.4-3). Site Notice distribution record (Annexure 11.4-4) Notification email to authorities and IAPs (Annexure 11.4-5) Notification Letter about the BID and advert to

Activity/Task	Objectives	Execution Process	Deliverable
		<p>placed at the Arbor Primary School notice board, entrance gate and on the perimeter fence and communal notice board on the 29 Nov 2018. Photos and site coordinates were taken. The team discovered that the originally placed site notices were removed on the 29 Nov 2018 and replacement site notices were placed. Photos and site coordinates of the replacements were taken. At the Stop sign at the T-Junction of R960 and R555 roads, the Site notice placed on the 15 November 2018 was removed. No sign of the poles of the sign were observed.</p> <p>The 610 mm x 420 mm Site Notice placed at the centre of the site next to the Station Building was also removed, no poles or the sign were observed in surrounding areas.</p> <p>Photographs were taken of where the Site Notice was placed on the 15th November 2019 and also at the same spot on the 29 November 2018 to illustrate the removed Site Notice (as at 29 November 2018). The date and reason for the removal of the Site notices cannot be motivated.</p> <p>Copies of the BID and advert were sent to authorities on 21 November</p>	<p>authorities) (Annexure 11.4-6).</p> <ul style="list-style-type: none"> • Site Notice to IAPs (English, isiZulu and Setswana) • IAP Site notice distribution register (Annexure 10.4-7) • Comments received (Annexure 11.4-8).

Activity/Task	Objectives	Execution Process	Deliverable
		<p>2018, via an email web link. The email was structured as follows:</p> <ol style="list-style-type: none"> 1. Notification Letter. 2. Background Information Document (BID) 3. Site Notice 4. Reply Slip <p>An email notifying the stakeholders about the BID and advert was emailed to Ward Councillor and other ley stakeholders on 21 November 2018.</p> <p>An IAP distribution register was signed by the households and community members engaged and provided with the leaflets. The IAP distribution register will form part of the Issues and Response report and attached as an Annexure in the application form including the draft and final BAR to be submitted to the Competent Authority.</p> <p>The comments that will be received either, faxed or emailed to the EAP will be incorporated into the draft BA report that will be provided to stakeholders for review.</p>	

11.1.4 Identification of Interested and Affected Parties (IAPs)

The key stakeholders and Interested and Affected parties (IAPs) were identified through previous engagements with key stakeholders and through Windeed Map Search. Using the Farm name and Portion number, the site and adjacent areas were located on the map. The IAP register developed for the compilation and update of the EMPr for the already existing operations on site, was used as a baseline for the compilation of the IAP register for the proposed planned activities.

The IAP Register was updated where new and additional IAPs were identified as key to the process. The parties that are included in the IAP register include, property owners, relevant authorities (competent authorities) and businesses situated around the proposed site.

11.2 Consultation of stakeholders and Regulatory Authority

11.2.1 Regulatory Authority Consultation

A preliminary meeting was held with the Department of Water and Sanitation in relation to the application for a WUL for the increase in scope.

11.3 Consultation with key stakeholders

11.3.1 Key stakeholder Consultation

Preliminary consultative meetings were held with the Ward Councillor and Arbor Primary School. A meeting to introduce the project and request permission to engage with Arbor village community members was held with Ward Councillor Mr Oupa Masilela on the 15 November 2018 and the outcomes of the meeting are attached as Annexure 11.1-2(a). A meeting with the school Principal for Arbor Primary School was held on the 29 November 2018 and the outcomes of the meeting are attached as Annexure 11.1-2(b). The outcomes of the public meeting held on the 23 January 2019 are attached as Annexure 11.1-2(c). A meeting with Chief Mahlangu was held on the 23 January 2019 and the outcomes of the meeting are attached as Annexure 11.1-2 (d).

11.4 Notification of Key Stakeholders and Interested and Affected parties

11.4.1 Newspaper advert

The application for environmental authorisation for the Arbor Siding planned activities and the availability of the BID was advertised in the local newspaper, Witbank News, on the 16th November 2018 affording the public 30 days to register as IAPs and submit comments on the proposed development. The commenting period on the application and BID closed on the 14 January 2019. Copies of the newspaper adverts are attached as Annexure 11.5-1.

11.4.2 Site notification

Site notices of the application and availability of the BID were erected at the proposed site (Arbor railway Siding) and other relevant identified areas on the 15th and 29th November 2018 as shown in Annexure 11.5-2. With the assistance of the Ward Councillor, Arbor Forum members and Arbor Primary School principal, notices were placed in strategic areas (Annexure 11.5-2) within the 100 m radius of the site as follows:

- Site office for the mobile clinic (next to the Arbor Forum site office and Arbor Primary School)
- Communal notice board next to Zola Mini Market 1
- Zola Mini Market 2 (wall at the entrance)
- Corner of R960 by the T-junction of R960 and R555
- Next to Station building at Arbor Railway Siding
- Arbor Primary School notice board, entrance gate and perimeter fence
- Communal notice board close to the main access road to enter and exit Arbor village
- On the steel fence at the Arbor office

The location and site coordinates of the strategically placed site notices are provided in Table 11.4-1.

Table 11.4-1: Location of Site notices

Number	Location	Site Coordinates
1	Site office for mobile clinic. Next to the Arbor Primary School and the Arbor Forum office (red container).	-26.0479700, 28.8904300
2	Community notice board 1 next to the first Zola mini market.	-26.046991, 28.888580
3	On the wall by the entrance of the second Zola mini market.	-26.0469510, 28.8885440
4	The main (610 mm x 420 mm) Site Notice placed by the Station Building and along the main access road leading to Arbor community on 15 Nov 2018. Replacements site notice placed on 29 Nov 2018.	-26.0404490, 28.8826050
5	An A3 sized English site notice close to the road at the stop on R960 before the T-junction of R960 and R555.	-26.0390170, 28.8836920
6	At Arbor Primary School notice board.	
7	Arbor Primary School entrance gate	-26.0474260, 28.8892970
8	Arbor Primary School perimeter fence	-26.047438, 28.889772
9	Replacement site notice at the second Zola Mini market wall by the entrance (place on 29 Nov 2018).	-26.0469510, 28.8885440
10	Communal notice board close to the main access road to enter and exit Arbor village.	-26.043831, 28.881116
11	On the steel fence at the Arbor office	-26.0387780, 28.8806360

11.4.3 Notification of key stakeholders and Arbor village community members

Key stakeholders including key state departments and commenting authorities were notified through the distribution of notification letter, BID and site notices through email (Annexure 11.4-5 and Annexure 11.4-6) and the community members within Arbor village were notified by distributing site notification

leaflets (Annexure 11.2-1) and signing to acknowledge receipt as shown in the site notice distribution register (Annexure 11.4-7).

11.4.4 Comments and Response Report

Some of the key issues identified during the stakeholder engagement are outlined in Table 11.4-2a and Table 11.4-2b. All comments received from the preliminary consultation with the stakeholders are captured and presented in the draft, updated and final BAR and attached as Annexure 11.4-8, further comments on the updated BAR will be incorporated during the later phases of the report updating process. All received comments from the Public Participation Process will be consolidated into a Comments and Response Report and attached as an Appendix in the final BAR.

Table 11.4-2a: Preliminary Summary of key issues identified and concerns raised

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
Meeting with Adi Environmental CC – EAPs for the proposed development of Arbor Village in Vlakvarkfontein 213 IR – 7th November 2018			
Arbor Siding: Risks for Arbor Siding in terms of proposed project: What risks were identified in terms of the development being located adjacent to the siding and will the development and siding be able to co-exist?	Adi Environmental cc	The further away the development, the fewer risks for Arbor Siding. The Arbor community identified dust and noise as issues of concern. The development and siding can co-exist if management measures are implemented to reduce potential impacts.	Section 12 Table 12.5-2. Minutes of the meeting attached as Annexure 6.1-1 and comments attached as Annexure 6.1-2.
Dust	Gijima team	The trucks from Vlakvarkfontein Colliery and Wescoal are mainly responsible for the dust. The siding itself does not create a lot of dust. It is thus an indirect issue affecting their operations and monitoring results. There is a possibility that coal could be obtained from Vlakvarkfontein Colliery. This would reduce the number of trucks on the road as the trucks will only travel from the mine to the siding resulting in a shorter haul. This would have a positive impact in terms of dust and traffic Dust suppression measures are in place. An ambient air quality study was done, focusing on the operational activities of the siding.	Section 12 Table 12.5-2; Impact 1.2 on Air Pollution and Table 12.5-3
Dust: The trucks from Vlakvarkfontein Colliery and Wescoal are mainly responsible for the dust. The siding itself does not create a lot of dust. It is thus an indirect issue affecting their operations and monitoring results. Suggested that the mines spray chemical solutions (dust suppressants) on	Gijima team	Adi Environmental cc Noted. Requested that monitoring results (e.g. air quality) be made available. To be investigated as part of the EIA phase.	Section 12 Table 12.5-2 and 12.5-3

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
<p>the road entering and exiting the railway crossing as part of their dust suppression measures. An air quality study (including modelling) should be considered for the proposed development taking into account dust from the gravel road and siding.</p>			
<p>Noise impact (trains): The trains travelling past the site are an existing source of noise. The railway line has been there for many years. This noise source cannot be stopped – trains are running 24/7.</p>	<p>Gijima team</p>	<p>Adi Environmental cc Noted. The proposed development is not a greenfields project and existing activities must therefore be taken into account.</p>	<p>Section 12 Table 12.5-2 and 12.5-3</p>
<p>Waste Waste licence application: Will a waste licence application be submitted with the EIA application? Location of waste collection area: Who drafted the layout plan and was there any particular reason why the waste collection area was placed in the centre of the site?</p>	<p>Gijima team</p>	<p>A waste licence application will be submitted as part of the process, depending on the waste management measures to be implemented at the village.</p> <p>The town planners, Urban Dynamics, compiled the layout plan. The waste collection area (transfer station) was placed in the centre of the site at an old borrow pit. The location of the waste transfer station is still being discussed with the community. The intention is to place skips in the borrow pit, into which the community can dump their waste.</p> <p>The skips will then be removed by the Victor Khanye Local Municipality and emptied at their waste disposal site.</p>	<p>Section 12 Table 12.5-2 and 12.5-3</p>
<p>Access Road (railway crossing; gravel road to Arbor Village and access from the R555)</p>	<p>Adi Environmental cc</p>	<p>Gijima: The railway crossing is located on Transnet property, outside of the lease area, and is</p>	<p>Section 12 Table 12.5-2 and 12.5-3</p>

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
		<p>thus not manned by Gijima. Wescoal installed the guardhouse and employs people from the community to man the crossing. However, the people are not properly trained. This has already led to several incidents. It is very risky for the community to use this</p> <p>crossing. An alternative access road should be used. The crossing on the eastern side near the Eskom substation is safer and preferable. The existing access road to Arbor Village extends through the Arbor</p> <p>Siding lease area. The existing gravel road is not mentioned in our lease agreement with Transnet. It is an unofficial road with no right-of-way servitude registered. The layout plan drafted for the proposed development did not take this into account</p> <p>Adi Environmental cc</p> <p>Noted.</p> <p>Information forwarded to the town planners (Urban Dynamics) and the civil engineer (BTW & Associates).</p> <p>To be addressed as part of the EIA phase and feedback will be provided in the EIA Report.</p>	
<p>A layout plan was drafted for the expansion of the siding in which the existing gravel road was diverted around the siding. Meetings were held with Truter Boerdery to obtain permission for this</p>	<p>Gijima team</p>	<p>Noted. Information forwarded to the town planner (Urban Dynamics).</p> <p>To be addressed as part of the EIA phase and feedback will be provided in the EIA</p>	<p>Section 7.1-1. Minutes of meeting attached as Annexure 7.1-1.</p>

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
<p>diversion. The town planner (Urban Dynamics) must be made aware of the intended road diversion and indicate it as such on the layout plan. A copy of the layout plan drafted for the siding will be forwarded to Adi Environmental.</p>		<p>Report. A copy of the layout plan for the siding was received and forwarded to the town planners (Urban Dynamics). To be addressed as part of the EIA phase and feedback will be provided in the EIA Report.</p>	
<p>Access from the R555 to the village is a risk since the access road is located near a dangerous curve in the R555. In addition, trucks tend to speed along this road.</p> <p>Recommended that speed humps be installed to force trucks to reduce speed.</p>	<p>Gijima team</p>	<p>Access from the R555 to the village is a risk since the access road is located near a dangerous curve in the R555. In addition, trucks tend to speed along this road.</p> <p>Recommended that speed humps be installed to force trucks to reduce speed.</p>	<p>Section 12 Table 12.5-2 and 12.5-3</p>
<p>Meeting with Ward Councillor – 15 November 2018</p>			
<ul style="list-style-type: none"> • Lack of consultation and follow up on request for a meeting from the applicant • Lack of communication in relation to the clearing done on site • Dust generated by the operations on site. • Commendation of the siding for providing employment opportunities to the Arbor community members and for uplifting the community. <p>Commented that the planned activities present positive opportunities for additional jobs and empowerment for the community.</p>	<p>Ward Councillor Masilela</p>	<p>The concerns of the Ward Councillor are noted and they will be incorporated into the Comments and Response register and report. The concerns raised will also be addressed in the BA report and EMPr.</p>	<ul style="list-style-type: none"> • Minutes of the meeting (Annexure 11.1-2(a)) and IAP Site notice distribution register (Annexure 11.4-7) • Section 12 and Table 12.5-2 and 12.5-3
<p>Meeting with Arbor Primary School Principal – 29 November 2018</p>			
<ul style="list-style-type: none"> • Dust generated by the operations on site. • Safety issue at the railway crossing 	<p>School Principal</p>	<p>The concerns raised during the meeting with Arbor Primary School principal held on the 29 Nov 2018 are noted. The comments will</p>	<p>Section 12 Table 12.5-2 and 12.5-3</p>

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
		be included in the Comments Register, Comments and Response report and addressed in the draft Basic Assessment report.	
Distribution of site notice leaflets and engagement with Arbor community members – Household visits			
<ul style="list-style-type: none"> • Dust from the site during the offloading and loading of coal especially during windy conditions. • • Safety issue of crossing the railway line Support for Nodite Cooperative in terms of training and development opportunities to grow the business and serve a broader number of customers and businesses in the area. Opportunities for provision of services for businesses such as Gijima can help them grow further as well 	Arbor Village community members	<p>Cooperative needs proper training and development opportunities to grow the business and serve a broader number of customers and businesses in the area. Opportunities for provision of services for businesses such as Gijima can help them grow further as well.</p> <p>Additional Site Notices (English and Setswana and Zulu translation) were placed on the notice board towards the entrance/ exit of the Arbor Village.</p> <p>An A3 size English Site Notice was placed at the spot where the 610 mm x 420 mm Site Notice was removed.</p> <p>The comments and concerns raised during the engagement with the community members are noted. The comments and concerns received will be included in the Comments Register, Comments and Response report and addressed in the draft Basic Assessment report.</p>	Section 12 Table 12.5-2 and 12.5-3
Meeting with Arbor Village Chief Simon Mahlangu – 22 February 2019			
Chief SM raised issues as follows: Site operations	Chief Simon Mahlangu	The issues raised are noted and will be addressed as part of the BAR process.	Section 12 Table 12.5-2 and 12.5-3

ISSUE/COMMENT	RAISED BY	RESPONSE	SECTION WITHIN BAR ADDRESSING ISSUE
<p>The planned extension on the Southern Side and The lack of stakeholder engagement. The structure of the community is no longer managed in isolation from each other but is consolidated into one which maximises representation for the greater good of the community. This means that when engaging, the Chief, Ward Councillor; Mr Oupa Masilela and the associated forums/associations need to be present</p> <p>The tombstones located close to the Transnet house.</p>		<p>A public meeting is scheduled for later in the afternoon of the 22 February 2019 to capture the community's issues of concern.</p> <p>The matter is noted and will be investigated as Gijima was not aware of this and that it would need urgent attention as it might have serious implications.</p> <p>A Heritage study has since been commissioned and the report shared with Chief Mahlangu on the 02 April 2019 and his response of no comments was received on the 05 April 2019.</p>	<p>The Heritage Specialist Study Report summary of the findings are outlined in Section 16.2.2 and the full Specialist Study is attached as Annexure 16.2-5.</p>

Table 11.4-2b: Summary of key issues identified and concerns raised to date

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
1. Environmental						
1.1	How does Gijima decide to involve us at Phase 2 of the development and not at Phase 1?	Ms Dudu Manyisa	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
2. Impact						
2.1	What about the tombstones located close to the Transnet house	Chief Simon Mahlangu	This issue has been addressed in the Heritage Study and will further include engagement with the South African Heritage Resource Agency (SAHRA).	During a Focus Group Meeting held on 23 January 2019.	Wed, 23 January 2019.	See Volume 3 of 3, Annexure 16.2-5 for the detailing Heritage Impact Assessment and its associated findings.
2.2	Stays very close to the Siding and his main concern is the dust, particularly coal dust. He is further concerned about the proximity of the planned activities to his residence, especially the additional trucks to be brought in will mean increase in dust and noise.	Ward Councillor Oupa Masilela	The comment will be addressed	During a Focus Group Meeting held on 15 November 2018.	Thurs, 15 Nov 2019.	See Volume 3 of 3, Annexure 16.2-9 and Table 12.5-2 (2.9 and 2.10 under the Construction Phase).
2.3	Will Gijima be bring in more trucks? As is, there are strongly failing at controlling traffic and accidents are high. In addition, some of the key aspects where they are failing us as a community includes dust suppression, employment of locals, local development, the tombstones	Mr Mandisa	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	See Table 12.5-2 (2.5 and 2,6 under the Construction Phase) (2.1 under the Operational Phase).

