BACKGROUND INFORMATION DOCUMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A DOLOMITE BURNING PLANT ON THE REMAINING EXTENT OF PORTION 3 AND PORTION 4 OF THE FARM WITKOPPIES 373 IR PORTION 65 OF THE FARM SLANGFONTEIN 372 IR AND THE REMAINING EXTENT OF THE ERF 303 OF HIGHBURY TOWNSHIP

DEADP Reference No: GDARD Reference Nos. Gaut 002/12-13/E0258; WCDM AEL Reference Number: AEL:0001/2013

Prepared by:
Nerine Coertzen and Pieter Badenhorst
Pieter Badenhorst Professional Services

October 2013

This Background Information Document (BID) serves to inform the public of the proposed construction and operation of a proposed dolomite burning plant on the grounds of the existing Glen Douglas Dolomite Mine. Apart from already identified I&APs other community members can register and will be added to the database for inclusion in the draft BAR.

Deviation has been granted by GDARD to apply for a Basic Assessment Process (BAR) instead of a Comprehensive Environmental Impact Assessment Process. Please also note that application has been made for exemption from placing an advertisement after receiving the environmental decision in a newspaper regarding the Environmental Authorisation as per NEMA EIA Regulation 10(2) d.

Public consultation is an essential part of the integrated environmental management process. All comments and issues raised following the BID and Open Day will be recorded and included in the final BAR. Feedback on how comments have been taken into account and the outcome of the assessment will also be included in the final BAR that will also be made available for comment.

1 PROJECT DESCRIPTION

The proposed dolomite burning plant will be constructed on the grounds of the existing Glen Douglas dolomite mine. The mine is situated near Vereeniging in Gauteng, approximately 25 km south of Johannesburg in the Sedibeng District Municipality as shown in Figure 1 and Figure 2. It is an open-pit mine producing metallurgical dolomite, aggregate and agricultural limeand supplies the metallurgical industry - essentially ArcelorMittal Steel's Vanderbijlpark and Newcastle Works. Land-use surrounding the mine is predominantly agricultural, residential and commercial activities. The Klip River flows through the eastern portion of the mine property with the R59 running past the mine on the left. Bass Lake, an old pit located on the property, is used for public recreational purposes.

Background

Glen Douglas Mine has been in operation for 56 years having been established by Iscor in 1957 and has an estimated mine life of 30 years. Over this period the mine has been producing metallurgical quality dolomite construction aggregate and agricultural lime through an open pit operation from a single excavation sub-divided by a 40 m wide dyke zone into two pits, the B and C Pits. The C Pit is the main source of the low silica metallurgical dolomite and the B Pit supplies the high silica aggregate.

Agricultural lime is produced as by-product from fines collected in settling ponds at the washing and screening plant. The mining method comprises conventional drill, blast, load and haul using 7 x 50 t Cat 773B diesel trucks and 2 x Cat 990 front-end loaders owned by Glen Douglas Mine. All ore and waste is drilled with 115 mm blast holes and charged with bulk emulsion explosives.