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	which are on site, the site clearance which they had no legal obligation to conduct; by this token Gijima does cannot manage their current operation therefore, no need for the extension.					
3. Consultation						
3.1	We have had consultation before, however, these EAP's fail us by not coming back and reporting on their deliverables. As such, this process is futile as we do not benefit anything but receive a lot of empty promises.	Mr Andries Nkosi	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
3.2	Concern with the lack of consultation from Gijima in relation to the commencement of activities on site. Councillor also indicated that from the previous Arbor meetings held, he was commissioned by the Arbor Forum to consult with Gijima on their behalf in order to understand what was happening on site, particularly with the clearing. He indicated that they are aware that there is no work that must commence on site without proper permission or authorisation, and clearing indicates the commencement of work on site.	Ward Councillor Oupa Masilela	The comment will be addressed in the BAR.	During a Focus Group Meeting held on 15 November 2018.	Thurs, 15 November 2019.	Section 11 of the report for the detailing public participation processes followed.
3.3	I stay on stand AB12, so I am a direct neighbour to the Arbor Railway Siding. I am highly disappointed in Gijima, moreso, I	Ms Poppy	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	am even more disappointed that there is no representative present today.		reached to leave the meeting until the expressed reoccurring issues are addressed.			participation processes followed.
3.4	In my opinion this meeting must end as Gijima is not present in this meeting. I know what will happen from here on, we as community members will strike, find police on site and then get wounded by the attack. Gijima preliminarily failed us from Phase 1 therefore, nothing at this point will help. We need Benny and Velile present for this meeting to reach its objective. Gijima handled this whole process wrong therefore, they need to come in and account to that.	Mr Steven Mokhonza	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
3.5	In a meeting held in August 2018, Velile himself stated that he had no obligation to engage with community members but with Transnet as the land belong to Transnet. My issue is that the dust and noise impact affect the Arbor Village community members and not Transnet. Velile from his comments seems like he does not care. Even with employment, he promised jobs but there and training and there are only six (6) locals that are employment by Gijima from Arbor and of the six (6) some are not original residents.	Mr Happy	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
3.6	Gijima has failed us and have a lot to say to express my dissatisfaction. Furthermore, I do not stand for us signing the register or leaving our contact details as we as the residents of Arbor Village will be left with Gijima and Myezo will not be present to answer our daily issues.	Ms Dudu Manyisa	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
3.7	Petitioned to not sign the register and not stay in the meeting until Gijima comes to answer their questions.	Mr Andries Nkosi	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
3.8	Gijima needs to come in and account for their actions.	Mr Mandisa	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	Section 11 of the report for the detailing public participation processes followed.
4. BID Comments						
4.1	Your e-mail (dated: 26 November 2018) and Background Information Document with regards to the proposed expansion of the Arbor Siding has reference. As previously indicated, AdiEnvironmental cc is currently busy with an Environmental Impact Assessment with regards	Riana J. van Rensburg – Adi Environmental	Thank you for your comments. We have noted them and they will be addressed in the basic assessment report. We will do follow-up with the stakeholders you mentioned a well. A meeting was also held with the Councillor.	26 November 2018	Tuesday, 11 December 2019.	Section 11 of the report for the detailing public participation processes followed.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	<p>to the establishment of the Arbor Rural Village to be located on a portion of Portion 5 of the farm Vlakvarkfontein 213 IR and a portion of the Remaining Extent of Van Dyksput 214 IR, Delmas. This project entails the formalization of the existing Arbor Village and the provision of new residential, business and community stands. The project applicant is Victor Khanye Local Municipality.</p> <p>Potential impacts (e.g. dust, noise, etc.) as a result of the coal loading and stockpiling activities at Arbor Siding on this residential area must be identified and mitigation measures proposed to reduce these impacts.</p> <p>We recommend that the Arbor Village leadership be consulted as part of your process, namely Councillor Oupa Masilela, Chief Simon Mahlangu, Arbor Forum, Arbor Steering Committee and Arbor Trading Association.</p> <p>Also take note of the following: From the figures provided it appears as if the proposed expansion project would extend onto the Remaining Extent of Van Dyksput 214 IR (registered to Truter Boerdery Trust) that forms part of the proposed rural village development. This potential impact would have to be</p>					

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	investigated as part of your Basic Assessment. Further comment to be provided upon review of the Draft Basic Assessment Report and Water Use Licence application.					
5. General						
5.1	Thanked Gijima for arranging the meeting as he has stayed in the Arbor Community for years, prior to the establishment of the Siding	Chief Simon Mahlangu	The comment was well received and noted.	During a Focus Group Meeting held on 23 January 2019.	Wed, 23 January 2019.	-
5.2	Tried several times after contacting Mr Benny with no success to request a meeting with Mr Velile Ramphele in order for him to understand the process of the activities undertaken on site particularly with the clearing done. Consultation and communication is key and as a business and provider of employment to the Arbor village community members there must be constant communication.	Ward Councillor Oupa Masilela	This will be curbed by engaging with the developer on the matter.	During a Focus Group Meeting held on 15 November 2018.	Thurs, 15 November 2019.	-
5.3	I stay on stand AB12, so I am a direct neighbour to the Arbor Railway Siding. I am highly disappointed in Gijima, moreso, I am even more disappointed that there is no representative present today.	Ms Poppy	All comments and questions were expressed then recorded to allow for an answer session, however a consensus was reached to leave the meeting until the expressed reoccurring issues are addressed.	During a Public Meeting held on 23 January 2019.	Wed, 23 January 2019.	-
6. Request and Registration						

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
6.1	Requested the existing Environmental Management Programme report (EMPr) for the Northern Side.	Riana J. van Rensburg	The request was attended to by sending an electronic copy of the existing EMPr.	Sent an email on 12 November 2018.	November 2018.	-
6.2	As bona fide residence of Arbor Farm, I hereby request to be registered as directly interested and affected person, for the above-mentioned licencing prospecting. I would highly appreciate if the communication of this fashion will meet your favourable consideration.	Thembinkosi Simon Skhosana	Thank you for your registration as an interested and affected party. You will receive further communication.	Sent an email on 01 December 2018.	Sat, 01 December 2018.	See Annexure 11.1-1 of the report for the detailing IAPr and Annexure 11.5-5 for the proof of correspondence sent out.
7. Draft BAR						
7.1	The clearance of vegetation on the Southern Siding was not identified as a listing activity. Since more than 1 ha of vegetation has been clearer, it is out opinion that Listing Activity 27 (Listing Notice 1) should also be included in the application.	Adie Erasmus	The current definition of "commence" in section 1 of NEMA states that "commence, when used in Chapter 5, means the start of any physical activity, including site preparation and any other activity on the site in furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity." "indigenous vegetation" refers to vegetation consisting of indigenous plant species occurring naturally in an area,	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	Confirmation of this requirement will be informed by the scheduled Site Visit for 27 November 2019, where the competent authority will prescribe the mandated requirement/s.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
			<p>regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years”</p> <p>We wish to indicate that: if the topsoil of the area that was cleared was lawfully disturbed in the previous 10 years, then listed activity 27 would not apply.</p> <p>There were previous disturbances on this site in the past 10 years (buildings as can also be viewed from historical data images). A road has previously been constructed to access the Arbor Community and berm wall form the road construction stockpiled adjacent to the road over a portion of the land in question. There was also rail maintenance works which necessitated.</p>			
7.2	<p>It is indicated in the DBAR that the proposed expansion would reduce traffic across the railway line by approximately 5000 trucks per month, since Vlakvarkfontein Colliery will offload on the southern side of the siding. Has this been discussed and agreed upon with Vlakvarkfontein Colliery.</p>	Adie Erasmus	<p>Gijima has engaged with Transnet and Eskom on the development of the Southern side, which will allow for coal to be delivered by rail to Eskom Power stations. Once Arbor is loading for Majuba, it then supports the Transnet and Eskom Road-to-Rail strategy, in particular coal form Vlakvarkfontein, and other</p>	<p>Sent an email with a response letter on 12 August 2019.</p>	<p>Thurs, 14 November 2019.</p>	-

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
			mines in the area. Mr Ramphele did have preliminary discussions with previous management at Vlakvarkfontein on various matters, of which loading at Arbor was also mentioned.			
7.3	It is mentioned that coal will be hauled from various mines in the area. Will trucks from these mines not have to cross the railway line to offload on the southern side? How many additional crossings are anticipated and what impact would this have on the railway crossing?	Adie Erasmus	Eskom will decide which mines will deliver to Arbor. Crossing of railway lines and the safety aspect is a Transnet Freight Rail responsibility. However, a maximum of 100 000t/m crossing the railway it averages on four trucks per hour on a 24-hour basis. Trucks entering Arbor facilities would be managed as part of the safety company procedures.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	
7.4	The potential impact of night-time noise on the residents of Arbor Village (e.g. disruption of sleep etc.) was not taken into account.	Adie Erasmus	A Noise Impact Assessment has been conducted and the report is presented in the updated BAR for public review.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Volume 3 of 3, Annexure 16.2-9 for the detailing Noise Impact Assessment.
7.5	A wetland study was conducted for the proposed Arbor Village development. According to the wetland Specialist (I. Venter of Kyllinga Consulting), a seep wetland extends into the eastern portion of the proposed Southern Siding. However, this wetland was not taken into consideration in the siding layout plans. It should be	Adie Erasmus	Although there are several data sets on the national archives indicating the extend of wetland systems, we deemed it necessary to verify the data set by field investigations as the systems might have changed or been impacted by other activities. A wetland assessment study was	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Volume 3 of 3, Annexure 16.2-8 for the detailing Wetland Delineation Assessment.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	<p>noted that the proposed storm water drain (to be located on the southern boundary of the siding) would extend through this seep wetland.</p>		<p>initiated in October 2019 to determine if there are any existing wetlands on site.</p> <p>Field investigations were conducted to assess and identify the wetland type, soil and vegetation in the vicinity of the study area. Preliminary results from the investigations identified a wetland system on the south eastern side of the proposed expansion area which is on the upstream side of the study area.</p> <p>The wetland assessment report is in the final stages. A decision was made to include the Section 21 (c) and (i) application as a full water use (worst case scenario). The Department of Water and Sanitation will make a decision if the activities imply a full water use authorisation or general authorisation. The findings of the wetland study will be shared with the Department for an informed decision.</p> <p>The civil engineering designs drafted for the siding extension confirm that dirty water will be collected by dirty water channels which drain</p>			

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
			gravitationally away from the identified wetland towards the proposed Pollution Control Dam (PCD), which will be at the lowest point of the study area. Since the identified wetland is upstream, no contamination is expected to be potentially contributed by the proposed extension.			
7.6	Was a Wetland Delineation study undertaken a part of the Biodiversity Plan?	Adie Erasmus	An updated Biodiversity study, inclusive of the indication of the transformed wetland is provided see Annexure 1 of this response.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Volume 3 of 3, Annexure 16.2-6 for the updated Biodiversity Management Plan.
7.7	The identified wetlands should be indicated on the siding layout plan and potential impacts assessed as part of this BAR.	Adie Erasmus	A wetland assessment study was initiated in October 2019 to determine if there are any existing wetlands on site and the layout plan will be incorporated into the updated BAR.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Volume 3 of 3, Annexure 16.2-8 for the detailing Wetland Delineation Assessment.
7.8	The siding is located within 500m regulated area (NFEPA wetlands/river) will Section 21 (c) ad (i) application be submitted?	Adie Erasmus	An application for Water Use Licence Application is underway.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	-
7.9	What measures will be in place to ensure that soil remediation will be done during Phase 2? In your opinion, the soil sealing should already be implemented during Phase 1 to ensure that no soil, surface water or groundwater	Adie Erasmus	During phase 1 there will be adherence to the hazardous waste management procedure, whereby Adequate measures must be in place to prevent accidental spillage, or leakage, and in the case of an incident,	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Volume 3 of 3, Annexure 16.2-4 for the detailing Soil Chemistry Report.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	<p>pollution takes place. This is especially important in view of the siding having a direct impact on a seep wetland located in the eastern portion of the siding.</p>		<p>adequate mitigation measures are in place to mitigate, and to prevent re-occurrence of the incident. Gijima also has a Procedure for Spillage Control, Containment and Clean-up for Gijima employees which will be applied during this development.</p> <p>All vehicles will have a drip tray to be used to contain the leak.</p> <p>Any spills left after the drip tray has been removed will be cleaned according to the approved procedure. The decontamination of any soils will be undertaken using an approved decontaminant. The spill kits will be kept on site and all users will be trained on the decontamination process.</p> <ul style="list-style-type: none"> • Hazardous waste skips/bins will be kept at designated areas for storage of contaminated soil which will be collected from site by an approved contractor. These containers will be closed with a lid or cover to prevent rain from entering the bins. 			

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
			<ul style="list-style-type: none"> All waste containers must be of sufficient strength and structural integrity to ensure that it is unlikely to burst or leak in its ordinary use. 			
7.10	Does the existing pollution control dam have sufficient capacity for the additional water from the Southern Siding? Dirty and clean water separation and stormwater management measures at the existing siding are thus already of concern.	Adie Erasmus	The current PCD cannot contain additional runoff from the expansion. The topography also does not allow for free drainage to the current location of the PCD. A second PCD is designed and is included in the Water Use Licence Application.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	
7.11	No further information regarding Phase 3, according to our information regarding Phase 3 extends onto the adjacent property owned by Truter Boerdery. Phase 3 may not be approved without the landowner's consent or before being properly assessed in the BAR.	Adie Erasmus	Land-owner consent for utilisation of this section of the development has been verbally obtained and a formal agreement will be provided. See Annexure 2 for the communication from Landowner; Truter.	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	See Annexure 11.1-2 for the communication from Landowner (Truter).
7.12	With reference to the public meeting held on 23 January 2019 – it is noted that the community walked out of the meeting since representatives of the applicant (Gijima) were not present, Will another public meeting be held to provide feedback to the	Adie Erasmus	During this EIA process, the prescriptions of GNR 326 EIA regulations, 41 were complied with. Details of all stakeholder engagements to date are provided in Section 11 of the updated BAR which as subjected to public review. The community was aware of the	Sent an email with a response letter on 12 August 2019.	Thurs, 14 November 2019.	

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
	community in terms of their issues raised?		process and had an opportunity to raise their environmental related issues and the issues they require to solved and discussed with Gijima management pertain to ongoing operational matters and will be addressed through another process by the applicant. Nevertheless, the issues pertaining to socio-economic aspects of employment of locals are addressed in the BAR.			
7.13	<p>Acknowledgment of the received response letter.</p> <p>It would be appreciated if you could also make the Updated Draft/Final Basic Assessment Report (including the noise and wetland studies) and Water Use Licence reports available to us for review once completed. We shall then provide further comment if necessary.</p>	Riana J. van Rensburg	The requested Updated BAR will be shared with all registered IAPs.	Sent an email detailing the request on 19 November 2019.	Wed, 27 November 2019	-
7.14	Employment of local people.	Chief Simon Mahlangu	As part of the commitments to local economic development (LED) objectives, Gijima will give preference to locals.	Sent an email with a response letter on 15 August 2019.	Tues, 19 November 2019.	See Section 5.8.
7.15	Owner to assist in community were the ned arises.	Chief Simon Mahlangu	The raised comments have been noted specifically for LED objectives. Gijima is already involved in various initiatives, such as groceries on a monthly basis for 4 families,	Sent an email with a response letter on 15 August 2019.	Tues, 19 November 2019.	See Section 5.8.

No.	Issue/Comment	Raised by	Response	When received	Response Date	Section addressed in BAR
			training and development, support for functions etc.			
7.16	Chieftancy should be given opportunity (business) to able to assist the community when need arises without asking for donations.	Chief Simon Mahlangu	As part of enterprise development objectives, Gijima has noted the raised comment.	Sent an email with a response letter on 15 August 2019.	Tues, 19 November 2019.	See Section 5.8.

11.4.5 Public Revision of the BAR

The registered IAPs were provided with an opportunity to review the draft BAR, currently the updated BAR and submit their comments through the completion of the reply slip. A period of 30 days will be given to IAPs to forward their comments and concerns.

11.4.6 Final Consultation BAR

The final BAR will be forwarded to the IAPs for their final comments which they will review and submit in writing their comments directly to the Competent Authority; DARDLEA.

12. POTENTIAL IMPACTS

The potential impacts have been preliminarily identified for each stage of the project, from construction, operational and decommissioning. The impact assessment undertaken is based on the identification of environmental activities/aspects, anticipated impacts and the impact rating. The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined Table 12.5-1 below. The potential impacts associated with the activities on site and their significance ranking are provided in Table 12.5-2.

The identified impacts are divided into Direct Impacts and Cumulative Impacts.

The proposed increased scope to the operations, also presents positive impacts, in the form of social and economic benefits for the communities surrounding the site. The site currently employs 30 locals and the proposed phased development introduces social benefits, which include job opportunities for about 25 extra local people. The economic benefits are also realized through the implementation of Transnet Road to Rail Strategy in transporting more coal directly to the power station, whilst reducing both costs and number of human fatalities on the road. The increased scope to the operation will transport an increased volume of coal material, which may lead to more stable electricity supply.

12.1 Construction Phase

12.1.1 Direct impacts

- Soil disturbance during site establishment for construction of new listed activities.
- Soil pollution due to leakages and spills of oil and diesel.
- Soil erosion due to the loss of soil during clearing, ripping, grading and from storm water runoff etc.
- Noise pollution due to vehicular movement and site workers on site during construction.
- Air quality due to dust generated by all movement of vehicles and personnel on site.
- Water quality due to reduced water quality from soil erosion and sedimentation.
- Potential road accidents.
- Mistrust due to the lack of communication channels.

12.1.2 Cumulative impacts

The potential cumulative indirect impacts include:

- Air Quality and deterioration of road infrastructure due to – Vehicular movement of other trucks outside the boundary of the site generate a lot of dust on the gravel road leading to the site. The increased truck traffic on R555 for haulage of coal has potential to increase dust in the air and impact on the air quality of the area.

12.2 Operational Phase

12.2.1 Direct Impacts

- Deterioration of air quality due to the generation of dust fall out during the loading and off-loading of coal.
- Surface water resources: Contamination of water due to coal spillage from haul trucks; Contamination of water of hydraulic fluid from machinery and trucks.
- Groundwater resources: Contamination of water due to coal stockpile seepage; Contamination of water from pollution control dam seepage.
- Impacts on health and safety personnel and potential road accidents.

12.2.2 Cumulative Impacts

The cumulative impacts include:

- Generation of dust from vehicular movement and air pollution from vehicular emissions.
- Dust emissions are likely to occur due to vehicular movement. The severity of this impact is anticipated to be medium, if mitigation measures such as dust suppression and adherence to speed limits are observed.

12.3 Decommissioning Phase

The direct impacts identified during the decommissioning due to the dismantling of operational structures and associated infrastructure are:

- Impacts on soil resources include loss of land capability, disturbance to soil structure from the ripping of the surface.
- Potential contamination of soil due to hydrocarbon spillages.
- Air pollution – generation of dust.
- Dust will be generated during the dismantling of structure and infrastructure

12.4 Rehabilitation Phase

The direct impacts include:

- After the dismantling of infrastructure, revegetation of the site will be undertaken. This impact is considered positive and its significance is medium, as it will result in the restoration of the site.
- Socio-economic – loss of income will impact on the social and economic status of the community especially Abor village.

12.4.1 Cumulative impacts

The cumulative impacts include:

- Job losses that add to the current high rate of unemployment in the country and produces non-productivity in the area resulting to Social Instability

12.5 The methodology used in determining and ranking potential impacts

The methodology used in the determining and ranking of potential impacts is outlined in Table 12.5-1 below

Table 12.5-1: Table for Impact Assessment Criteria

Weight	Hazard Effect or Severity		Scope/Extent	Duration			
6	Disastrous/can cause irreplaceable damage		Trans-boundary effects	Residual			
5	Catastrophic/major and cannot be mitigated		National/Severe environmental damage	Residual			
4	High/Critical/serious but can be mitigated		Regional effect	Decommissioning			
3	Medium/ slightly harmful /can be mitigated		Immediate surroundings / local/outside site/project area fencing	Life of operation			
2	Minimal/potentially harmful/can be mitigated		slight permit deviation/on-site	Short term/ construction (6 months-1yrs)			
1	Insignificant/non-harmful /can be reversed		Activity specific/No effect /Controlled	Immediate (0-6 months)			
Weight number	1		2	3	4	5	6
Frequency of impact	Highly unlikely		Rare	Low likelihood	Probable/ possible	Regular/ almost likely	

Weight	Hazard Effect or Severity		Scope/Extent	Duration			
6	Disastrous/can cause irreplaceable damage		Trans-boundary effects	Residual			
5	Catastrophic/major and cannot be mitigated		National/Severe environmental damage	Residual			
4	High/Critical/serious but can be mitigated		Regional effect	Decommissioning			
3	Medium/ slightly harmful /can be mitigated		Immediate surroundings / local/outside site/project area fencing	Life of operation			
2	Minimal/potentially harmful/can be mitigated		slight permit deviation/on-site	Short term/ construction (6 months-1yrs)			
1	Insignificant/non-harmful /can be reversed		Activity specific/No effect /Controlled	Immediate (0-6 months)			
	Probability of Impact		Conceivable but very unlikely	Only remotely possible (has happened somewhere)	Unusual but possible	Quite possible (50/50)/ Certain	Is the most likely and expected (has and foresee it happen again)
	Frequency of activity	Annually or less	6 monthly/ temporarily	Infrequent/monthly	Weekly/regularly / Life of operation	Daily/permanent	Residual

Activity: a distinct process or task undertaken by an organisation for which a responsibility can be assigned.

Environmental aspect: **an element of an organisation’s activities, products or services which can interact with the environment or cause an environmental impact.**

Environmental impacts: **consequences of these aspects on environmental resources or receptors.**

Receptors: **comprise, but are not limited to people or man-made structures.**

Resources: **include components of the biophysical environment.**

Frequency of activity: **refers to how often the proposed activity will take place.**

Frequency of impact: **refers to the frequency with which a stressor will impact on the receptor.**

Severity: **refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.**

Spatial scope: **refers to the geographical scale of the impact.**

Duration: **refers to the length of time over which the stressor will cause a change in the resource or receptor.**

		CONSEQUENCE (Severity + Spatial Scope + Duration)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LIKELIHOOD (Frequency of activity + Frequency of impact)	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	2	4	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	3	6	9	12	16	20	24	28	32	36	40	44	48	52	56	60
	4	8	12	16	20	25	30	35	40	45	50	55	60	65	70	75
	5	10	15	20	24	30	36	42	48	54	60	66	72	78	84	90
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160

Potential impact = Consequence * Likelihood

Degree to which the impact can be mitigated (e.g. 40 % reduction in oils spillage when the management measure is applied and 70% reduction in contamination of soils).

0-40%; 40%-70%; 80%-100%

The interpretation of the status of the impact

IMPACT STATUS	CRITERIA
Positive	The impact benefits the environment.
Negative	The impact results in a cost to the environment.
Neutral	The impact has no effect on the environment.

Once the significance of an impact has been determined, the CONFIDENCE in the assessment of the significance rating is ascertained using the rating systems outlined in below.

Definition of Confidence Ratings

CONFIDENCE RATINGS*	CRITERIA
High	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact. Greater than 70% sure of impact prediction.
Medium	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact. Between 35% and 70% sure of impact prediction.
Low	Limited useful information on and understanding of the environmental factors potentially influencing this impact. Less than 35% sure of impact prediction.

The level of confidence in the prediction is based on specialist knowledge of that particular field and the reliability of data used to make the prediction. The degree to which the impact can be reversed is estimated using the rating system outlined in below.

Definition of Reversibility Ratings

REVERSIBILITY RATINGS	CRITERIA
Irreversible	Where the impact is permanent.
Partially Reversible	Where the impact can be partially reversed.
Fully Reversible	Where the impact can be completely reversed.

The degree to which there will be a loss of resources, table below refers to the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable.

Definition of Loss of Resources

LOSS OF RESOURCES	CRITERIA
Low	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
Medium	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
High	Where the activity results in an irreplaceable loss of a resource.

Lastly, the degree to which the impact can be mitigated or enhanced is described below

Degree to which impact can be mitigated

DEGREE TO WHICH IMPACT CAN BE MITIGATED	CRITERIA
None	No change in impact after mitigation.
Very Low	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
Low	Where the significance rating drops by one level, after mitigation.
Medium	Where the significance rating drops by two to three levels, after mitigation.
High	Where the significance rating drops by more than three levels, after mitigation.

Table 12.5-2: Potential impacts associated with the activities on site

Activity / Aspect	Potential Impact	Project Phase	Type of Impact	Impact Rating			
PHASE: PRE-CONSTRUCTION (PLANNING AND DESIGN)							
Availability of Permits and legal authorisations that are in order	Potential Illegal operation of the site should the required permits not be available	<ul style="list-style-type: none"> • Planning & Design • Construction • Operational • Decommissioning 	Direct	Severity	Spatial Scope	Duration	Consequence (sub-total)
				Serious (3) (PM-2)	National (5) (PM- 1)	Residual (1) (PM-2)	8 (PM-5)
				Frequency of impact	Probable 3 PM (2)	PROBABILITY 6 (PM-4)	
				Frequency of activity	Infrequent 3 PM (2)		
				SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)	
				Medium (48)		Low (20)	
				Impact status		Negative	
				Confidence rating		Medium	
				Reversibility		Partially reversible	
				Loss of resources		Medium	
Site establishment and assembling of temporary structures <ul style="list-style-type: none"> • Clearance of vegetation • Demarcation of operational zones • Site clearance for stockpiling and loading areas. 	1.1 Impacts on soil resources 1.1.1 Potential for soil erosion 1.1.2 Potential for soil pollution due to oil and chemical spillages; temporal ablation facilities. 1.1.3 Disturbance of topsoil and vegetation 1.1.4 Potential for soil compaction 1.1.5 Loss of vegetation cover	Pre-construction	Direct/ Cumulative	The impact on topsoil removal will be low as the site has already been disturbed and is highly transformed. It is further recommended that all machinery to be used should be serviced and inspected daily before and after use Installation of storm water management system to reduce the risk of flooding, a silt trap to be installed with the pollution control dam to be constructed.			
				Severity	Spatial Scope	Duration	Consequence (sub-total)
				Medium(3) (PM-2)	On-site (2) (PM- 1)	Immediate (1) (PM-2)	6 (PM-5)
				Frequency of impact	Probable 3 PM (2)	PROBABILITY 6 (PM-4)	
				Frequency of activity	Infrequent 3 PM (2)		
				SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)	
				Medium (36)		Low (20)	
				Impact status		Negative	
				Confidence rating		Medium	
				Reversibility		Partially reversible	

Activity / Aspect	Potential Impact	Project Phase	Type of Impact	Impact Rating			
				Loss of resources	Medium		
				Degree to which the impact can be mitigated	High		
1.2 Air pollution 1.2.1 Generation of dust from vehicular movement during site establishment	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct/ Cumulative	Generation of dust during the site establishment, construction , operational and decommissioning phases of the project. Implementation of mitigation measures such as dust suppression will reduce the significance of the impact to low.				
				Severity	Spatial Scope	Duration	Consequence (sub-total)
				Medium(3) (PM-2)	On-site (2) (PM- 1)	Construction (2) (PM-2)	7 (PM-5)
				Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)	
				Frequency of activity	Daily 5 PM (2)		
				SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)	
				Medium (35)		Low (20)	
				Impact status		Negative	
				Confidence rating		High	
				Reversibility		Partially reversible	
				Loss of resources		Medium	
				Degree to which the impact can be mitigated		High	
1.3 Impacts on faunal species 1.3.1 Impacts on faunal habitat 1.3.2 Impacts on faunal diversity		Direct	Impacts on faunal species are anticipated to be low due to the existence of previous rail siding infrastructure therefore limiting the occurrence of faunal species as the area is already disturbed. The operational site is highly transformed and with exception of Eucalyptus species randomly occurring on the boundaries of the site and serve as screening method, the site is unable to carry and sustain any flora species as a habitat due to coal dust footprint.				
				Severity	Spatial Scope	Duration	Consequence (sub-total)
				Medium(3) (PM-1)	Immediate surroundings (3) (PM- 1)	Life of operation(3) (PM-2)	9 (PM-4)
				Frequency of impact	Probable 3 PM (2)	PROBABILITY 5 (PM-4)	

Activity / Aspect	Potential Impact	Project Phase	Type of Impact	Impact Rating																																												
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1.4 Impacts on flora species 1.4.1 Loss of vegetation cover 1.4.2 Loss of flora species diversity	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct/ Cumulative	Loss of vegetation cover and flora species diversity could occur during the site clearance, however, it should be noted that the proposed development site is an existing rail siding therefore clearance of vegetation cover and other associated impacts such as loss of species diversity will be low. The operational site is highly transformed and unable to carry and sustain any flora species as a habitat due to coal dust footprint.	<table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Minimal (2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life operation(2) (PM-2)</td> <td>6 (PM-4)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 6 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Infrequent 3 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td>SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="3">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td>Medium (36)</td> <td colspan="3">Low (20)</td> </tr> <tr> <td>Impact status</td> <td colspan="3">Negative</td> </tr> <tr> <td>Confidence rating</td> <td colspan="3">Medium</td> </tr> <tr> <td>Reversibility</td> <td colspan="3">Partially reversible</td> </tr> <tr> <td>Loss of resources</td> <td colspan="3">Medium</td> </tr> <tr> <td>Degree to which the impact can be mitigated</td> <td colspan="3">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Minimal (2) (PM-1)	On-site (2) (PM- 1)	Life operation(2) (PM-2)	6 (PM-4)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 6 (PM-4)		Frequency of activity	Infrequent 3 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)	SIGNIFICANCE OF IMPACT (post-mitigation)			Medium (36)	Low (20)			Impact status	Negative			Confidence rating	Medium			Reversibility	Partially reversible			Loss of resources	Medium			Degree to which the impact can be mitigated	High		
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1.5 Surface water resources 1.5.1 Deterioration of water quality		Direct	Based on the South African Water Quality Guidelines, developed by the Department of Water Affairs and Forestry (DWAF) (now known as Department of Water and Sanitation), the water quality at the siding has no negative potential impacts for all uses as it falls within the set standards. Water for domestic use at the siding is supplied by Eskom and the analyses results show good water quality.																																													

Activity / Aspect	Potential Impact	Project Phase	Type of Impact	Impact Rating																																												
	1.5.2 Potential for sedimentation of surface water resources			<p>Contamination of surface water resources, such as the wetland in the close vicinity outside the boundaries of the siding, could result from the uncontrolled storm water drainage system might find its way to surface water resources leading to deterioration of water quality.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-2)</td> <td>Local (3) (PM- 3)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-7)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (3)</td> <td colspan="2">PROBABILITY 9 (PM-5)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (45)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">High</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">Medium</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-2)	Local (3) (PM- 3)	Life of operation (3) (PM-2)	9 (PM-7)	Frequency of impact	Probable 4 PM (3)	PROBABILITY 9 (PM-5)		Frequency of activity	Daily 5 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (45)		Low (20)		Impact status		Negative		Confidence rating		High		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		Medium	
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	1.6 Potential for wetland destruction or degrading.		Direct	<p>Siltation of wetland system would alter geomorphic functioning, the movement of water through the system (hydrological functioning). Additionally, hardened surfaces and bare areas are likely to increase surface run-off velocities and peak flows received by wetlands unless mitigated.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-2)</td> <td>Local (3) (PM- 3)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-7)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (3)</td> <td colspan="2">PROBABILITY 9 (PM-6)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (3)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (54)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">High</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">Medium</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-2)	Local (3) (PM- 3)	Life of operation (3) (PM-2)	9 (PM-7)	Frequency of impact	Probable 4 PM (3)	PROBABILITY 9 (PM-6)		Frequency of activity	Daily 5 PM (3)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (54)		Low (20)		Impact status		Negative		Confidence rating		High		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		Medium	
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Construction of new evaporation dams or Alternative: To use the existing channels to divert dirty water from the Southern Side the Northern side t link up to Pollution Control Dam through a network of channels under the railway.	2.1 Groundwater resources 2.1.1 Contamination of groundwater resources from oil and/or chemical oil spillages	Construction Operational Decommissioning	Direct/Cumulative	<p>There is potential for ground water contamination from chemical and/or oil spillage resulting in seepage during the construction phase of the project. It is however anticipated that this impact will be low, after implementation of mitigation measures.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-1)</td> <td>Local (3) (PM- 2)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY 9 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">High (81)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">• High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-1)	Local (3) (PM- 2)	Life of operation (3) (PM-2)	9 (PM-5)	Frequency of impact	Probable 4 PM (2)	PROBABILITY 9 (PM-4)		Frequency of activity	Daily 5 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		High (81)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		• High	
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Construction/Upgrade of the existing station building into office block and ablution facility.	2.2 Ablution facilities Contamination of surface and ground water resources	Construction	Direct	<p>There is potential for ground water contamination from chemical and/or oil spillage resulting in seepage during the construction phase of the project. It is however anticipated that this impact will be low, after implementation of mitigation measures.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-1)</td> <td>Local (3) (PM- 2)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY 9 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">High (81)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-1)	Local (3) (PM- 2)	Life of operation (3) (PM-2)	9 (PM-5)	Frequency of impact	Probable 4 PM (2)	PROBABILITY 9 (PM-4)		Frequency of activity	Daily 5 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		High (81)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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	2.3 Heritage and archaeological resources Impacts on heritage and archaeological resources during site clearing and establishment	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct	<p>There is potential for the discovery of heritage resources such as graves and/ or archaeological artefacts during the construction phase of the project due to the diggings and establishment of structures and infrastructures (Loading and stockpile areas), however as the site is an old established site with some existing infrastructure such as the station building the significance is considered to be low. It should however be noted that contractors and personnel should be alerted on the probability of chance findings of archaeological artefacts throughout the project life cycle.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium(2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life of operation (2) (PM-2)</td> <td>6 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (48)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Irreversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium(2) (PM-1)	On-site (2) (PM- 1)	Life of operation (2) (PM-2)	6 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (48)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Irreversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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Remove the entire existing concrete drainage infrastructure. Remove the building rubble from the site. Remove the OHTE from the platform line.	2.4 Waste management Land, soil and water pollution due to improper waste management	Pre-construction Construction Operational Decommissioning	Direct/ Cumulative	<p>There is potential for pollution of land, soil and water due to improper waste disposal such as littering, overflowing bins, and burning of waste on site. This impact is considered to be low after implementation of mitigation measures. The building rubble will be removed and disposed appropriately.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life of Operation (2) (PM-2)</td> <td>6 (PM-4)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 5</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (2) (PM-1)	On-site (2) (PM- 1)	Life of Operation (2) (PM-2)	6 (PM-4)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 5																																	
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				Frequency of activity	Permanent 5 PM (2)
				SIGNIFICANCE OF IMPACT (pre-mitigation)	SIGNIFICANCE OF IMPACT (post-mitigation)
				Medium (35)	Low (20)
				Impact status	Negative
				Confidence rating	Medium
				Reversibility	Partially reversible
				Loss of resources	Medium
				Degree to which the impact can be mitigated	High

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Transportation of equipment, machinery and personnel to the site	2.5 Increase in traffic flow	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct/ Cumulative	<p>During the construction phase of the project it is anticipated that the traffic volume generated by the movement of vehicles will have a low impact. This is mainly due to the fact that the site has already been established, therefore the required equipment and machinery will not be as much as those required for the establishment of a non-existent site. The vehicles already servicing the Northern side will be used to clear the site for the Southern side.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-1)</td> <td>Local (3) (PM- 2)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (2)</td> <td colspan="2">PROBABILITY 5 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 2 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (45)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-1)	Local (3) (PM- 2)	Life of operation (3) (PM-2)	9 (PM-5)	Frequency of impact	Probable 4 PM (2)	PROBABILITY 5 (PM-4)		Frequency of activity	Daily 2 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (45)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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	2.6 Generation of dust from vehicular movement 2.7 Air pollution from vehicular emissions	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct	<p>Dust emissions are likely to occur due to vehicular movement as the access roads are gravel. The severity of this impact is anticipated to be low, if mitigation measures such as dampening of the gravel road and adherence to speed limits are observed. Furthermore, the traffic volume is anticipated to be low during this phase of the project, in comparison with the Operational Phase. Air pollution from emanating from vehicular emissions is also anticipated to be low if the mitigation measures prescribed in this Environmental Management Plan are adhered to. The cumulative impacts of dust in the overall area within a 1 km radius of the Siding is expected as there are a number of trucks travelling on the gravel portion of R960 road towards R555 Ogies road.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Critical (4) (PM-1)</td> <td>Regional (4) (PM- 1)</td> <td>Life of operation (2) (PM-2)</td> <td>10 (PM-4)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Critical (4) (PM-1)	Regional (4) (PM- 1)	Life of operation (2) (PM-2)	10 (PM-4)	Frequency of impact	Probable 3 PM (2)	PROBABILITY																																	
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2.8 Impacts on health and safety	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct	<p>Due to the nature of the proposed project it is likely that heavy equipment and machinery will be utilized. The potential for accidents and injuries is therefore likely, however the severity of the impact is considered to be medium. The use of PPE and adherence to the site safety rules and guidelines will be ensured at all times.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-1)</td> <td>Local (3) (PM- 1)</td> <td>Life of operation (3) (PM-2)</td> <td>8 (PM-4)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">High (64)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Irreversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (2) (PM-1)	Local (3) (PM- 1)	Life of operation (3) (PM-2)	8 (PM-4)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		High (64)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Irreversible		Loss of resources		Medium	
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	2.9 Increase in ambient noise levels due to vehicular movement, usage of machinery, equipment and construction activities.	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct	<p>The construction of the structures will only cause a temporal increase in ambient noise levels during construction and decommissioning phase. The noise will only be limited to construction activities. The expected noise caused by these construction vehicles is however, foreseen to be low, as the expected noise will be from the truck engine and generators. The noise will only be experienced during the day and only during construction phase. Therefore, probability of excessive noise is low and will have low intensity. It is anticipated that the noise levels will increase during the Operational phase as the trucks offload to stockpile and the front-end caterpillars load coal into the train wagons.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life of operation (3) (PM-3)</td> <td>7 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (56)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (2) (PM-1)	On-site (2) (PM- 1)	Life of operation (3) (PM-3)	7 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (56)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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3. Energy	Potential energy wastage	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Indirect	<p>There might be a potential for energy wastage during the construction phase. The impact is anticipated to be low after implementation of mitigation measures.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>CONSEQUENCE (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Minimal (2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life of operation (3) (PM-3)</td> <td>7 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	CONSEQUENCE (sub-total)	Minimal (2) (PM-1)	On-site (2) (PM- 1)	Life of operation (3) (PM-3)	7 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)																									
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4. Socio-economic	Creation of employment opportunities, SMME development opportunities and capacity building	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning	Direct (Positive)	<p>There will be creation of job opportunities (25 new jobs) during the construction and operational phase of the project. However, due to the technical nature of the project and the existence of infrastructure on site, the job opportunities will be limited. The proposed development is an extension of an existing operations on the Northern Side.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>CONSEQUENCE (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-2)</td> <td>On-site (2) (PM- 2)</td> <td>Life of Operation (2) (PM-1)</td> <td>6 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Low 2 PM (4)</td> <td colspan="2">PROBABILITY 6 (PM-7)</td> </tr> <tr> <td>Frequency of activity</td> <td>Life of operation (4) PM (3)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (36)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	CONSEQUENCE (sub-total)	Medium (2) (PM-2)	On-site (2) (PM- 2)	Life of Operation (2) (PM-1)	6 (PM-5)	Frequency of impact	Low 2 PM (4)	PROBABILITY 6 (PM-7)		Frequency of activity	Life of operation (4) PM (3)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (36)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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Open Channels of Communication and Consultation with Stakeholders 1	Impact Potential arising to lack of transparency in the operation of the site.	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning	Direct	<p>Open and constant communication between the developer and the key stakeholders is important to enable all parties an opportunity to raise their views and concerns in relation to the proposed development. Key and registered IAPs are to be consulted to ensure their inputs, views and comments are considered and addressed. Consultation on potential practical mitigation measures for identified issues and concerns provide an opportunity for open and transparent communication channels. Consultation with existing key stakeholder forums and Associations will reduce the risk to medium or low.</p>																																												