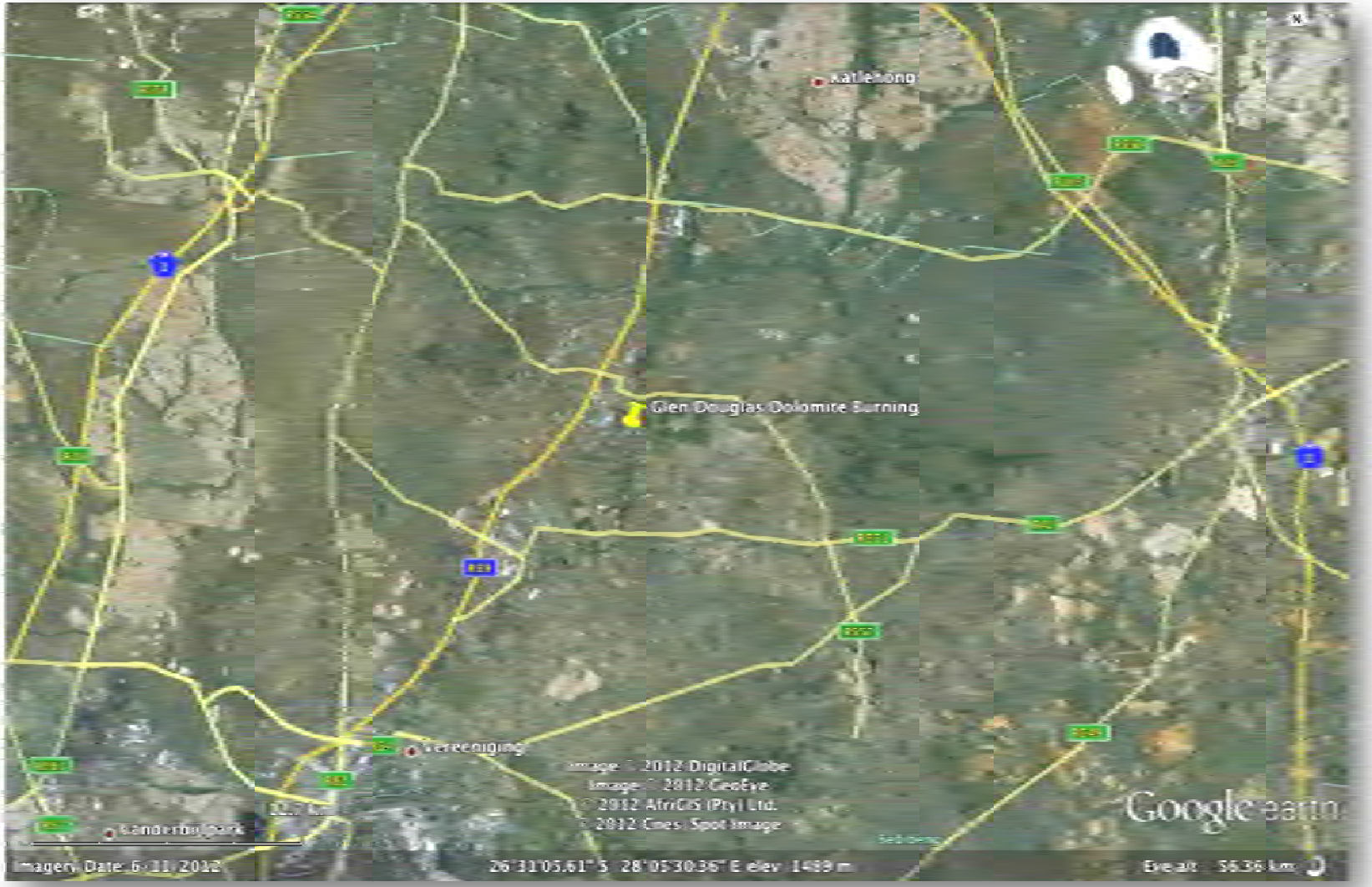

Figure 1: Glen Douglas mine locality

Figure 2: Glen Douglas mine

Proposed Operations

Given the use of burnt dolomite in the metallurgical and steel making industry, Afrimat has proposed expansion into the production of burnt dolomite with the Glen Douglas Burnt Dolomite Project. For this purpose, two 90 ton single vertical shaft kilns are proposed to be installed. The equipment used to effect this burning is called a kiln. Two types of kiln that are commonly used as shown below in Figure 3:

a) rotary and b) vertical shaft.