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1. Operational Activities: <ul style="list-style-type: none"> Haulage of coal Offloading of coal at stockpile areas Loading of coal into rail wagons 	1.1 Impacts on soil resources 1.1.1 Potential for soil erosion 1.1.2 Potential for soil pollution due to oil and chemical spillages 1.1.3 Disturbance of topsoil and vegetation 1.1.4 Potential for soil compaction	Operational	Direct	<table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>CONSEQUENCE (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Serious (4) (PM-2)</td> <td>Regional (4) (PM- 2)</td> <td>Life of operation (3) (PM-1)</td> <td>11 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 4 PM (4)</td> <td colspan="2" rowspan="2">PROBABILITY 9 (PM-7)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (3)</td> </tr> <tr> <td colspan="2">High (99)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> </tbody> </table>				Severity	Spatial Scope	Duration	CONSEQUENCE (sub-total)	Serious (4) (PM-2)	Regional (4) (PM- 2)	Life of operation (3) (PM-1)	11 (PM-5)	Frequency of impact	Probable 4 PM (4)	PROBABILITY 9 (PM-7)		Frequency of activity	Daily 5 PM (3)	High (99)		Low (20)		Impact status		Negative																	
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1.2 Air pollution 1.2.1 Generation of dust fall out during the loading and offloading of coal	Operational	Directive/ Cumulative	Dust fall out during the loading and offloading of coal and emanating from coal stockpiles is anticipated during the operational phase of the project. This impact is considered to be low after the implementation of mitigation measures.	<table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Critical (3) (PM-2)</td> <td>National (5) (PM- 1)</td> <td>Operational (2) (PM-2)</td> <td>10 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> </tr> <tr> <td colspan="3">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td>SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="3">High 80</td> <td>(Low (18)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Low</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Critical (3) (PM-2)	National (5) (PM- 1)	Operational (2) (PM-2)	10 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)			SIGNIFICANCE OF IMPACT (post-mitigation)	High 80			(Low (18)	Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Low		Degree to which the impact can be mitigated		High	
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1.3 Surface water resources 1.3.1 Contamination of water due to coal spillage from haul trucks	Operational		Impacts emanating from the daily operational activities such as loading of coal, movement of trucks and machinery will result in spillage and seepage into water resources. These impacts are however considered to be low after the implementation of mitigation measures.	<table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-1)</td> <td>Local (3) (PM- 3)</td> <td>Life of operation (3) (PM-2)</td> <td>8 (PM-6)</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (2) (PM-1)	Local (3) (PM- 3)	Life of operation (3) (PM-2)	8 (PM-6)																																		
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	1.3.2 Contamination of water spillage of hydraulic fluid from machine and trucks 1.3.3 Contamination of water due to incorrect disposal of industrial and domestic waste 1.3.4 Contamination of water due to incorrect handling of waste from ablution facilities			<table border="1"> <tr> <td>Frequency of impact</td> <td>Probable 2 PM (1)</td> <td rowspan="2">PROBABILITY Certain 4 (PM-2)</td> </tr> <tr> <td>Frequency of activity</td> <td>Residual 2 PM (1)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td>SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (32)</td> <td>Low (12)</td> </tr> <tr> <td colspan="2">Impact status</td> <td>Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td>High</td> </tr> <tr> <td colspan="2">Reversibility</td> <td>Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td>Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td>Medium</td> </tr> </table>	Frequency of impact	Probable 2 PM (1)	PROBABILITY Certain 4 (PM-2)	Frequency of activity	Residual 2 PM (1)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)	Medium (32)		Low (12)	Impact status		Negative	Confidence rating		High	Reversibility		Partially reversible	Loss of resources		Medium	Degree to which the impact can be mitigated		Medium
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	1.4 Ground water resources 1.4.1 Contamination of water due to coal stockpile seepage 1.4.2 Contamination of water from pollution control dam seepage 1.4.3 Contamination of water spillage of hydraulic fluid from machine and trucks 1.4.4 Contamination of water due to incorrect disposal	Operational Decommissioning		Impacts emanating from the daily operational activities such as loading of coal, movement of trucks and machinery will result in seepage into groundwater resources. These impacts are however considered to be low after the implementation of mitigation measures, as the site is underlain by a minor aquifer class which does not have a high primary permeability, furthermore no evidence of either a perched and/or permanent groundwater level was observed on site. <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium(2) (PM-1)</td> <td>Local (3) (PM- 3)</td> <td>Life of operation (3) (PM-2)</td> <td>8 (PM-6)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 2 PM (1)</td> <td colspan="2">PROBABILITY Certain 4 (PM-2)</td> </tr> <tr> <td>Frequency of activity</td> <td>Residual 2 PM (1)</td> <td colspan="2"></td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium(2) (PM-1)	Local (3) (PM- 3)	Life of operation (3) (PM-2)	8 (PM-6)	Frequency of impact	Probable 2 PM (1)	PROBABILITY Certain 4 (PM-2)		Frequency of activity	Residual 2 PM (1)												
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	1.5 Waste Management 1.5.1 Contamination of soil resources due to oil and chemical spillages/leakages 1.5.2 Contamination of water resources due to infiltration of chemical and oil seepages 1.6.3 Land pollution due to littering	Operational		There is potential for land, soil and water pollution during the operational phase of the project due to the various operational activities that will be occurring e.g. movement of vehicles, storage and usage of chemical and hazardous substances. <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium(2) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Operational(2) (PM-2)</td> <td>6 (PM-4)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3)</td> <td colspan="2">PROBABILITY Certain 5 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Residual 2 PM (2)</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (35)</td> <td colspan="2">Low (16)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium(2) (PM-1)	On-site (2) (PM- 1)	Operational(2) (PM-2)	6 (PM-4)	Frequency of impact	Probable 3)	PROBABILITY Certain 5 (PM-4)		Frequency of activity	Residual 2 PM (2)			SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (35)		Low (16)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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1.6 Impacts on health and safety of personnel	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 		Direct	Due to the nature of the proposed project it is likely that heavy equipment and machinery will be utilised. The potential for accidents and injuries is therefore likely however the severity of the impact is considered to be low, after implementation of mitigation measures.																																												

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				Loss of resources		Medium	
				Degree to which the impact can be mitigated		High	
	1.7 Increase in ambient noise levels due to vehicular movement, usage of machinery, equipment and construction activities.	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning	Direct	Noise is expected to be produced during the operational phase of the project. The noise will mostly be experienced during the day and will emanate from vehicles, operation of machinery and equipment, loading of coal into train wagons as well as human interactions. The significance of the impact is anticipated to be low, after implementation of mitigation measures and residents in close proximity of the site will be informed of any activities that will cause excessive levels of noise before commencement(i.e. blasting).			
				Severity	Spatial Scope	Duration	Consequence (sub-total)
				Medium(2) (PM-1)	On-site (2) (PM- 1)	Life of operation (3) (PM-3)	7 (PM-5)
				Frequency of impact	Probable 3 PM (2)	PROBABILITY Certain 5 (PM-4)	
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1.8 Creation of employment opportunities, SMME development opportunities and capacity building	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct (Positive)	<p>There will be creation of job opportunities (25 new jobs) during the operational phase of the project. However, due to the technical nature of the project and the existence of infrastructure on site, the job opportunities will be limited.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>CONSEQUENCE (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (2) (PM-2)</td> <td>On-site (2) (PM- 2)</td> <td>Operational (2) (PM-1)</td> <td>6 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Low 2 PM (4)</td> <td colspan="2" rowspan="2">PROBABILITY Probable 4 (PM-7)</td> </tr> <tr> <td>Frequency of activity</td> <td>Temporarily 2 PM (3)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (24)</td> <td colspan="2">Medium (35)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Positive</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Fully reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Low</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	CONSEQUENCE (sub-total)	Medium (2) (PM-2)	On-site (2) (PM- 2)	Operational (2) (PM-1)	6 (PM-5)	Frequency of impact	Low 2 PM (4)	PROBABILITY Probable 4 (PM-7)		Frequency of activity	Temporarily 2 PM (3)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (24)		Medium (35)		Impact status		Positive		Confidence rating		Medium		Reversibility		Fully reversible		Loss of resources		Low		Degree to which the impact can be mitigated		High	
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	1.9 Potential energy wastage	<ul style="list-style-type: none"> Pre-construction Construction Operational Decommissioning 	Direct / Indirect	<p>There might be a potential for energy wastage during the operational phase. The impact is anticipated to be low after implementation of mitigation measures.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>CONSEQUENCE (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-1)</td> <td>On-site (2) (PM- 1)</td> <td>Life of operation (3) (PM-3)</td> <td>8 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY Probable 5 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Temporarily 2 PM (2)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">Medium (40)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Medium</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	CONSEQUENCE (sub-total)	Medium (3) (PM-1)	On-site (2) (PM- 1)	Life of operation (3) (PM-3)	8 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY Probable 5 (PM-4)		Frequency of activity	Temporarily 2 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		Medium (40)		Low (20)		Impact status		Negative		Confidence rating		Medium		Reversibility		Partially reversible		Loss of resources		Medium		Degree to which the impact can be mitigated		High	
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2. Movement of trucks, machinery and equipment	2.1 Increase in traffic flow	Operational	Direct /Indirect	<p>During the operational phase of the project it is anticipated that the traffic volume generated by the movement of vehicles will have a medium impact on traffic flow in the area.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium(2) (PM-1)</td> <td>Local (3) (PM- 3)</td> <td>Operational (2) (PM-2)</td> <td>7 (PM-6)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY Certain 5 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Residual 2 PM (2)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium(2) (PM-1)	Local (3) (PM- 3)	Operational (2) (PM-2)	7 (PM-6)	Frequency of impact	Probable 3 PM (2)	PROBABILITY Certain 5 (PM-4)		Frequency of activity	Residual 2 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)																									
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	2.2 Generation of dust from vehicular movement 2.3 Air pollution from vehicular emissions		Direct/ Cumulative	<p>Dust emissions are likely to occur due to vehicular movement as the access roads are gravel. The severity of this impact is anticipated to be low, if mitigation measures such as dampening of the gravel road and adherence to speed limits are observed.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> <tr> <td>Medium (3) (PM-2)</td> <td>Regional (3) (PM- 1)</td> <td>Life of operation (3) (PM-2)</td> <td>9 (PM-5)</td> </tr> <tr> <td>Frequency of impact</td> <td>Probable 3 PM (2)</td> <td colspan="2" rowspan="2">PROBABILITY 8 (PM-4)</td> </tr> <tr> <td>Frequency of activity</td> <td>Daily 5 PM (2)</td> </tr> <tr> <td colspan="2">SIGNIFICANCE OF IMPACT (pre-mitigation)</td> <td colspan="2">SIGNIFICANCE OF IMPACT (post-mitigation)</td> </tr> <tr> <td colspan="2">High (72)</td> <td colspan="2">Low (20)</td> </tr> <tr> <td colspan="2">Impact status</td> <td colspan="2">Negative</td> </tr> <tr> <td colspan="2">Confidence rating</td> <td colspan="2">High</td> </tr> <tr> <td colspan="2">Reversibility</td> <td colspan="2">Partially reversible</td> </tr> <tr> <td colspan="2">Loss of resources</td> <td colspan="2">Low</td> </tr> <tr> <td colspan="2">Degree to which the impact can be mitigated</td> <td colspan="2">High</td> </tr> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)	Medium (3) (PM-2)	Regional (3) (PM- 1)	Life of operation (3) (PM-2)	9 (PM-5)	Frequency of impact	Probable 3 PM (2)	PROBABILITY 8 (PM-4)		Frequency of activity	Daily 5 PM (2)	SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)		High (72)		Low (20)		Impact status		Negative		Confidence rating		High		Reversibility		Partially reversible		Loss of resources		Low		Degree to which the impact can be mitigated		High	
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2. Rehabilitation	Re-vegetation of the site	Decommissioning Rehabilitation	Direct/ Cumulative	<p>Subsequent to the dismantling of infrastructure, re-vegetation of the site will be undertaken. This impact is considered positive and its significance is medium, as it will result in the restoration of the site.</p> <table border="1"> <thead> <tr> <th>Severity</th> <th>Spatial Scope</th> <th>Duration</th> <th>Consequence (sub-total)</th> </tr> </thead> <tbody> </tbody> </table>	Severity	Spatial Scope	Duration	Consequence (sub-total)																																						
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Activity / Aspect	Potential Impact	Project Phase	Type of Impact	Impact Rating			
				Medium (2) (PM-3)	On-site (2) (PM- 2)	Decommissioning (2) (PM-1)	6 (PM-6)
				Frequency of impact	Low 1 PM (1)	PROBABILITY 3 (PM-3)	
				Frequency of activity	Temporal 2 PM (2)		
				SIGNIFICANCE OF IMPACT (pre-mitigation)		SIGNIFICANCE OF IMPACT (post-mitigation)	
				Medium (18)		Low (18)	
				Impact status		Positive	
				Confidence rating		Medium	
				Reversibility		Partially reversible	
				Loss of resources		Low	
				Degree to which the impact can be mitigated		High	

Table 12.5-3: Mitigation Measures for the Southern Side Activities [as compiled by Myezo Environmental Management Services (PTY) Ltd] with more focus on the Southern Side.

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
PHASE: PRE-CONSTRUCTION				
Proper demarcation of site boundary for the proposed increase in scope on site and the proposed Arbor village establishment.	Encroachment and overlap of boundaries for proposed activities and Arbor village	<ol style="list-style-type: none"> 1. The Transnet Land Surveyor Department, the landowners from Truter Boerdery must consult together with Arbor Siding management and Emalahleni Local Municipality to determine the exact boundaries for the Arbor Siding and the proposed Arbor village. 2. Land Surveyor documents from Transnet must be kept on site at all times by Arbor Siding. 	Pre-Construction	Managing Director/ Chief Operations Officer Contractor Engineer Transnet Truter Boerdery Emalahleni Local Municipality
<u>Construction Camp Set up</u> Provide with a layout of the site indicating the position of all of the following, as applicable: ablution facilities, storage areas, ready-mix areas, stockpile areas, waste disposal facilities, hazardous substances storage area, etc. prior to the site establishment, for acceptance.	<ul style="list-style-type: none"> • Soil erosion, • Soil pollution • Biodiversity loss • Water Quality • Groundwater quality • Air Quality • Noise pollution 	<ol style="list-style-type: none"> 3. All possible design scenarios with the least environmental impact to be considered. 4. Ensure that alignment is compatible with the natural contours. 5. Continue ensuring that built structures do not break the horizon. 6. Ensure finishes are carefully selected to match the surroundings, and free forms are where practicable. 7. Construction camp & ablution facilities will be out of the sensitive zone areas and proper CEMP (Construction Site Environmental Management Plans) will be implemented together with the EMP. 8. Disaster Management Plan and all Site Health and Safety Procedures to be implemented. 9. Dust suppression will be implemented within the site to minimise air quality and visibility impacts. 	Pre-Construction	Managing Director/ Chief Operations Officer Contractor Engineer Siding Supervisor
	Social disturbances	<ol style="list-style-type: none"> 10. Prior to establishing the construction camp, the contractor will produce a plan showing the positions of all structures, laydown yards and other infrastructure for approval by the 11. Managing Director and Engineer. 	Pre-Construction	Managing Director/COO Contractor Engineer

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		12. The area chosen for these purposes is the minimum reasonably required and which will involve the least disturbance of vegetation. 13. Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak is cleared around the perimeter of the camp and office sites. 14. Construction and maintenance activities closely of such a nature will be planned properly and monitored as not to disturb the livelihood of adjacent property owners. 15. A designated place for food preparation and eating will be established at the construction site. 16. Dry chemical toilets will be made available at a ratio of 1 toilet per 10 staff, within the campsite perimeter and will be cleaned and serviced as requested by the service provider. 17. Workers movements will be limited to the construction area only and will be enforced in terms of the contracts of appointments 18. Any complaints are addressed accordingly and record will be kept thereof. 19. The applicant will ensure that measures are in place to prevent /mitigate disruption of services as result of construction. 20. Residents will be notified 7 days in advance of disruptions to services.		
PHASE: CONSTRUCTION				
Construction aspects	<u>Construction Activities</u>	21. Construction methods are respectful of the environment - no unnecessary vegetation clearing, excavations or untidiness. 22. Littering on site and the surrounding areas is prohibited. Clearly marked litterbins are provided on site. The contractor's representative monitors the presence of litter on the work sites as well as the construction campsite. All bins are cleaned.	Construction	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>23. Waste is disposed, as soon as possible and not allowed to stand on to decay, resulting in bad odours and attracting vermin.</p> <p>24. Adequate sanitation and water supply are installed for the construction personnel (authorisation from DWAF may be required).</p> <p>25. All waste removed from site is disposed at municipal /permitted waste disposal site.</p> <p>26. The contractor ensures that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project.</p> <p>27. The contractor cleans up and restores all disturbed areas and implement rehabilitation measures where appropriate as elaborated below.</p> <p>28. The contractor ensures that the site is kept tidy at all times, that sufficient refuse bins are provided and that they are emptied regularly.</p> <p>29. Refuse or building rubble generated on the premises is deposited on adjacent properties, roads verges or open spaces. It is contained on site, then removed and disposed of at an approved dumping site at least every two weeks.</p> <p>30. Disturbed and open areas are rehabilitated and re-vegetated as soon as possible after construction.</p> <p>31. No unnecessary removal of indigenous vegetation are allowed, but should rather be incorporated into the landscaping design.</p> <p>32. The construction site is contained to prevent any visual intrusion and be kept in a clean and orderly state at all times.</p> <p>33. Retainment of as much of the existing vegetation as possible in an undisturbed state i.e. not part of the estate footprint.</p> <p>34. Identification of those operations and activities that are associated with the identified significant environmental impacts as outlined in the EMPr and development of aspect registers</p>		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		35. Planning of these activities, including maintenance, in order to ensure that they are carried out under specified conditions as stipulated in the procedure and existing EMP.		
Construction aspects	<u>Storage of material including Hazardous material</u>	36. Storage of materials (including hazardous materials) 37. Choose storage area location by considering prevailing winds, distances to water bodies, general onsite topography and water erosion potential of the soil. Impervious surfaces will be provided where necessary; 38. Designate, demarcate, fence off and secure all storage areas to minimize the risk of crime; storage areas should be safe from access by unauthorized persons; 39. Provide fire prevention facilities at all storage facilities. 40. Store all hazardous materials such as oils, paints, thinners, fuels, chemicals, etc. in properly constructed and impermeable bunded areas. Hazardous materials will not be allowed to contaminate the subsurface or enter into drainage systems. Siting of hazardous material storage areas will be approved by the Project Manager. 41. Implement and monitor adherence to <u>SHEQ Policy and Procedures</u>	Construction	Contractor Siding Supervisor
Safety of workers	<u>Health and Safety</u>	42. Procedures on site: 43. Management of Fire Extinguishing equipment 44. Contractor site audit Inspection Sheet 45. Emergency management plan 46. OHS Act 85 of 1993 (Section 37(2)) 47. Health and Safety Plan 48. Incident Reporting 49. Non-conformance procedures 50. Personal Protective clothing 51. SHEQ Agenda 52. SHEQ Induction Training 53. Management procedures and Inspection checklists	Contractor Siding Supervisor	Construction