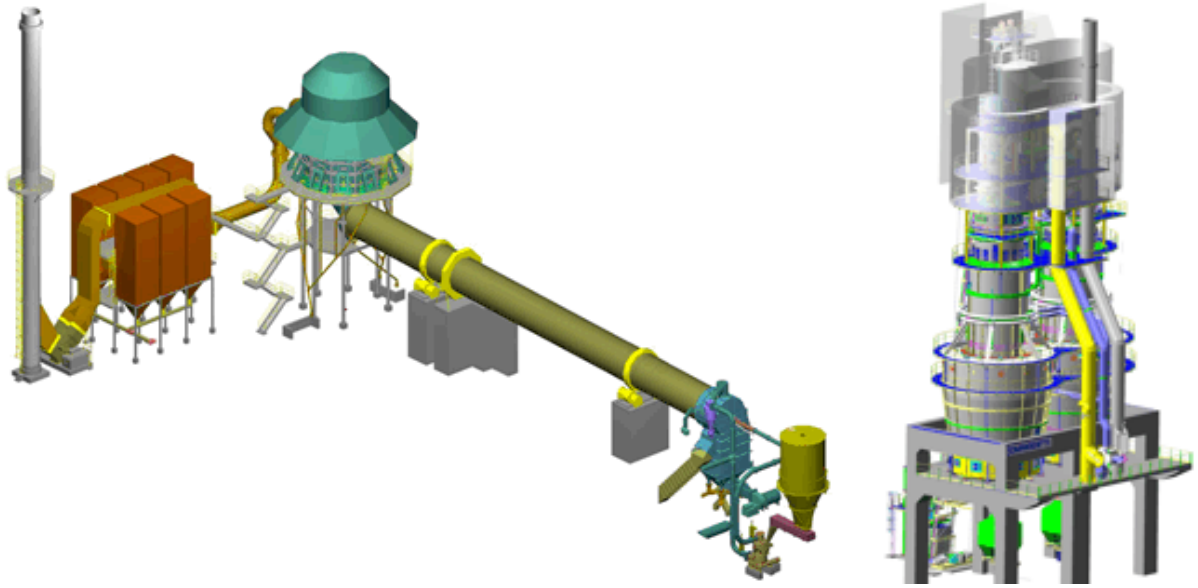

Figure 3: Example of kilns proposed for the dolomite burning

Both of these kiln types shown incorporate the modern energy saving heat recovery improvements, and both can be fired with pulverised coal, liquid or gas fuels. In the rotary kiln, the 'hat' on the feed end is called the 'preheater', which preheats the stone and cools the hot gases by direct contact. The kiln feed material is metallurgical dolomite, washed and graded to 50 - 100 mm lumps. The calcining or burning process involves the heating of the metallurgical dolomite to between 900 and 1100 °C for about four hours in order to drive off the carbon dioxide: Dolomite ($CaCO_3.MgCO_3$) + Heat -> Burnt Dolomite ($CaO.MgO$) + CO_2. The vertical shaft kiln shown is the 'parallel flow' design with burner lances to introduce fuel to specific locations in the shafts. Gas flow is periodically reversed to ensure maximum heat transfer between stone and gas.

Process Description

The process involves the feeding of the dolomite rock crushed and screened to a 40X80mm size into the top of the kiln. The preliminary process flow below in Figure 4 is for the mixed feed kiln (option c) in which low volatile coal is fed in a fixed ratio with the dolomite. The layout shows coal and dolomite stockpiles feeding dedicated weigh hoppers.