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		54. Legislative appointments 55. Safe working procedures for Weighbridge, offloading and loading of Coal at Arbor 56. Safety Talks 57. Vehicle Management System 58. SHE Policy		
Effect on Water Quality				
<ul style="list-style-type: none"> • Construction of roads, • Services infrastructure, dwellings; • Construction camp • Materials Stockpiles • Maintenance of haul roads • Personnel discipline • Temporal Ablution facilities installation (Toilet facilities shall occur at a minimum ratio of 1 toilet per 20 workers (preferred 1:15). 	<p><u>Water Quality:</u> Sedimentation Pollution</p> <p><u>Groundwater Quality:</u> Pollution</p>	59. Proper management of construction activities to reduce erosion and increased silt load on water flowing over uncovered soil. 60. Topsoil will be susceptible to erosion; run-off of soil during rain events that may cause sedimentation, poor water quality, riparian vegetation disturbed 61. All water flow will be directed through controlled management into the existing drainage system. The contractor will ensure that no erosion and siltation of existing drainage system occurs, as a result of construction/development activities. 62. Toilets, permanent or portable/ temporary, shall be maintained in a hygienic state and serviced regularly. 63. Portable toilets should be serviced by a reputable contractor and the contents shall be removed to a licensed disposal facility. No spillage is to occur when portable toilets are cleaned or emptied.	Construction	Contract Siding Supervisor
<ul style="list-style-type: none"> • Impact on Wetland Potential for wetland destruction or degrading 	<p><u>Wetland Quality</u> Sedimentation/Siltation Pollution</p>	64. A phased planned approach must be taken when construction is initiated. Areas must only be stripped directly prior to construction and only expose soils to erosion for the minimum period necessary. Where possible, re-vegetate of areas. 65. An effective stormwater and clean and dirty water separation must be designed and approved by the Wetland Specialist as part of WULA. Erosion control and stormwater infrastructure must form the basis of the initial construction activities, prior to production related construction activities.		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		66. Wetland habitat must be clearly demarcated, and access strictly prohibited (fenced off). 67. Topsoil and subsoil must be stockpiled separately in low heaps. 68. Stockpile any topsoil or any overburden material outside the outer boundary of wetlands. 69. Erosion must not be allowed to develop on a large scale before effecting repairs. 70. Make use of existing roads and tracks where feasible rather than creating new routes through vegetated areas. 71. Vegetation and soil must be retained in position for as long as possible, and removed immediately ahead of construction/earthworks in that area (DWAF, 2005). 72. Runoff from roads must be managed to avoid erosion and pollution problems. 73. All areas susceptible to erosion must be protected and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. 74. Natural trees, shrubbery and grass species must be retained wherever possible. 75. Areas exposed to erosion due to construction should be vegetated with species naturally occurring in the area. 76. Surface water or storm water must not be allowed to concentrate, or flow down cut or fill slopes without erosion protection measures being put in place.		
Impact on Soil				
<ul style="list-style-type: none"> • Clearing of vegetation for construction • Stripping of topsoil • Levelling, grading and compaction • Material Stockpiling • Construction of roads services, 	<u>Soil:</u> Soil Erosion Loss of topsoil Disturbance to soil structure Soil Pollution from spills and leakages from the diesel storage tank during refuelling or	77. Appropriate soil erosion and control procedures are applied to all embankments that are disturbed and established. 78. Occurrence of erosion is monitored during operational phase and corrective measures taken if necessary. 79. Clearance activities will be phased to ensure that only a limited area is cleared. 80. Vegetation clearance will be kept to a minimum to ensure as much of the natural area as possible is maintained.	Construction	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<p>infrastructure, dwellings</p> <ul style="list-style-type: none"> • Construction of additional infrastructure • Construction of slurry dams • Fuelling of trucks - use of diesel storage tank in the Northern Side of site • Servicing and Maintenance of trucks (oil change, service checks etc.). • Remove the entire existing concrete drainage infrastructure. • Clearing of the concrete rubble and dispose appropriately • Removal of trees (Eucalyptus mature trees) 	<p>machinery maintenance servicing Soil loss</p> <p>Exposure of soil, increased erosion levels due to run-off of water. Little precipitation and evaporation, loss of habitat life, reduced water table levels</p>	<ol style="list-style-type: none"> 81. Topsoil is stockpiled in heaps not exceeding 2,0 m in height and be protected from erosion. 82. Re-usable subsoil stripped from construction sites is stockpiled separately and clearly identified as such. 83. Soil is not stockpiled on drainage lines or near watercourses. 84. The diesel storage facility will have impermeable and chemical resistant floors and maintained regularly. Ensure that the drainage and containment system capable of collecting and storing all runoff water arising from the storage facility in the event of a flood is constructed. The system will also under the heavy rainfall event, maintain a freeboard of half a meter. 85. Operation equipment will be inspected regularly and kept in good running order, and leaks repaired immediately. 86. Spillages of oil, grease and hydraulic fluids will be reported to the site manager, cleaned up using an oil spill kit by removing the soil and disposing such soil in a separate waste bin which will be labelled contaminated soil'. The drum will be taken to a soil farm for decontamination. 87. Contractors, staff and drivers will be trained on how to deal with spillages. 88. There will always be a soil decontaminant on site. 89. There will be incident registers stored on site during operation in phase. 90. Suitable personal protective equipment (PPE) and protective clothing will be provided as prescribed by the company's standard operating procedures. 91. Disturbance of large footprint areas will be avoided. 92. All cleared area will be rehabilitated and landscaped. 93. Any tree cutting will be done in line with municipal by-laws and a licence will be sought before cutting of any listed or indigenous trees on site. 94. Restrict operation activities to demarcated areas and consider all other areas as no-go areas to minimise disturbance or loss of undisturbed land. 		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
Impact on Storm Water Management				
<ul style="list-style-type: none"> Divert and extend the storm water drainage channel. Construct a berm wall on the station side of the channel with the excavated material. Backfill and compact the old channel where required. 	<u>StormWater Management:</u> Storm water control Soil Erosion Contamination of soil and surrounding area	95. Berms and storm water channels will be considered during the construction phase in order to divert clean runoff from the external catchment away from the disturbed areas.	Construction	Contractor Siding Supervisor
Impact on Storm Water Infrastructure				
Extend the existing storm water culvert for the full width of the loading area and connect it to the new storm water cut-off drain.	<u>Stormwater infrastructure:</u> Storm water control Soil Erosion Contamination of soil and surrounding area	96. Ensure the design and layout of the storm water infrastructure causes minimal environmental impact. 97. Ensure it is easy to maintain, repair and replace without negatively affecting the environment.	Construction	Contractor Siding Supervisor
Impact on Air Quality				
<ul style="list-style-type: none"> Dust from the clearing of vegetation for the construction camp establishment Dust generated from the removal of the building rubble Dust generated from the removal of mature trees. Dust generated from the Stockpiled coal without dust suppression treatment. 	<u>Air Quality:</u> Dust: Wind direction is from the west- northwest which is directly towards the position of the residential house in the vicinity of the site. The residential house next to the site on the Southern Side will be affected by the wind blowing over the coal stockpile and the dust generated from the trucks transporting coal to and from the stockpile area to the loading areas.	98. The neighbours will be informed about the planned construction and operational times. Communication protocols including the registration of complaints relating to site activities will be also outlined. 99. The contractor's representative or environmental officer notifies all people living within 100m of the construction site of proposed activities. 100. In the event of serious levels of dust pollution, the implementation of constant dust monitoring by qualified consultants is undertaken. 101. Vehicles used on or entering the site are be serviced regularly to ensure that they do not emit smoke of fumes. 102. Sprinkle water on all exposed surfaces especially during dry and windy conditions.	Construction	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
	<p>Visibility will be affected</p> <p><u>Waste Management:</u> Concrete rubble</p> <p><u>Waste Management:</u></p>	<p>103. Ensure that the Site Health & Safety protocols and systems are in place and implemented. All workers will wear PPE safety wear at all times.</p> <p>104. Minimise removal of vegetation cover.</p> <p>105. Speed limit is enforced in all areas to limit the levels of dust pollution</p> <p>106. Rehabilitate all bare areas as soon as possible with local indigenous water-wise vegetation.</p> <p>107. Monitor the cumulative PM10, SO2, CO and VOC air quality impact due to vehicle entrainment on unpaved road surfaces and during loading and off-loading of coal at the site.</p> <p>108. The predominant wind direction within the site is from the west- northwest on which during daytime there is an increase in these winds velocity. Less frequent winds are from the southern directions</p> <p>109. With exception of Sulphur dioxide, the pollutants recorded within the site falls within the NAAQ air quality threshold targets.</p> <p>110. Monitor ambient air quality variables especially Sulphur dioxide levels against the target threshold as determined by AQA and SANA 1929:2005 standards in all four sites.</p> <p>111. Monitor the Modelled ambient PM10 concentrations to ensure compliance to the daily NAAQ PM10 limit applicable from 1 January 2015.</p> <p>112. Monitor cumulative impacts associated with the contribution of Arbor Siding operations.</p> <p>113. Ensure that four dust buckets stands be strategically erected to the main areas or sensitive receptor area to verify predicted cumulative impacts and refine controls accordingly. Dust samples from the dust buckets will be taken to analyse the Gravimetric Dust Fallout content,</p> <p>114. The PM10, SO2, CO and VOC concentrations determined through active sampling in order to measure these variables against national ambient air quality</p>		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>guidelines should be conducted in a monthly basis in order verify predicted cumulative impacts and refine the operational site impacts with the aim of lowering the exceeding SO2 concentrations.</p> <p>115. Dust suppression in the form of water spraying the areas of frequent vehicular movement should be done in a 3 hours interval to minimize the generated dust whilst avoiding water accumulation to the surface.</p> <p>116. Monitor changes within the dust fall out gravimetric weight and compliance against the set SANS 1929 standards and within or outside the DEA AQ target</p>		
<p>Waste generated from the breaking and removal of concrete rubble.</p>	<p><u>Waste Management:</u> Concrete rubble</p>	<p>117. Clear the concrete rubble and ensure dust suppression is implemented on the area as soon as possible.</p> <p>118. All rubble from demolition activities will either be used on site as part of the existing development, or will be taken away from the project site and disposed off appropriately.</p> <p>119. Rubble will not be dumped on site but will be placed within a receptacle for regular removal;</p> <p>120. Construction rubble shall be disposed of in registered and legal construction waste disposal site.</p> <p>121. Transport and dispose to relevant registered legal Council disposal site.</p> <p>122. Collect Dust fall out samples for comprehensive analysis do</p>	<p>Construction</p>	<p>Contractor Siding Supervisor</p>
<ul style="list-style-type: none"> • Remove the building rubble from the site. • Remove the OHTE from the platform line. 	<p><u>Waste Management:</u></p>	<p>123. Implement Waste collection and sorting from the source.</p> <p>124. Ensure Proper Waste Management Measures.</p> <p>125. Public Awareness regarding importance and function of water resource</p>	<p>Construction</p>	<p>Contractor Siding Supervisor</p>
<p>Construct new evaporation dam.</p>	<p><u>Pollution Management:</u></p>	<p>126. Water use licence required.</p> <p>127. No construction of evaporation dam before the issuing of a Water Use Licence.</p>	<p>Construction</p>	<p>Contractor Siding Supervisor</p>

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>128. Ensure the designs and mitigation measures for leakage or spillages are in place.</p> <p>129. Implement and adhere to conditions of the WUL to be applied for.</p> <p>130. Should the use of the Pollution Control Dam on the Northern side be used, management measures as listed within the WUL will be adhered to:</p> <p>131. The Pollution Control Dam shall be operated and maintained to have a minimum freeboard of 0.8 metres above full supply level and all other water systems related to thereto shall be operated in such a manner that it is at all times capable of handling the 1:50 year flood event on top of its mean operating level.</p> <p>132. The Licensee shall use acknowledged methods for sampling and the date, time and sampler will be indicated for each sample.</p> <p>133. Flow metering devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than once in two years. Calibration certificates shall be available for inspection by the Provincial Head or his representative upon request.</p>		
<ul style="list-style-type: none"> • Noise from use of heavy machinery • Noise from vehicular movement - clearing, grading, levelling etc. • Noise from Siding workers 	<p><u>Noise Pollution:</u></p>	<p>134. Dust and noise generation are monitored during operational phase.</p> <p>135. Machinery with low noise levels to be used.</p> <p>136. Construction activities to take place during daytime periods only.</p> <p>137. Vehicles to comply with the standards as provided in the IFC's Environmental Health & Safety Regulations.</p> <p>138. Generators will be placed in such a manner that it is away from noise sensitive areas or acoustically screened off.</p> <p><i>In terms of the conducted assessment parameters described in SANS 10103³ i.e. the resulting total and increase in ambient noise levels, respectively, indicate that the severity of the noise impacts</i></p>	<p>Construction</p>	<p>Contractor Siding Supervisor</p>

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<ul style="list-style-type: none"> Noise from use of heavy machinery Noise from vehicular movement - clearing, grading, levelling etc. Noise from Siding workers 	<p><u>Heritage Resources:</u></p> <ul style="list-style-type: none"> Destruction of undiscovered subsurface heritage resources during construction activities. Sites of heritage significance Graves 	<p><i>are generally low. As a result, the introduction of specific noise mitigation measures is not necessary.</i></p> <p>139. Archaeologist to check any further clearance with construction crew for possible heritage resources.</p> <p>140. Where any significant resources are found the archaeologist will assess and make the appropriate mitigation requirements.</p> <p>141. Stop construction if any heritage resources – such as graves, human remains or fossils are identified.</p> <p>142. Should graves, fossils or any historical artefacts be identified during construction, activities will cease and the South African Heritage Resources Agency (SAHRA) or provincial Heritage Resources Agency will be informed of the find. Work may only continue once the relevant heritage resources agency has provided approval for the continuation.</p> <p>143. Old station building. According to its style and the material used in its construction, this building probably dates to the 1940s. It is similar in style, layout and material as other stations on the same line, e.g. Dryden and Argent. The structure is fenced off and well protected by an alarm system.</p> <p>144. The Transnet house is outside the demarcated site boundary.</p> <p><i>In terms of the conducted assessment parameters described in SANS 10103³ i.e. the resulting total and increase in ambient noise levels, respectively, indicate that the severity of the noise impacts are generally low. As a result, the introduction of specific noise mitigation measures is not necessary.</i></p>	Construction	Contractor Siding Supervisor
<ul style="list-style-type: none"> Arbor Station built structure 	<ul style="list-style-type: none"> Heritage significant resource 	<p>145. Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact; or, alternatively</p>	Construction Operational Decommission Rehabilitation	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		146. Archaeological investigation: This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards.		
<ul style="list-style-type: none"> Sourcing of labour and suppliers. Direct economic benefit to the community 	147. <i>Socio-economic Impacts</i> To increase positive benefits of the project	148. Job opportunities in terms of positions to be filled within the expansion of the Siding will be given first preference to the qualifying local community members within the vicinity of the site before extending to other areas outside the site proximity. 149. Sourcing of materials from local suppliers will be encouraged to boost the local economic status of the community. 150. The Siding Supervisor will also source previously disadvantaged contractors or BBBEE compliant companies for services such as sanitation, environmental control on site, storm water structures and rehabilitation. 151. Preference will be given to locals for supply of goods and services during construction. 152. A database will be formulated for the locals to submit their credentials for consideration during construction.	Construction	Contractor Siding Supervisor
Proximity of the proposed activities to the proposed Arbor village development	Dust	153. Continue to implement dust suppression in the form of water spraying the areas of frequent vehicular movement should be done in a 3 hours interval to minimize the generated dust whilst avoiding water accumulation to the surface. 154. Monitor changes within the dust fall out gravimetric weight and compliance against the set SANS 1929 standards and within or outside the DEA AQ target. 155. Collect Dust fall out samples for comprehensive analysis done from the 4 buckets strategically placed at the site.	Construction Operational Decommission Rehabilitation	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		156. Collect samples through the use of dust buckets from the various locations; 157. To submit the samples for comprehensive analysis; 158. To report on the compliance of the analytical results against standards and guidelines in order to identify problem areas and make recommendations for remedial actions; 159. To identify areas and sources of pollution; 160. Mitigation measures such as dust suppression as set within the conditions of the WUL will be implemented and as described in the EMP. 161. Compile and submit copies of the dust fallout monitoring reports to the client for monthly submission and bi-annually to the relevant government authorities.		
	Noise	162. Machinery with low noise levels to be used. 163. Construction activities to take place during daytime periods only. 164. Vehicles to comply with the standards as provided in the IFC's Environmental Health & Safety Regulations. 165. Generators will be placed in such a manner that it is away from noise sensitive areas or acoustically screened off. 166. Train movement schedule to be communicated to the adjacent community and land owners. <i>In terms of the conducted assessment parameters described in SANS 10103³ i.e. the resulting total and increase in ambient noise levels, respectively, indicate that the severity of the noise impacts are generally low. As a result, the introduction of specific noise mitigation measures is not necessary.</i>	Construction Operational Decommission Rehabilitation	Contractor Siding Supervisor
	Safety issues at railway crossing	167. Provide employment and proper training opportunity of personnel at railway crossing. 168. A pedestrian crossing to rather be considered on the farm land's side next to the Eskom substation.	Construction Operational Decommission Rehabilitation	Mine Management, Contractors and Employees

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
Legal Compliance	Legal Compliance	169. Ensure legal compliance throughout the site planned activities in all phases until closure. 170. Maintenance of compliance with legal and other environmental requirements 171. Determination of applicable legal and other environmental requirements when: 172. A new process or service is planned 173. An existing process is to be modified 174. EMP kept at office and personnel informed through inductions about availability of EMP. 175. Compliance with Section 24 of the Constitution of South Africa (Act No. 108 of 1996). 176. Consultation of Section 21 (a) and (g) of NWA. 177. Compliance with the EIA regulations in terms of Chapter 5 of NEMA as amended. 178. Compliance with all the relevant Provincial regulations and Municipal by laws. 179. Compliance with the EMP and Record of Decisions. 180. Compliance with the provisions for duty of Care and Remediation of Environmental Damage contained in Section 28 of the National Environmental Management Act (Act 107 of 1998).	Pre - Construction Construction Decommission Rehabilitation	Contractor Siding Supervisor
Data management system	Information & Data Management	181. Ensure that all acquired monitoring data is captured on a database linked to the operator's information system. 182. Upon capturing, the data is analysed and plotted visually on a time series graph, for the purposes of establishing improvement of deterioration in water quality. 183. Once analysed, the data is consolidated into a monitoring report, and a copy is sent to the Department of Water and Sanitation at a frequency prescribed in the permit.	Construction Decommissioning	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<p>The amount of dirty water runoff to the natural water bodies through storm water and potential flooding in the area.</p>	<p><u>Water Quality:</u> Sedimentation</p>	<p>184. Exposed/cleared surfaces will be kept to a minimum to minimise the volume of dirty run-off generated.</p> <p>185. Adequate sedimentation control measures are instituted at any prominent drainage lines, water crossings and construction trenches.</p> <p>186. Sedimentation and silt in watercourses will be monitored.</p> <p>187. Where possible construction activities will be positioned away from drainage lines and areas with a perched water table.</p> <p>188. All fuel, chemical, oil, etc will be confined to areas where the drainage of water can be controlled. Use appropriate structures and methods for storage and handling.</p> <p>189. No dumping of foreign material in streams, rivers and/or wetland areas is allowed.</p> <p>190. No washing and or cleaning of clothes, eating utensils, tools or equipment is allowed in water bodies.</p> <p>191. Adequate sanitation for all personnel is supplied on site.</p> <p>192. No permanent stock piling of any kind allowed within the 1:100 year flood line or within 10m of any watercourses.</p> <p>193. The gradient of the site is designed in a way that allows water to gravitate towards a centre then drain in to an evaporation pond.</p> <p>194. A 100mm sacrificial layer of coal is placed on top of the natural surface. This layer of sacrificial coal will always be kept constant between the surface soil and the coal material stored on site.</p> <p>195. Pollution control dams with appropriate liners are constructed by an approved engineer.</p> <p>196. The silt in the dam (fine coal) is reclaimed regularly and disposed in an environmental sound manner.</p> <p>197. The water is recycled on site</p>	<p>Operational</p>	<p>Siding Supervisor</p>
<p>PHASE: OPERATIONAL</p>				