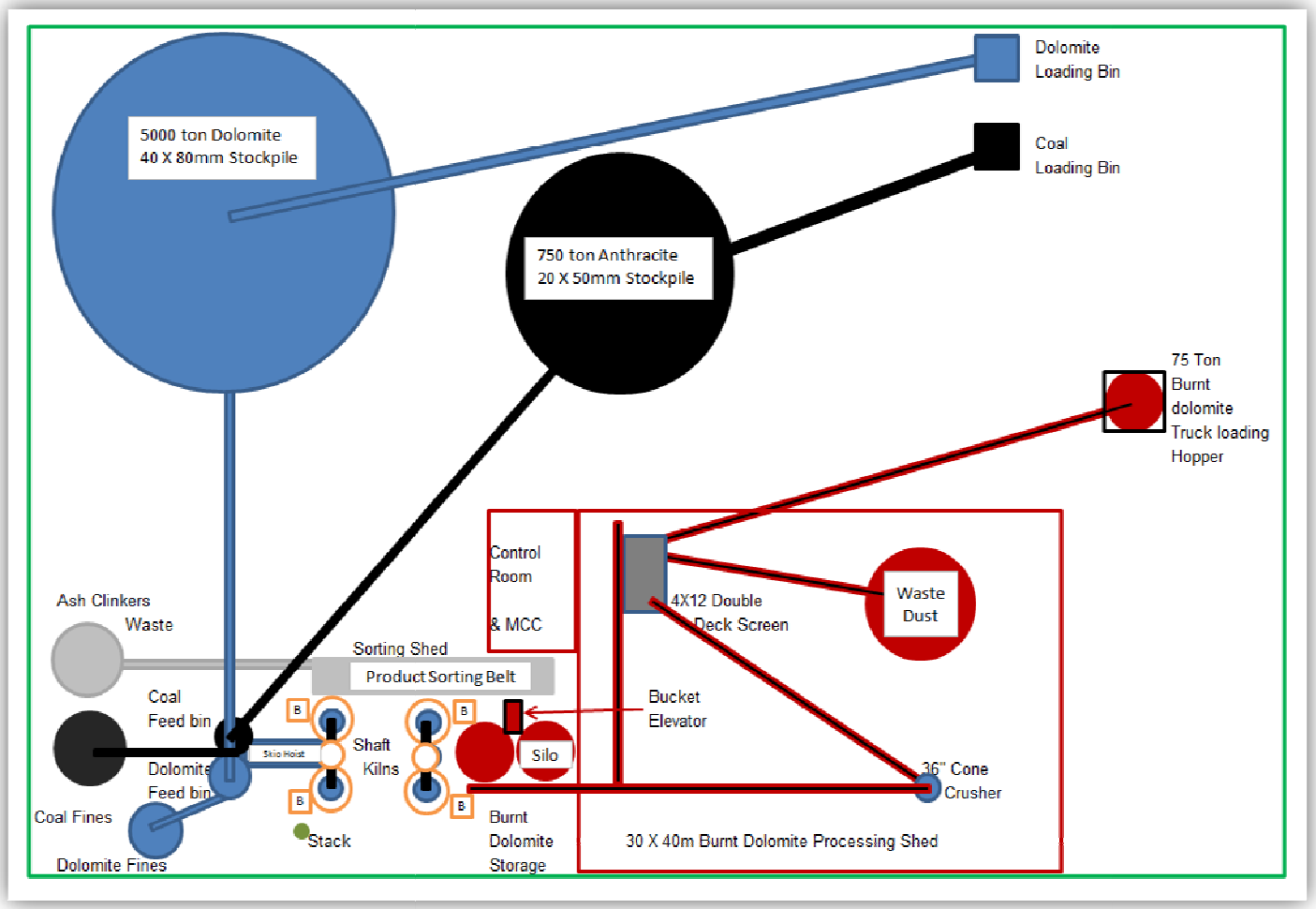

Figure 4: Process flow diagram for the dolomite burning plant.

The weighed batches are then transferred simultaneously into a skip hopper to effect a good mixing of the two materials. The skip lifts the material to the top of the kiln and dumps the mix into a charge hopper fitted with top and bottom seals so that the charge can be loaded into the kiln without gas leakage from the system.

Option b) has a similar layout, but includes a coal mill, which pulverises the coal. The pulverised coal is then stored in a hopper and dosed into a pneumatic air conveying system which injects the fuel about one third of the way up the kiln at strategic locations across the section of the kiln. The skip hoist in this case only loads the dolomite into the kiln.

Controlled amounts of air are either blown into or sucked from the bottom of the kiln to effect cooling of the burnt dolomite as well as preheat the air for combustion. By carefully controlling the ratio of fuel to dolomite, the burning temperatures in the kiln are controlled. The combustion gases are sucked out of the top of the kiln and filtered in a bag filter before being discharged through the stack at a temperature of about 120 ^{o}C.

Burnt dolomite is extracted from the bottom of the kiln by special hydraulic table feeders (which are designed to withdraw the material evenly over the kiln cross section) onto a sorting belt. Here coal ash clinkers are transferred to the clinker belt so that the burnt dolomite is not contaminated. In the case of pulverised coal (option b), this sorting is not required because the coal ash is fine and will be screened out.

The burnt dolomite is transferred to a storage facility which is shown here as a silo. A number of different storage options based on cost and customer requirements are being investigated, but these do not impact the process.

Prior to dispatch to customers, the product is crushed and screened to the order requirement. Dust generated will be combined with the bag filter dust, hydrated and blended with the agricultural lime.

2 ENVIRONMENTAL IMPACT

The proposed development forms part of the existing Glen Douglas Mine and is situated within the mining area. The following aspects assessed the significance of potential impacts on sensitive receptors:

- Air Quality Impact Assessment
- Botanical Assessment
- Visual Assessment

According to the studies conducted, a preferred site was identified (Site 1), as well as two alternate sites (Site 2 and Site 3). Figure 5 below shows the different sites identified. Please note full details of studies will be provided in the draft BAR.