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<ul style="list-style-type: none"> • Use of temporal ablution facilities • Maintenance of ablution facilities on site • Leaks or spillage from Diesel Storage tank • Spillage of coal during haulage of coal in and out of Loading area. 	<u>Groundwater Quality:</u> Pollution	198. Ensure proper use of ablution facilities. 199. Ensure proper maintenance of ablution facilities. 200. Ensure there are no leakages or spillages from the diesel storage tank. 201. Ensure spills and leakages are attended to as soon as possible and the incident report is kept updated. 202. Make use of portable chemical latrines to handle sewerage, until such time as more permanent facilities have been constructed. 203. Chemical latrines will be serviced by an outside contractor in accordance with local by-laws. 204. Depending on the number of persons utilising change-house facilities during the operational phase, a decision will be made on the construction of appropriate sewerage handling facility. 205. Provision of appropriate sewage and works septic tanks, pump stations and soakaways.		
Implementation of WUL conditions	<u>WUL Conditions:</u> <ul style="list-style-type: none"> • Surface water quality monitoring • Groundwater quality monitoring • Dust suppression 	206. Implement WUL Conditions 207. External WUL Audit 208. Awareness and Training 209. Confirmation of commencement of WULA activities 210. Annual soil chemistry study and mapping 211. Design water quality monitoring program (surface and ground) 212. Annual water balance study 213. Water quality monitoring, reporting and feedback to DWS 214. Limited access to pollution control dam 215. The licence is subjected to all applicable provision of the National Water Act, 1998 (Act 36 of 1998). 216. The responsibility for complying with the provision of the licence is vested in the Licence and not any other person or body.	Operational	Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>217. The licence is subjected to all applicable provision of the National Water Act, 1998 (Act 36 of 1998).</p> <p>218. The Licensee will immediately inform the Responsible Authority of any change of name, address, premises and/or legal status.</p> <p>219. if the properties in the respect of which this licence is issued is subdivided or consolidated, the Licensee will provide full details of all changes in respect of the properties to the responsible Authority within 60 days of the said change taking place.</p> <p>220. If a Water User Association is established in the area to manage the resource, membership of the Licensee to the Association is compulsory. Rules, regulation and water management stipulation of such association will be adhered to.</p> <p>221. The Licensee shall be responsible for any water use charges and/or levies imposed by a Responsible Authority.</p> <p>222. While effect will be given to the Reserve as determined in terms of the Act, where a lower confidence determination of the Reserve has been used in issuance of this licence, the licence conditions may be amended should a higher confidence reserve be conducted.</p> <p>223. When compulsory licensing is implemented for the water resource in of which this licence was issued, the water use authorized in this licence may be subject to appropriate conditions on quantity and quality.</p> <p>224. The licence shall not be construed as exempting the Licensee from compliance with the provision of any other applicable Act, Ordinance, Regulation or By-law.</p> <p>225. The licence and amendment of this licence are also subjected</p>		
		<p>226. Protected plants occurring within the footprint are translocated in consultation with an approved specialist after obtaining the necessary permits from authorities.</p>		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>227. All protected species occurring within the footprint are clearly marked for the duration of the construction phase and should remain intact and undisturbed. If this is unavoidable, the contractor follows procedures as advised by the .</p> <p>228. Where alien invasive plants occur they are uprooted, cut and / or chemically treated. (use only approved chemicals)</p> <p>229. The use of alien invasive plants for landscaping is prohibited and a long term management plan for the eradication and control of existing alien invasive plants is implemented.</p> <p>230. No wild animal are under any circumstance handled, removed or be interfered with.</p> <p>231. No wild animal is fed on site</p> <p>232. No domesticated animals (i.e. chickens and pigs) are permitted at the staff village and/or campsite.</p> <p>233. If applicable, regularly undertake checks of the surrounding natural vegetation, in the fences and along game paths to ensure no traps have been set. Remove and dispose of any snares or traps found on or adjacent to the site.</p> <p>234. Problem animals and vermin are removed by an appropriate organisation or authority (i.e. such as the Parks Board, the SPCA or a registered exterminator)</p> <p>235. No use is made of any pesticides, unless approved by the Project Management Team.</p>		
Excess surface water runoff and control of storm water	<p><u>Storm Water Management:</u> Storm water control Soil Erosion Contamination of soil and surrounding area</p>	<p>236. Clearing will be limited to only areas that will be worked-on.</p> <p>237. There will be storm water control to ensure separation of clean and dirty water.</p> <p>238. Clean water will also be diverted way from the dirty work areas via culverts, bunds and diversion trenches.</p> <p>239. The storm water is controlled and disposed of into the natural area at points where the volume of water becomes too much to be accommodated by the V-drain</p>	Operational	Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		shaped roads. Energy breakers in the form of natural rock is created at these disposal points and erosion control measures are implemented. 240. Storm water is diverted away from working area to prevent clean water contamination.		
Maintenance of the storm water infrastructure	<u>Stormwater Management:</u> Storm water control Soil Erosion Contamination of soil and surrounding area	241. A maintenance schedule for clearing silt at the culvert crossing will be designed and implemented. 242. Flood protection structures like attenuation walls will be designed and constructed for flood risk areas.	Operational	Siding Supervisor
<ul style="list-style-type: none"> • Operation of trucks for the loading, offloading of coal at stockpile areas • Loading of coal into train wagons 	<u>Air Quality:</u> Dust Visibility	243. Ensure all the Ambient Emission Licence (AEL) conditions are met. 244. Utilise measures such as dust suppression systems and vehicular and haul trucks speed control. 245. Monitor air quality levels and where levels exceed the maximum allowance, investigate source points and implement mitigation measures. 246. Areas of disturbance will be limited to footprints given in the final layout drawings and vehicular movement outside these demarcated areas will be restricted. 247. Conduct dust suppression through dampening and watering of road, which could potentially generate dust. 248. Suppress dust using dust suppression mechanism such as water	Operational	Siding Supervisor SHE Officer
Hazardous waste generated from the oil changes, maintenance of truck and machinery	<u>Waste Management:</u> Hazardous waste	249. Hazardous wastes will be separated from general wastes, stored within secondary containment in appropriate containers. 250. Certificates of hazardous waste disposal (waybills) are to be retained for auditing purposes. 251. Hazardous storage and refuelling areas are to be bunded with an impermeable liner to protect groundwater quality and will comply with relevant SANS codes.	Operational	Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
All pollution generating activities related to the operation of the Siding	<p><u>Pollution Management:</u> All activities with the potential to cause pollution to the environment in general (soil, surface water, groundwater, air quality, health etc).</p>	<p>252. Monitor the efficiency of any installed sewage system.</p> <p>253. To enhance the impermeability of the study area, the following additional steps are recommended:</p> <p>254. Remove the sparse vegetation over the entire area to be developed. Any roots will be removed entirely and the resultant 'crater' will be backfilled with soils compacted in 150 mm thick layers.</p> <p>255. Shape the entire surface to a suitable cross-fall to facilitate effective run-off drainage (possibly a slope of 1:50 or steeper). It may be required to install suitable drainage systems at the lower point to collect run-off.</p> <p>256. Scarify the surface to a depth of at least 150mm and re-compact to at least 90% Mod AASHTO density at OMC to OMC + 2%.</p> <p>257. In the event that a specific Tank is used, the tank will be bunded and made permeable to prevent leakage.</p> <p>258. Ensure there is permission for using anything that falls under the leased area.</p> <p>259. Waste/ pollution control.</p> <p>260. Industrial and domestic waste management.</p> <p>261. Management of refuse and waste disposal to avoid visual intrusion and prevent a health hazard.</p> <p>262. Implementation of clean-up programmes for spillages.</p> <p>263. Management of refuse and waste disposal to minimize impact on water quality.</p> <p>264. Sewage management.</p> <p>265. Provision of appropriate sewage and works septic tanks, pump stations and soakaways.</p> <p>266. Fuel and lubricant management.</p> <p>267. Prevention of soil and water contamination due to fuel spillage.</p>	Operational	Siding Supervisor
• Noise from use of heavy machinery	<p><u>Noise pollution</u> Residential house in the vicinity of the house to</p>	<p>268. Noise complaints will be recorded and followed with formal response.</p>	Operational	Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<ul style="list-style-type: none"> • Noise from vehicular movement - loading and offloading of coal at stockpile areas and the loading of coal into train wagons etc. • Noise from Siding workers • Vibrations from the movement of the train 	<p>be consulted on the route and access roads for the trucks and operating hours of the train.</p>	<p>269. A complaints register will be kept on site.</p> <p>270. All equipment and vehicles will be maintained in good operating condition. Any worn or faulty exhaust-and/or intake silencers will be replaced immediately</p> <p>271. Landowner will be informed of the plan to do 24hr operation will be done and recommended measures to alleviate noise will be implemented.</p> <p>272. A buffer zone between the rail (source) and noise sensitive areas (residential receptors) will be maintained. This buffer will be maintained by means of noise screening trees and at least a radius of 100m from any residential structure will be maintained and no noisy activities will be done, except for transportation activities via access roads to and from the site and actual loading. Control measures are implemented. All noise levels are controlled at the source.</p> <p>273. All employees are given the necessary ear protection gear if the noise levels exceed 70db.</p> <p>274. Interested and affected parties are informed about impending excessive noise.</p> <p>275. Generators and pumps are housed in casings to help reduce any noise in operation.</p> <p>276. No loud music or excessive noise generated by employees is allowed on site and in construction camps.</p> <p><i>In terms of the conducted assessment parameters described in SANS 10103³ i.e. the resulting total and increase in ambient noise levels, respectively, indicate that the severity of the noise impacts are generally low. As a result, the introduction of specific noise mitigation measures is not necessary.</i></p>		
<p>Disturbance of heritage resources</p>	<p><u>Heritage Resources:</u> Destruction of undiscovered</p>	<p>277. Should there be any identification of archaeological artefacts, South African Heritage Resources Agency will be notified.</p> <p>278. Should graves, fossils or any historical artefacts be identified during construction, activities will cease and the South African</p>	<p>Operational</p>	<p>Siding Supervisor</p>

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		279. instructs the responsible person to remove or control these species according to the most effective methods as given in the relevant literature. 280. The arranged an environmental briefing and training session with the contractor and his crew prior to commencement of construction activities.	Operational	Siding Supervisor
PHASE: DECOMMISSIONING & REHABILITATION				
Demolishing of infrastructure - debris may flow into natural water bodies during rainy season e.g. flash floods, unmanaged storm water flow	<u>Water Quality:</u> Sedimentation	281. Ensure water sources within the area are protected from effects of sedimentation resulting from the demolishing activities.	Decommissioning	Contractor Siding Supervisor
Demolishing of Dirty water channels and Pollution Evaporation Dams (PCDs)	Pollution	282. Ensure that all infrastructure is demolished and the debris disposed in an environmentally friendly manner. 283. Disposal of rubble to be done at a legal and properly registered disposal facility.		Contractor Siding Supervisor
<ul style="list-style-type: none"> Tear down of the Diesel Storage Tank Phasing off of the Coal Loading zones 	<u>Groundwater Quality:</u> Pollution	284. Ensure that the groundwater is protected from the demolition activities planned during decommissioning of all infrastructure on the site.		Contractor Siding Supervisor
<ul style="list-style-type: none"> Demolishing of all infrastructure on site Clearing, levelling and rehabilitation activities 	<u>Soil:</u> Soil Erosion <u>Topography:</u> Scenic view Ground stability	285. Bare surfaces will be managed as small as possible. 286. Any disturbed areas will be rehabilitated and landscaped to create a better scenic view. 287. The current disturbance will be cleaned 288. All temporary infrastructures will be demolished during closure. Waste will be disposed of at a licensed Municipal waste disposal site. 289. The landscape will blend with the surrounding areas to avoid water ponding.	Decommissioning	Contractor Siding Supervisor

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
<ul style="list-style-type: none"> • Tear down of the Diesel Storage Tank • Phasing off of the Coal Loading zones • Demolishing of Dirty water channels and Pollution Evaporation Dams (PCDs) 290.	Soil Pollution	291. Ensure there are no leaks or spillages from the decommissioning of the Diesel Storage tank and the Chemical storage area. 292. Ensure there is no leakages from the Coal Loading zones during decommissioning and all the coal residue is removed from the area.	Decommissioning	Contractor Siding Supervisor
Tear down all infrastructure on the site	<u>Biodiversity:</u> Fauna and flora loss	293. Ensure the local and indigenous flora species are protected and used during rehabilitation of the site.	Decommissioning	Contractor Siding Supervisor
	<u>Storm Water Management:</u> Storm water control Soil Erosion Contamination of soil and surrounding area	294. Ensure all the storm water management infrastructure is removed without causing further negative impact to the environment. 295. Ensure proper disposal of the rubble at the legal and registered disposal site or sent to recycling centre. 296. Construction staff only use authorised temporary paths and roads.	Decommissioning	Contractor Siding Supervisor
	<u>Storm water infrastructure:</u> Storm water control Soil Erosion Contamination of soil and surrounding area	297. The Environmental Control Officer ensures that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project. 298. Upon completion of the construction period, the ensures that any/all temporary access roads and returned to a state no worse than prior to construction commencing. 299. Once heavy machinery has cleared the bulk of these material stockpiles, the disturbed areas is levelled and cleared of any foreign material manually. 300. Fully rehabilitate all disturbed areas and protect them from erosion. 301. Slopes will be designated according to predefined specifications, aimed at the prevention of soil erosion, of efficient storm water control of the eventual re-		

Activities	Environmental Impact/Aspect	Mitigation	Phase	Responsibility
		<p>establishment of vegetation and of ultimately achieving aesthetically acceptable landscapes.</p> <p>302. In general, no slopes steeper than 1(V):3(H) are allowed.</p> <p>303. Cut slopes are not steeper than 1:2(V:H) and rounded off on the top edge.</p> <p>304. Bulk and fine shaping is executed according to design, aimed at the prevention of soil erosion, of efficient storm water control, of the eventual re-establishment of vegetation and of ultimately achieving aesthetically acceptable landscapes.</p> <p>305. On the man-made slopes, the following rehabilitation methods are applied:</p> <p>306. Replacing and redistribution of stripped topsoil to a minimum depth 200mm</p>		

Table 12.5-4: Monitoring Plan

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p>Security - unauthorised access to site</p> <p>Monitoring of perimeter soil berm used as fencing for the site.</p> <p>Soil erosion - Heavy rainfall /floods</p>	<p>Security and access control to site.</p> <p>Sedimentation of watercourses resulting from the silt and soil eroded from soil berm especially during heavy rainfall or floods</p>	<p>Safety of communities surrounding the site. No access to safety- hazard areas without permission and proper site safety clothing.</p> <p>Check the soil berm for any disturbance or damage and repair.</p> <p>Ensure the soil berm is stable.</p>	<p>Siding Supervisor</p> <p>Security Officer</p>	<p>Foot or vehicle patrol.</p> <p>Record</p> <p>Frequency of reporting:</p> <p>Monthly and following any heavy rainfall will be included in the monthly report.</p>
<p>Biodiversity monitoring should be undertaken.</p> <p>Faunal mortality</p> <p>Biodiversity loss</p>	<p>Disturbance to the fauna and flora on site will be minimised.</p> <p>All impacts affecting biodiversity will be mitigated as per the listed mitigation measures in the EMP.</p> <p>Habitat pollution due to uncontrolled storm water</p>	<p>Visual assessment of site to record species occurrence of terrestrial biodiversity including various plant communities, invasive alien species, fauna and other ecosystems occurring on the site.</p> <p>Annual surveys of TSF with respect to success of vegetation establishment.</p> <p>Monitor species activities and other activities taking place within or adjacent to the project area.</p>	<p>Siding Supervisor</p>	<p>Will include, but is not limited to:</p> <ul style="list-style-type: none"> ➤ Monitoring of the condition of habitats, ecosystems, topsoil stockpiles, species inventory and alien vegetation

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	drainage poses a significant risk to the National Freshwater Ecosystem Priority Areas (NFEPA) ecosystem in the close vicinity to the operational site outside the Arbor Siding boundary.	Monitor the movement and activities of the Avi-fauna, animals and small mammals observed on site. Regular site inspection of fauna species within the site. Determine or map the ecological sensitivity of the area. Proper storm water drainage and maintenance plan will be put in place to prevent the storm water draining into the nearest freshwater ecosystem. Visual observation of the NFEPA ecosystem to be done regularly and traces of coal residue monitored, mitigated and reported.		<p style="text-align: center;">control including the storm water drainage system leading outside the Arbor Siding boundary.</p> <p style="text-align: center;">➤ Photographic records to be kept.</p> <p>Monthly internal site inspection reporting.</p> <p>Annual report and submit to Biodiversity section of provincial DEA and DMR</p> <p>Annually</p>
Monitoring of erosion Roads	Soil Erosion resulting from heavy traffic flow of trucks	Sedimentation of water resources.	Siding Supervisor	Visual inspection of the site and rail infrastructure.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<p>offloading coal at stockpile area</p> <p>Soil erosion from heavy rainfall events</p> <p>Roads sides eroded and unstable for trucks to transport coal to stockpile and loading areas.</p>	<p>Stability of the operational areas within the site. Flat surfaces to ensure stable transportation of coal to weighbridge; offloading at stockpile area; loading of coal into train wagons.</p> <p>Railway ground infrastructure stability to be monitored and inspected especially after heavy rainfall events. Repairs to be done timeously to prevent further damage and safety hazards to the personnel on site and neighbouring community.</p> <p>Topography to be inspected to ensure efficiency in the offloading at stockpile area and the loading at loading zone without incidents that could impact the environment.</p>		<p>Walk over rehabilitated areas, drive along roads</p> <p>Monthly report to DMR and DWS</p> <p>Every 6 months and following any heavy rainfall</p>
<p>Inappropriate tree felling or removal of alien invasive plants</p>	<p>Infestation of alien invasive plants within the site.</p> <p>Uncontrolled growth and spread of invasive alien species (Eucalyptus).</p>	<p>Visual assessment of site to record species occurrence of terrestrial biodiversity including various plant communities, invasive alien species, fauna and other ecosystems occurring on the site.</p> <p>Monitor species activities and other activities taking place within or adjacent to the project area.</p>	<p>Siding Supervisor</p>	<p>Visual inspection on foot patrol</p> <p>Map presence of invasive plants</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Monitoring of alien plants over the whole site		Determine or map the ecological sensitivity of the area.		Plan removal, remove and document area covered on monthly basis Verify with Photographs Monthly.
Monitoring of Water Quality – from selected points. Stockpiling of coal poses a significant risk to water resources - both surface water and groundwater.	Surface and ground water pollution from surface runoff from the stockpile area and the pollution control dam. Changes in surface and groundwater quality will be monitored regularly. The change in hydrological characteristics of the area can affect surface runoff, soil moisture, and evapo-transpiration and groundwater behavior.	The objective is to prevent and minimise water pollution. As part of the approved and issued Integrated Water Use Licence (04/B20F/G/4009 File No: 27/2/2/B620/12/9), surface water quality monitoring reporting will be done on the following variables: pH Electrical conductivity (mS/m) Chloride (mg/L) Sulphate (mg/L) Fluoride (mg/L)	Siding Supervisor	Identify sources of potential contamination. Assess possible impact of receiving water environment. Chemical and bacteriological tests at identified boreholes as recommended in the EMP. Build up database and graph the results.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		<p>Sodium (mg/L)</p> <p>Potassium (mg/L)</p> <p>Calcium (mg/L)</p> <p>Magnesium (mg/L)</p> <p>Aluminium (mg/L)</p> <p>Iron (mg/L)</p> <p>Manganese (mg/L)</p> <p>Nitrate (mg/L)</p> <p>Total Dissolved solids [TDS]</p> <p>Total hardness</p> <p>Ground water monitoring:</p> <p>Identification of sources of potential contamination</p> <p>Determine the extent of any pollution plume that may occur and prevent the contamination from moving off site</p>		<p>Compare with limits and take action on non-conformances</p> <p>Water quality samples collected monthly</p> <p>Report submitted to DWS</p> <p>Water monitoring report every month</p> <p>Submit monitoring report every 3 months and annually.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		<p>Assessment of possible impact on the receiving water environment in order to formulate remedial measures should ground water contamination be evident</p> <p>Monthly sample collection bottling, labelling, storage and transportation for laboratory analysis. The analysis according to the DWAF South African Water Quality Target Value (SAWQTV) to be conducted.</p>		
Stockpiling of coal - Air Quality	<p>Air quality deterioration due to coal dust in the air and potential low visibility and health impacts to personnel on site. Air Quality - dust fall out monitoring programme.</p> <p>Monitor changes within the dust fall out gravimetric weight and compliance against the set SANS 1929</p>	<p>Bi-annual quality surveys conducted to measure the gravimetric dust fall out at the operational and cumulative impacts currently in effect causing poor air quality in the site. Four (4) monitoring buckets installed at Arbor Siding in four directions (i.e. north, east, south and west) provide the data used for the analysis. The points are located as follows:</p> <ul style="list-style-type: none"> • North point monitored dust generated by Arbor activities, Ntshovela mine and an access point for the neighbouring residential area; 	<p>Siding Supervisor</p> <p>Air Quality Specialist</p>	<p>Air Quality - dust fall out samples taken for comprehensive analysis done from the 4 buckets strategically placed at the site.</p> <p>Collect samples through the use of dust buckets from the various locations;</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	standards and within or outside the DEA AQ target.	<ul style="list-style-type: none"> • East point monitored dust generated during accessing Arbor Siding facilities and the above mentioned neighbouring land-uses; and activities along the R555; • South point monitored the actually operational activities at the siding during the off-loading and loading of coal; and • West point monitored the dust generated during the loading of coal (no longer valid as stand was stolen). <p>The buckets are left open so that generated dust at the study site can settle in them for periods of 30+/- 2 days. After the running period the dust were collected, sealed on site and sent to a laboratory for analysis. The masses of the water-soluble and insoluble components of the material were collected and the results were obtained by gravimetric weight and reported as mg/m² /day.</p>		<p>To submit the samples for comprehensive analysis; To report on the compliance of the analytical results against standards and guidelines in order to identify problem areas and make recommendations for remedial actions;</p> <p>To identify areas and sources of pollution; and</p> <p>Mitigation measures such as dust suppression as set within the conditions of the WUL will be implemented and as described in the EMP.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
		<p>Determine if the results obtained are within the set SANS 1929 standards or exceed the set standard and are within or outside the DEA AQ target.</p> <p>Implement corrective action and mitigation measures put in place as described in the EMP, the Site Management Best Practices and the Air Quality Management Plan.</p> <p>The North and East and South monitoring points exceeds the SANS 1929 standards but are within DEA AQ target and the average is still within industrial threshold of between 600 and 1200 as per target guidelines and DMR.</p>		<p>Compile and submit copies of the dust fallout monitoring reports to the client for submission to the relevant government authorities.</p> <p>Monthly to client</p> <p>Bi-annual to authorities</p>
Rehabilitation of all areas within the site.	Potential disturbance to soil structure, increased biodiversity returning to site post operation, soil pollution from demolition and	<p>Check compliance with gradients and variation in topography.</p> <p>Monitoring of All Rehabilitation Areas.</p>	Siding Supervisor	<p>Survey – map new rehabilitated areas.</p> <p>Plot on map and calculate area treated.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	dismantling of PCD and diesel tank storage area.	Ensure implementation of Site rehabilitation Plan in accordance with the Best Practice and Guidelines for the site and the EMP.		Every six months.
Contamination of water sources and ground water due to seepage or leakages due to instability of water storage facilities.	<p>Potential contamination of surface water sources and groundwater from leakage and destruction from instable water storage facility.</p> <p>Instable water storage facility could lead to increased surface run off thus increasing soil erosion and sedimentation of water sources.</p>	Monitoring of stability of water storage facilities.	Siding Supervisor	<p>Follow specifications in mandatory code of practice for water storage facilities.</p> <p>Regular physical inspections of the physical structural integrity of the infrastructure.</p> <p>Inspect for crack, wear and tear and implement necessary mitigation measures.</p> <p>Follow Incident Reporting Protocol as a when required.</p>

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
				Monthly internal report to client. Periodically
Storage and use of Hazardous material on site during construction and operational phase.	Potential contamination of water and soil through seepage or spillage and leakage of stored material or hazardous material. Potential of a fire should materials not be stored properly on site. Potential Safety hazard should materials not be handled properly.	Monitoring of disposal of old oil, oil filters, old oil drums, oily cloths, batteries, fluorescent tubes, tyres and contaminated soil. (Hazardous waste site). Monitor implementation of Waste management Plan for site.	Siding Supervisor	Record each load sent off the site Give used oils to oilkol Ensure safe disposal certificates are obtained from suppliers if the material are given back to them Annual
Construction waste (rubble); general waste generation (litter, solid waste)	Potential contamination of water resources from littering and improper waste	Monitoring of maintenance of general waste disposal	Siding Supervisor	Running total of loads of waste taken. Record of waste taken to waste disposal site

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	management practices and disposal.			Keeping records of waste taken to disposal site . All loads of waste to be recorded and quantity extrapolated. Covering of waste pit Monthly
Sanitation/ Ablution facility set up, use and decommissioning	Potential soil pollution, surface water and groundwater pollution due to lack of protective barrier, location and distance from sensitive areas. Poor use and maintenance of sanitation facilities.	Monitoring of condition of sewage facilities	Siding Supervisor	Visual inspection. Record condition.
Fuel storage - Diesel storage tank	Potential seepage or leakage from the tank or during the refuelling of	Monitoring of condition of bunded areas around diesel fuel tanks, re-fuelling area, old oil tank; and petrol tanks.	Siding Supervisor Siding Supervisor	Visual inspection

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	trucks or during maintenance servicing could lead to pollution of the soil and water sources.	Heavy impermeable lining on the diesel storage area		
Observations of all ground breaking activities during the construction phase in accordance with the Heritage Impact Assessment report.	Disturbance of any existing heritage significant resources or sites during construction, operation and decommission phase.	Visual observation of heritage resources or sites Record sites or resources Report the sites or resources observed to SAHRA	Siding Supervisor	Report during survey before construction and at decommissioning As and when discovered Every Six months
Survey to identify the status of existing heritage sites during operation	Disturbance to existing heritage sites or resources during operation.	Visual observation of heritage resources or sites Record sites or resources Report the sites or resources observed to SAHRA	Heritage specialist	Report on survey during operational phase. Annual report
Use of wastewater from the Pollution Control	Water use at the site.	Monitoring of water usage and ensuring water flow meters are installed at the pollution control dam.	Siding Supervisor	Record total water use and water use at different plants by recording flow meters.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Dam for dust suppression.	Water allocation for dust suppression to comply with licence condition.	Monitor volume of water from PCD used per month for dust suppression not to exceed the target set in the WUL conditions.		Ensure compliance with licence.
Compliance to site EMP	All aspects listed within EMP that require monitoring.	Refine the existing EMPr and compile a site specific Operation EMPr.	Siding Supervisor	Daily Monthly report
Alien vegetation control		Compile an Alien Invasive Management Plan	Ecological specialist	Annual reporting
Soil Management: Soil erosion, pollution, disturbance, topography,	Areas with a high inherent risk of soil erosion, soil wash or flooding; Areas with a high risk of soil damage, i.e. where there are vulnerable soils and/or topography, and where climatic and farm management practices may	Compile a soil management plan (storing, sloping, and vegetation of topsoil)	Ecological specialist	Daily Monthly report Annual report

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<p>combine to damage the soils particularly easily.</p> <p>“Soil damage” includes all of the following:</p> <ul style="list-style-type: none"> • wind erosion; • water erosion, • erosion related to tillage and harvesting; • compaction, including puddling, crusting (=surface capping), or developing impermeable “pans”. • organic matter decline; • salinization; • acidification; • landslides; • subsidence; • desertification; 			

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<ul style="list-style-type: none"> • adverse effects of climate change on the soil, and • soil biodiversity loss. 			
Biodiversity protection on site	Potential biodiversity loss and faunal mortality from site operations from construction to rehabilitation.	Protection and handling of fauna found within the site at all stages of operation.	Siding Supervisor	Site observation report Monthly Every six months for seasonal change Annually

12.6 Monitoring System

12.6.1 Water Monitoring

As part of the EMPr and Integrated Water Use License, Arbor will conduct water quality monitoring reporting on the following parameters: pH, Electronic Conductivity, Sulphates, Nitrates, Sodium, Fluorides, Magnesium and Calcium.

A database will be created for storage of water quality data, this database will be designed such that it is flexible enough to allow future additions/refinements to the monitoring programme. A suitably qualified person will manage the data and appropriate control mechanisms defined to ensure that no errors occur.

12.6.2 Groundwater Monitoring

The following water monitoring methodology is recommended:

- Record the static pre- pumped water level, prior to sampling.
- Install the pump and purge the hole. Installation depth, type of pump, purging rates and times should be recorded in the monitoring protocol.
- Whilst purging, record the following field parameters:

Temperature, pH and Electrical conductivity

- Record the quantity of water removed during purging. While removing the stagnant water from the borehole take continuous readings of EC and pH until the readings are stable.
- The unfiltered sample will be collected (in clearly marked 1L plastic bottles) for major cation and anion as well as trace and heavy metal analysis.
- The filtered samples (clearly marked 1 L plastic bottles) will be collected for trace and heavy metal analysis. The filtered water should be immediately acidified to pH<2.
- Samples will be kept in a cooler box and sent to the laboratory within 48 hours.

Quarterly monitoring will be conducted to reflect the following variables:

- pH-Value at 25 ° C
- Conductivity at 25° C in mS/m
- Total Dissolved Solids
- Suspended Solids
- Nitrate & Nitrite as N
- Chlorides as Cl
- Total Alkalinity as CaCO₃
- Fluoride as F
- Sulphate as SO₄
- Calcium as Ca
- Magnesium as Mg
- Sodium as Na

- Potassium as K
- Iron as Fe
- Manganese as Mn
- Aluminium as Al

12.6.3 Sampling Methods and Guidelines

Samples collected will be preserved so as to ensure that the samples are maintained in a condition representative of their in-situ state. The sampling and sample preservation will be undertaken according to the following guidelines:-

- “Groundwater sampling: a comprehensive guide for sampling methods”, compiled by John M Weaver for the Water Research Commission (WRC Report TT 56/92).
- SABS ISO 5667-11 : 1993 Guidance on sampling of groundwater
- SABS ISO 5667-1 : 1980 Guidance on the design of sampling programs
- SABS ISO 5667-2 : 1991 Guidance on sampling techniques
- SABS ISO 5667-3: 1994 Guidance on the preservation and handling of samples

The site will be left neat and tidy after the sampling work has been completed.

12.6.4 Surface Water Monitoring

Surface water samples will be collected on a monthly basis. Monthly Monitoring will be conducted to reflect the following:

- pH-Value at 25 ° C
- Conductivity at 25° C in mS/m
- Total Dissolved Solids
- Suspended Solids
- Nitrate & Nitrite as N
- Chlorides as Cl
- Total Alkalinity as CaCO₃
- Fluoride as F
- Sulphate as SO₄
- Calcium as Ca
- Magnesium as Mg
- Sodium as Na
- Potassium as K
- Iron as Fe
- Manganese as Mn
- Aluminium as Al

12.6.5 Sample bottling and labelling

All samples will be collected utilizing sterilized bottles provided by the Lab. Before a sample can be collected, a prescribed sampling bottle will be labelled in correspondence with the point identity from which sampling will take place.

12.7 Key Aspects on Site and Existing Management Measures

Some examples of aspects identified on site and how they are managed is provided in Table 12.3-1 below. The mitigation measures for identified impacts will be designed and management plan/programme be designed to ensure that here is compliance with the conditions of authorisation

Table 12.7-1: Key Aspects on Site and Existing Mitigation Measures

Key Aspect	Mitigation Measure
Potential diesel spillage during refuelling	Drip trays used during refuelling.
Potential spillage during storage	Care taken when packing the materials in storage. Materials Data Sheet kept on site.
Rainwater contaminated on the stockpile area with coal/oil/diesel flows into the river/spruit	Pollution control dam design structure and the Storm Water Management Plan are done. An experienced engineer produced the sketches of the designs for the pollution control dam.
Oil spillages on soil	Designate an area for vehicle maintenance and place a drip tray under the vehicles during maintenance.
Incorrect disposal of hazardous waste at landfill site	Use of a certified hazardous waste collector engaged to dispose of waste at a registered landfill site. Promote, reduce, reuse and recycle principles. Reuse and recycle material that is still in good condition to be used.
Incorrect disposal of general waste on illegal premises	Use of a certified general waste collector engaged to dispose of waste at a registered landfill site. Promote reduce, reuse and recycle principles. Reuse and recycle material that is still in good condition to be used.
Inadequate design/capacity of French drains resulting in high levels of bacterial/solid matter entering the environment (groundwater/streams/rivers)	Use of experienced civil engineer to create the design of drains (i.e. storm water control pollution dam).
Noise generation	Service trucks/vehicles regularly to ensure that they do not make unbearable noise and emit high levels of harmful gases.
Vehicular emissions	Service trucks/vehicles regularly to ensure that they do not make unbearable noise and emit high levels of harmful gases.
Coal spillage next to the road	Ensure that the trains are well enclosed during transportation of coal.
Dust generation when tarpaulins are not closed properly	Ensure that the trains are well enclosed during transportation of coal.
Dust generation during the stockpiling of coal	Stockpile the coal in various small piles. Minimise the dust emission by spraying water on the surrounding ground (dust suppression).

12.8 Positive and negative impacts that the proposed activity and alternatives

12.9 Cumulative Impacts

13. SITE AND TECHNOLOGY ALTERNATIVES

13.1 Details of all the Site Alternative considered

13.1.1 Site Alternatives S1 and S2

During the site identification phase, there are four sites which fall within the land leased by Transnet (Portion 1 of Farm Van Dyksput No. 214 IR.

The sites considered including the currently operational areas as illustrated in Figure 3.1-1 are:

- Northern Side area marked on Figure 3.1-1 as DWX1470J is S1
- Northern Side area marked on Figure 3.1-1 as DWX1468J is S2
- Southern Side area marked as Figure 3.1.1 as DWX1469J is S3
- Southern Side area marked as Figure 3.1-1 as DWX1471J is S4

Some consideration that was taken in the site selection is provided in Table 13.1-1 below. The site selection matrix is provided in Table 13.1-1.

Table 13.1-1: Site alternatives selection considerations

Site Alternative considered	Factors for consideration
Northern Side area marked on Figure 3.1-1 as DWX1470J – Site Alternative S1	<ul style="list-style-type: none"> • Not enough space for the proposed increase scope of work due to already existing operational infrastructure. • No available space for additional planned stockpiling and loading of coal. • Too close to the access road and railway crossing.
Northern Side area marked on Figure 3.1-1 as DWX1468J– Site Alternative S2	<ul style="list-style-type: none"> • Close proximity to the artificial wetland. • Not enough space for the proposed increase scope of work due to already existing operational infrastructure – water pollution dam, storage container, offices with ablution block, weighbridge etc. • No available space for additional planned stockpiling and loading of coal.
Southern Side area marked as Figure 3.1.1 as DWX1469J– Site Alternative S3	<ul style="list-style-type: none"> • Vacant land • Land still within the lease agreement with Transnet. • Adequate space for the proposed increase in scope of work including the stockpiling and loading of coal for haulage • No current existing human settlement adjacent to the Transnet boundary. • Planned development of an established township by Victor Khanye Local Municipality for the Arbor village on Portion 2 and 5 of Farm Vlakvarkfontein 213 IR is in close proximity to the Transnet boundary and one of the preferred sites for the proposed increase in scope of work.

Site Alternative considered	Factors for consideration
	<ul style="list-style-type: none"> • Close proximity the Arbor Station building identified as a Heritage significant resource. • Close proximity to the public access road and railway crossing.
Southern Side area marked as Figure 3.1-1 as DWX1471J– Site Alternative S4	<ul style="list-style-type: none"> • Vacant land • Land still within the lease agreement with Transnet. • Adequate space for the proposed increase in scope of work including the stockpiling and loading of coal for haulage. • No current existing human settlement adjacent to the Transnet boundary. • Planned development of an established township by Victor Khanye Local Municipality for the Arbor village on Portion 2 and 5 of Farm Vlakvarkfontein 213 IR is in close proximity to the Transnet boundary and one of the preferred sites for the proposed increase in scope of work. • Close proximity the Arbor Station building identified as a Heritage significant resource.

The details of each Site Alternative are provided in Table 13.1-1 above.

Alternative S3 and S4 (preferred alternative)

This alternative is preferred from an environmental and spatial perspective as the area proposed for the increased scope of work is adequate to accommodate the planned activities and associated infrastructure such as weighbridge, railway upgrades, new pollution control dam and silt trap, stockpile and loading areas. The proximity of the Arbor Station, considered a heritage significant resource has been considered and the recommendations of the Heritage specialist and mitigation measures as prescribed in the EMPr must be implemented and adhered to.

Alternative S3 and S4 (least preferred alternative)

This alternative is least preferred from an environmental and spatial perspective as the area proposed for the increased scope of work is not adequate to accommodate the planned activities and associated infrastructure such as weighbridge, railway upgrades, new pollution control dam and silt trap, stockpile and loading areas. The site is already operational with existing infrastructure established such as the weighbridge, storage container, pollution control dam, existing railway infrastructure and water channels, offices and ablution facilities. The existence of an artificial wetland on the site restricts the options to increase the developmental footprint.

The selection matrix for the site alternatives is provided as Table 13.1-2

13.2 Site Selection Matrix

1. Available space for additional infrastructure development
2. Land leased
3. Existing railway line infrastructure

4. Available space for coal stockpiling and loading
5. Close proximity to watercourse
6. Close proximity to heritage significant resource

Table 13.2-1: Site selection matrix

Site Alternative	1-	2	3	4	5	6
Northern Side area marked on Figure 3.1-1 as DWX1470J is Site Alternative S1	No	Yes	Yes	No	No	No
Northern Side area marked on Figure 3.1-1 as DWX1468J is Site Alternative S2	No	Yes	Yes	No	Yes	No
Southern Side area marked as Figure 3.1.1 as DWX1469J is Site Alternative S3	Yes	Yes	No	Yes	No	Yes
Southern Side area marked as Figure 3.1-1 as DWX1471J is Site Alternative S4	Yes	Yes	No	Yes	No	Yes

13.2.1 A concluding statement indicating the preferred alternatives, including preferred location of the activity

The site alternative S3 and S4 are the preferred sites for the proposed increase in scope of work to the Siding. An alternative considered also included the option of linking the existing water channels from the Southern Side S3 and S4 to decant dirty water into the existing pollution control dam located in the Northern Side (Site Alternative S2). This option was considered not ideal as it would have resulted in the water channels passing underneath the existing railway lines. The alternative to rather construct a new pollution dam on Site Alternative S4 highly outweighed the anticipated environmental impacts and cost implications of channelling dirty water from the Southern Side to the Northern Side underneath the railway line.

The design and technology alternative 1 was chosen as the preferred technology alternative as it entails keeping the existing rail track as is with modifications such as extension of Line 5 and diversion of Line 6. The placement of the PCD in the Southern side is preferred as the expansion of the PCD in the Northern side will be within the wetland area – even though this is applied for and mitigation measure will be provided.

The proposed mitigation measures as set out in the EMPr must be implemented as to safeguard the environment against all the identified, assessed and cumulative impacts related to the proposed increase in scope of work on the Arbor Railway Siding.

14. DESCRIPTION OF ALL ENVIRONMENTAL ISSUES AND RISKS THAT WERE IDENTIFIED

14.1 An assessment of the significance of each issues and risk and an indication of the extent to which the issues and risk can be avoided or addressed by the adoption of mitigation measures.

The identified potential impacts, their risks, significance and mitigation measures have been assessed as outlined in Table 10.1-1 and Table 10.1-2. The mitigation is further outlined in the EMPr attached as an annexure to this updated BAR report.

15. SUMMARY OF KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

Some of the key issues and findings during the environmental impact assessment are summarized as follows:

- Dust generation from truck vehicular movement, coal stockpiling and coal loading onto train for haulage
- Noise from truck vehicular movement and the train
- Potential diesel spillage during refuelling
- Potential spillage of coal onto exposed soil during stockpiling
- Rainwater contaminated on the stockpile area with coal/oil/diesel flows into the river/spruit
- Potential oil spillages on soil
- Incorrect disposal of hazardous waste at landfill site
- Incorrect disposal of general waste on illegal premises
- Inadequate design/capacity of French drains resulting in high levels of bacterial/solid matter entering the environment (groundwater/streams/rivers)
- Noise generation
- Vehicular emissions from the public access road and railway crossing towards Arbor Village

16. EXISTING SPECIALISTS STUDIES AND OTHER RELEVANT INFORMATION

The following studies were already undertaken:

- Biodiversity Study (see Annexure 16.2-6)
- Water Quality Study
- Stockpile Bulk Handling Capacity Study (Annexure 16.2-7)
- Ambient Air Quality
- Soil Chemistry (Annexure 16.2-4)
- Heritage Impact Assessment (Annexure 16.2-5)
- Wetland Delineation (Annexure 16.2-8)
- Noise Impact Assessment (Annexure 16.2-9)

16.1 Existing Monitoring Air quality monitoring

For monitoring dust, the Siding has buckets around the site to measure gravimetric dust fall out. To reduce the amount of dust on site dust suppression is done daily at regular times. The gravimetric dust fallout monitoring consists of bi-annual monitoring. The first assessment was conducted in August 2019 and will capture the dust fall-out for the transition of the Winter to Spring season. Table 1 is a visual illustration of dust fallout deposition for the period August/September 2018 period. The August-September 2018 dust fallout results demonstrate that all three monitoring points are within the national Department of Environment, Forestry and Fisheries (DEFF) Air Quality (AQ) target; 516mg/m²/day. A comparison of the previously measured dust levels for the siding was conducted to analyse the trends of dust generation. Key findings and recommendations include: The current monitoring period showed a decrease in comparison to the previously monitored period. The recorded results averages are within the DEFF and SANS 1929 targets for industrial establishment; and Arbor Railway Siding Management and personnel are directly involved in implementing dust suppression and improving the overall dust pollution being generated at the operation site. This is achieved considering and applying the recommendations made on the previous monitoring reports and effectively strives to improve environmental compliance within the siding.

16.2 Water Quality Monitoring

Water quality monitoring is also undertaken. Water samples are taken every month from the water monitoring sampling points and analysed at an accredited laboratory. The water monitoring reports are submitted quarterly to the DWS. The outcomes of the September 2019 assessment include: Domestic Water – Domestic water quality was evaluated against the limits as specified in the South African National Standard, Drinking Water Standard (Edition 2) SANS 241-1:2015. The quality of domestic water (Arbor JoJo Tank) continued to be acceptable and compliant in terms of analysed chemical and microbial variables in September 2019. All analysed chemical and microbial variables were within set limit. Surface Water – Surface water quality was evaluated against the standards as specified in the Resource Water Quality Objectives (RWQOs). A strict chloride concentration threshold of 3 mg/L was exceeded at SW 1, SW 2 and SW 3 monitoring points. The chloride concentration was recorded 14 mg/L, 13 mg/L and 15 mg/L respectively. In September 2019, SW 1 recorded sulphate concentration of 582 mg/L respectively. The only monitoring point which exceeded sulphate concentration limit of 200 mg/L. Wastewater – Wastewater quality is supposed to be evaluated against the standards as specified in the Integrated Water Use Licence (IWUL). However, PCD was not sampled in September 2019 due to lack of water. The PCD monitoring point was not sampled during September 2019 monitoring period, because there was no water. All parameters measured at the Arbor JoJo tank had values within the SANS 242-1:2015 limits for domestic water uses. The JoJo tank water, therefore, was of adequate water quality for domestic water purposes.

Most variables analysed at SW 1, SW 2 and SW 3 were well below set RWQOs standards, except for chloride and sulphate concentrations. All surface water monitoring points (SW 1, SW 2 & SW 3) exceeded RWQOs limit of 3 mg/L for chloride. Chloride occurs naturally through geological and weathering processes. Anthropogenic sources might include the use of inorganic fertilizers, industrial

effluents and irrigation drainage. SW 1 was the only surface water monitoring point which exceeded set limit threshold of 200 mg/L for sulphate. Possible source of sulphate is likely to be from agricultural activities. It is unlikely for the siding to be the source. There are no discharges from the siding into the environment, and stockpile runoff is captured in a closed system. Also, the distance between the Arbor siding, SW 1 and SW 3 makes it impractical for stockpile runoff to reach both monitoring points. Furthermore, anthropogenic sources include mining, agriculture and to a lesser extent combustion of fossil fuel. Although these findings are reported in most instances it is not practical for the siding to resolve these unrelated challenges, considering the diverse land uses around the siding which are also potential sources of some parameters.

16.2.1 Surface Water and Ground Water Studies

A water specialist has been engaged on site and quarterly water quality sampling and monitoring is currently conducted on the operational Northern Side of the Siding.

A Water Management Plan for the proposed increase in scope has also been developed to illustrate water related infrastructural developments proposed. A water management plan was developed in September 2018 for the proposed increase in scope of work of the existing operations on the Southern side of Arbor railway siding and is attached as Annexure 16.2-1. The Integrated Waste and Water Management Plan is attached as Annexure 16.2-2. The Rehabilitation Strategy and Implementation Programme is outlined as Annexure 16.2-3 and the Soil Chemistry is attached as Annexure 16.2-4.

16.2.2 Heritage Impact Assessment (HIA)

A HIA was mandated as part of this EA application and furthermore, the need was identified from a meeting that was held in January 2019, with the Chief of Arbor Village and the local community, it was revealed that there might be graves on the southern sides of the railway siding. For this reason, a Heritage Specialist had to be engaged and the terms of reference were developed and sent to the specialist. A desktop analysis was conducted and a range of resources such as archival sources, database survey, maps and aerial imagery were used. A site survey was conducted at Arbor Railway Siding on the 28 February 2019. As such the Heritage specialist was engaged to undertake the following:

- Status Quo Analysis and reporting
- Identification of heritage and archaeological artefacts/sites to determine the existence of heritage and archaeological resources on site (as described under Section 3 of the Heritage Resources Act (HRA))
- Comment on the legislative context governing heritage sites and how the siding operation needs to cooperate and co-exist with this legislative climate and specific compliance requirements and actions with processes and procedures to be followed.
- Identification of structures older than 60 years and mapping of identified heritage and archaeological artefacts/ sites, structures older than 60 years and development of an action plan
- Impact Assessment using applicable criteria

- Recommended mitigation measures for all identified impacts
- Monitoring plan, emergency response plan and awareness plan
- Costing pertaining to any relocation that might be necessary and a detailed scope of work for those subsequent activities
- Compiling a Heritage Impact Report.

The assessment determined that no sites, features or objects of heritage significance except for the Station building that occurs in the study area; see Annexure 16.2-5.

16.2.3 Wetland Assessment

The Wetland Assessment followed a series of approaches to enable an adequate description of the potential wetland habitat and so as to ensure that the wetland study conducted is applicable for both an Environmental Authorisation and Water Use Licence Application. The results of the assessment include – two hydro-geomorphic wetland types were identified and delineated within the study area and within 500m from the study area during the present study and classified into two distinct hydro-geomorphic (HGM) units, HGM 1, a hillslope seepage wetland connected to HGM 2 and HGM 2, a valley bottom wetland that was likely unchanneled historically. The Ecological Importance and Sensitivity of HGM 1 were perceived to be low as a result of anthropogenic impacts especially the dominance of invasive and terrestrial vegetative species in several sections of the wetland. HGM 2, the valley bottom wetland was assigned a very high Ecological Importance and Sensitivity as well as a result of the occurrence of species of conservation concern, status of the associated wetland vegetation type, several FEPA wetlands and wetland clusters downstream from the study areas as well as the importance of providing clean water and biodiversity support to the Wilge River. The impact assessment identified surface water pollution including sedimentation and pollution, alteration hydrological regime and poor water quality downstream as the major potential impacts, during the construction and operational phase. Several general and specific mitigation measures were proposed in order to reduce negative impacts and incorporate some potentially positive impacts from the proposed development. It is recommended that the proposed the layout plan be adapted in order to shift stockpiles slightly to the west to enable a more effective clean and dirty water separation through staying on the western side of the highest local topographical line. Dirty water will thus be able to drain away from the seepage wetland and connectivity within the seepage wetland increased. The surface layout plan is being re-considered to cater for the presented recommendation/s. See Annexure 16.2-8 for the comprehensive assessment.

16.2.4 Noise Impact Assessment

Following a raised concern from a registered IAP, a noise impact assessment was conducted on 07 October 2019 to ensure that any noise impact is assessed in respect of the prescribed thresholds and conditions. Present ambient noise levels are determined by the movement of coal trucks, this includes trucks accessing the site and external sites for which pass by the site to access their respective sites. As far as the propagation of noise is concerned, the topography for which the site falls within is flat, this providing no acoustic screening against the propagation of noise. The vegetation mainly consists of grasslands and a limited number of medium sized trees while the ground conditions are compacted. In terms of the propagation of noise over longer distances, the conditions can be described as acoustically

“hard”. This means that there will only be attenuation of noise due to the absorption of sound energy. The nearest noise sensitive receptor is Arbor Village as located approximately 400m south of the railway lines. In terms of assessment parameters described in SANS 10103³, i.e. the resulting total and increase in ambient noise levels, respectively, the findings indicate that the severity of the of the noise impacts are generally low. See Annexure 16.2-9 for the comprehensive report produced.

Identified sites

The sites identified during the physical survey, which could be sites, features or objects of cultural significance were:

(a) Old station building (illustrated as Figure 16.2-1).



Figure 16.2-1: Front view of the Old station building



Figure 16.2-2: Rear view of the Old station building
Impact assessment

The impact assessment indicated a high significance rating and recommends that as mitigation measures the following must be done:

- (i) Avoid/ preserve
- (ii) Conduct archaeological studies

Legal requirements

For this proposed project, the assessment has determined that no sites, features or objects of heritage significance except for the Station building that occurs in the study area.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the conditions proposed below.

The proposed conditions for inclusion in the environmental authorisation:

- The Paleontological Sensitivity Map (SAHRIS) indicate that the study area has a moderate sensitivity of fossil remains to be found and therefore a paleontological desktop study of the area is required.
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

16.2.5 Biodiversity Studies

The Biodiversity management plan was aimed at indicating biodiversity important species and ecosystems within the operating area; the occurrence and diversity of flora and fauna species associated; the ecological functionality and conditions that influence the area's ecosystem interactions. This will enable the project proponent in applying its mitigation measures while enabling successful operation and biodiversity management within the site. The findings of the study indicate that the area adjacent to the operating site is mainly used for residential, agriculture and mining activities that left it in a destitute form. With regards to flora and fauna, the study site is located in Highveld part of Mpumalanga province which commonly known for its wetlands and grass plains with variety of flora species. Arbor Railway Sidings area availability of flora is restricted to alien invasive plants; thus the vegetation is transformed in edges of the site. No critical flora species of conservation importance within the site were recorded. Furthermore, with exception with random encounters with fauna, no faunal species of importance were observed or recorded within the site. With exception of one transformed wetland and dam construction to support the activity, there were no natural or functioning wetlands were observed and recorded within Arbor Railway boundary. The reader is directed to Annexure 16.2-6.

16.2.6 Stockpile Capacity Storage Study

A specialist was engaged to determine the Stockpile capacity for the Arbor Railway Siding. The storage of coal on site does not exceed the threshold that requires an atmospheric licence in terms of the National Management: Air Quality Act (Act 39 of 2004). Gravimetric dust fall monitoring and reporting is currently done on the Northern side and will be extended to the Southern Side. The Northern Side of Arbor Railway Siding have reached its full capacity and considering the current contractual agreement between Transnet and Gijima, the stockpiling area has to be increased. For an informed conclusion regarding the matter, a Bulk Handling Capacity Specialist was engaged on 04 March 2018 to conduct a professional assessment and a report was produced on the 26th of March 2018 following a site visit

done on 05 March 2018. The assessment was further conducted to establish where the new storage area, weighbridge and truck loading area could be located. The results of the assessment determined the total volume of storage was calculated at 20 847m³ and at a loose coal density of 800kg/m³ which equates to a total weight of 16 678 ton. Therefore, the combined total storage capacity of both the northern and southern stockpile areas, is 47 352m³ which equates to a total volume of 37 882 ton. See Annexure 16.2-7 for the detailing assessment results and factors applied for presented quantities.

16.3 A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed

The identified assumptions which were presented from the various conducted studies are outlined below.

- Heritage Impact Assessment
 - The railway line which runs from Apex Junction eastwards towards Witbank via Dryden was completed in 1906. All the known, currently existing stations along this route, is clearly indicated on the 1925 version of the South African Railway Map as is included in the Blue Book for that year. However, it is not clear which of the stations were completed and the respective dating. Given such, it would be a mistake to assume that the type of station buildings and houses, for example, previously (Arbor) and currently still at Delmas were completed at the same time. Clearly the materials used, e.g. yellow face bricks, as well as the layout and fittings (doors, window frames, etc.), indicate a construction date from probably only the late 1930s, but more probably the 1940s.
- Biodiversity Management Plan
 - Vegetation – This study was not intended to provide an inventory of all species present within the study area but instead aimed to provide an overall assessment of the ecological values with particular emphasis on the endemic vegetation status, endangered ecological communities and condition.
 - Fauna – Faunal assessment was limited to desktop even though the sightings were intended during ground trothing, the incidents were limited and avifauna-survey was omitted due to time period allocated and extent of ecological aspects that were to be covered.
 - Spatial Mapping – Spatial mapping of the areas of importance was done on a coarse scale.
- Wetland Delineation Assessment
 - In order to obtain definitive data regarding biodiversity, hydrology and functioning of particular wetlands, studies should ideally be conducted over a number of seasons and number of years. The current study relied on information gained during a single field survey conducted during a single season, desktop information for the area, as well as professional judgement and experience.

- Wetland and riparian areas within transformed landscapes, such as urban and/or agricultural settings, or mining areas with existing infrastructure, are often affected by disturbances that restrict the use of available wetland indicators, such as hydrophytic vegetation or soil indicators. As such, wetland and riparian delineation are based on indicators where available and the authors interpretation of the current extent and nature of the wetlands and riparian areas associated with the proposed activity.
 - Some precision agricultural techniques such as topographical manipulation and soil redistribution ploughing were evident within the study area which in some instances could obscure pedological signs of wetness and hydric soil forms.
 - Wetland and riparian assessments are based on a selection of available techniques that have been developed through the Department of Water and Sanitation. These methods are, however, largely qualitative in nature with associated limitations due to the range of interdisciplinary aspects that have to be taken into consideration. Current and historic anthropogenic disturbance within and surrounding the study area has resulted in soil profile disturbances as well as successional changes in species composition in relation to its original/expected benchmark condition.
 - Delineations of wetland areas were largely dependent on the extrapolation of field indicator data obtained during field surveys, 5m contour data for the study area, and from interpretation of geo-referenced orthophotos and satellite imagery as well as historic aerial imagery data sets received from the National Department of Rural Development and Land Reform. As such, inherent ortho-rectification errors associated with data capture and transfer to electronic format are likely to decrease the accuracy of wetland boundaries in many instances.
 - Wetlands outside of the study area boundary was extrapolated using aerial imagery, although some sampling was done outside of the study boundaries in order to confirm findings and better interpret hydro-pedological characterization of the study area.
- Noise Impact Assessment
 - The purpose of calculating the noise impacts of the proposed extension of the facilities a low baseline ambient noise level of 33dba was assumed. This assumption tend to over estimate, rather than under estimating the severity of any noise impacts.

16.4 A reasoned opinion as to whether the proposed activity should or should not be authorised – recommendation from EAP

It is of the opinion of the EAP that any potential impacts associated with the proposed development may be mitigated through thorough planning and implementation. The proposed mitigation measures to attain the commitments of the applicant are detailed in the Environmental Management Programme report (EMPr) – Volume 2 of 3. It is important to indicate that the project is based on providing social and economic value through various initiatives to empower and develop local community and further forms part of the Transnet Road to Rail strategy.. Given the proposed activities, the outcomes of the Environmental Impact Assessment (EIA) and the identified impacts from the project activities would be manageable if the proposed mitigation measures are implemented; as such the environmental assessment practitioner (EAP) would motivate in favour of the proposed development.

16.5 Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised

The project will include operational aspects and Gijima Supply Chain Management Services (Pty) Ltd will conduct regular maintenance and monitoring in line with the aspects expressed in the EMPr. The estimated period for which the site is predicted to operate runs over a period of over 50 years. The estimated period for the construction phase is six (6) months, where the instruction for construction will be determined by the issued ROD.

16.6 Where applicable, details of any financial provision for the rehabilitation, closure and ongoing post-decommissioning management of negative environmental impacts

At this stage, the existing financial provision accounts for the Northern Side and further needs to be updated to fully include the aspects for which will give rise from the proposed expansion, see Appendix 12.1-1 of the EMPr (Volume 2 of 3). The need for any amendment/s will be undertaken to ensure that he efficient financial provisions measures have been accounted for.

16.7 Any specific information that may be required by the Competent Authority

N/A.

16.8 Any other matters required in terms of Section 24 (4) (A) and (B) of the Act

N/A.

17. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP DECLARATIONS

The Independent Environmental Assessment Practitioner

I, Babalwa Fatyi of Myezo Environmental Management Services (Pty) Ltd declare under oath that I –

- Act as the independent environmental assessment practitioner in this application;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2006;
- Have and will not have no vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;
- Will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- Will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- Will keep a register of all interested and affected parties that participated in a public participation process; and
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Myezo Environmental Management Services (Pty) Ltd

Name of company:

Date:

Signature of the Commissioner of Oaths:

Date:

Designation:

18. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE APPLICANT

The Applicant

I, Benedictus Xesha of Gijima Supply Chain Management Services (Pty) Ltd declare under oath that I

- Am, or represent, the applicant in this application;
- Appointed the environmental assessment practitioner as indicated above to act as the independent environmental assessment practitioner for this application;
- Will provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to this application;
- Will be responsible for the costs incurred in complying with the Environmental Impact Assessment Regulations, 2010, including but limited to –
- Costs incurred in connection with the appointment of the environment assessment practitioner or any person contracted by the environmental assessment practitioner;
- Costs incurred in respect of the undertaking of any process required in terms of the regulations;
- Costs in respect off any fee prescribed by the Minister in respect of the regulations;
- Costs in respect of specialist reviews, if the competent authority decides to recover costs; and
- The provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by competent authority;
- Will ensure that the environmental assessment practitioner is competent to comply with the requirements of these regulations;
- Am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- Hereby indemnity, the government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which the applicant or environmental assessment practitioner is responsible in terms of these regulations; and
- Will not hold the competent responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to an appeal being decided in terms of these regulations.

Signature of the Environmental Assessment Practitioner:

Gijima Supply Chain Management Services (Pty) Ltd

Name of company:

Date:

Signature of the Commissioner of Oaths:

Date:

Designation:

GIJIMA - ARBOR RAILWAY SIDING - BASIC ASSESSMENT REPORT

**ARBOR RAILWAY SIDING BASIC ASSESSMENT REPORT FOR PROPOSED OPERATIONS OF A RAIL SIDING TO STORE, HANDLE AND RAIL
COAL, MPUMALANGA PROVINCE**

Document Name: GAB – R – Updated BAR

Date: 26 November 2019

Rev 2.0

DARDLEA Ref: 1/3/1/16/1N-213

Myezo Ref No: GAB 2018/11



**MYEZO ENVIRONMENTAL
MANAGEMENT SERVICES**
Environmental Stewardship

DISTRIBUTION RECORD

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1		Soft copy		Victor Khanye Local Municipality Arbor Primary School Registered IAPs				21 June 2019
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1		Soft copy						15 November 2019
1	Final BAR	-		-		Rev 3.0		-

19. REFERENCES

Victor Khanye Local Municipality (2017 -2021). Final Integrated Development Plan IDP – 2018.2019 Review, Delmas, Mpumalanga.

Victor Khanye Local Municipality Spatial Development Framework

Department of Environmental Affairs (1998), NEMA, Pretoria

Department of Environmental Affairs (1998), EIA Regulations, Pretoria

Adi Environmental, 2018, Draft Scoping report, Vlakvarkfontein (Arbor) Rural Village, Delmas (Ref: EIA2018/01)

Adi Environmental, 2018, Arbor Background Information Document

Adi Environmental, 2019, Final Scoping Report, Vlakvarkfontein (Arbor) Rural Village, Delmas (Ref: EIA2018/01) » Scoping Report

20. LIST OF ANNEXURES FOR UPDATED BAR

Annexure 1.3-1: The copy of the commitment from Eskom in relation to the envisaged monthly tonnage.

Annexure 1.4-1: An application for the expansion of the lease area to Transnet Freight Rail (TFR) has been submitted by Gijima and a recent communique in relation to the progress of the application

Annexure 1.5-1: Water Use Licence (WUL) on the 8 December 2015 (Licence No. 04/B20F/G/4009)

Annexure 2.1-1: EAP CV

Annexure 2.1-2: Company Profile

Annexure 5.8-1: EMPr Environmental Authorisation

Annexure 6.1-1: Minutes of Meeting convened with Adi Environmental

Annexure 6.1-2: Comments to the BID and Scoping Report

Annexure 7.1-1: Zoning Certificate

Annexure 11.1-1: IAP Register

Annexure 11.1-2(a): Outcomes of meeting with Ward Councillor

Annexure 11.1-2(b): Outcomes of meeting with School Principal

Annexure 11.1-2(c): Outcomes of meeting with Chief Mahlangu

Annexure 11.2-1: Site Notices (English, isiZulu, Setswana Translation)

Annexure 11.3-1: Background Information Document

Annexure 11.5-1: Proof of newspaper advert

Annexure 11.5-2: Proof of site notice

Annexure 11.5-3: Reply Slip (English)

Annexure 11.5-4: Site Notice distribution

Annexure 11.5-5: Notification email to IAPs

Annexure 11.5-6: Notification letter to authorities

Annexure 11.5-7: IAP Site Notice Distribution

Annexure 11.5-8: Comments received (email etc)