Figure 5: Site alternatives. Site 1 was identified as the preferred alternative

The following conclusions have been made with regards to the proposed sites in the studies:

1. Air Quality Impact Assessment

For the proposed dolomite-burning project, the following conclusions can be made:

- Predicted incremental and cumulative SO2 concentrations are in compliance with the hourly, daily and annual average standards at all three proposed sites;
- Predicted incremental and cumulative NO2 concentrations are in compliance with the hourly and annual average standards at all three proposed sites;
- Predicted incremental and cumulative CO concentrations are in compliance with the hourly and 8- hourly average standards at all three proposed sites;
- Predicted incremental PM10 concentrations are in compliance with the daily and annual average standards at all three sites. Higher concentrations are predicted at Sites 2 and 3 due to the proposed hauling of metallurgical dolomite to these two sites. The proposed conveying of metallurgical dolomite to Site 1 results in a reduction in PM10 emissions;
- Predicted incremental dust fallout is low at all three proposed sites and does not pose a nuisance risk to surrounding inhabitants.

For future emissions (current mining operations and dolomite burning kilns), the following conclusions can be made:

- For scenario 1 (75% CE), predicted incremental and cumulative PM10 concentrations exceed the current and future daily average PM10 standards at all three proposed sites. Incremental annual average PM10 concentrations fall well below the current and future annual average standards at all three sites, although cumulative annual average concentrations are in non-compliance;
- For scenario 2 (90% CE), predicted incremental PM10 concentrations are in compliance with the current and future daily average and annual average PM10 standards at all three sites. However, cumulative concentrations are in non-compliance with both the current and future daily average and annual average PM10 standards due to elevated background concentrations;
- Predicted incremental dust fallout for both scenarios falls within the allowable dust fallout limit of 600 mg/m2/day for residential areas. For the dust buckets located within the mining boundary, dust fallout is within the permissible limit for heavy commercial and industrial.

Current mitigation measures implemented at Glen Douglas Dolomite Mine to reduce particulate emissions include wet suppression on the unpaved haul roads and the use of water sprays at the sinter and supersand plants to reduce general dust emissions.

Emissions generated from primary and secondary crushing are controlled through the use of water sprays (activated during tipping of ROM into the primary crusher) and with wet scrubbers. Emissions from drilling are minimised by injecting water down the drill hole. Particulate emissions from the proposed dolomite burning kilns will be controlled using bag filters. A dust fallout-monitoring network, consisting of 7 locations, is currently in place at Glen Douglas Dolomite Mine.

2. Botanical Assessment

- The preferred site (site 1) is currently used for 4x4 activities. The site is highly disturbed and the vegetation clearly reflects this disturbance. The site is not botanically sensitive and has low conservation value.
- No Red or Orange List species (Pfab, 2000; Compaan, 2011) were found at Site 1. Site 1 does not fall within any CBA or ESA. The closest CBA is on the northern boundary of Glen Douglas Mine approximately 250 m east of Site 1
- Plant species diversity on Site 2 is very low and likelihood of occurrence any sensitive species is also very low. Most of Site 2 is mapped as a CBA and no Red or Orange List species were found.
- Site 2 is flanked on the east side by the Klip River and was confirmed to be a wetland, at least in part, and therefore is not suitable for the proposed construction of dolerite burning kilns. Its proximity to the Klip River would also mean that the riverine system would have to be adequately buffered, making it non-viable in terms of the area available for construction.
- Site 3 is largely a transformed agricultural area, divided into an eastern third with horse stables and grazed paddocks and a western wedge-shaped two-thirds. Despite the winter condition, which precluded a conclusive evaluation of this area, and the use of the area for grazing, it is judged that this part of Site 3 has high merit in terms of grassland conservation. If rested from grazing it is likely to provide a good example of Carletonville Dolomite Grassland.
- Site 3 is partially mapped as a CBA. However, from ground-truthing it is believed that more of the western two-thirds of Site 3 (i.e. the whole of the western two-thirds) should be assigned CBA status. There is the possibility of Orange and/or Red List species occurring on Site 3 (western two-thirds) but due to the winter condition it was not possible to verify this. As a result this is not a preferred site.

3. Visual Conceptual Representation

The conceptual visual representation of the kilns was superimposed on photographs taken from around the site as shown below in Figure 6. The following were the conclusions

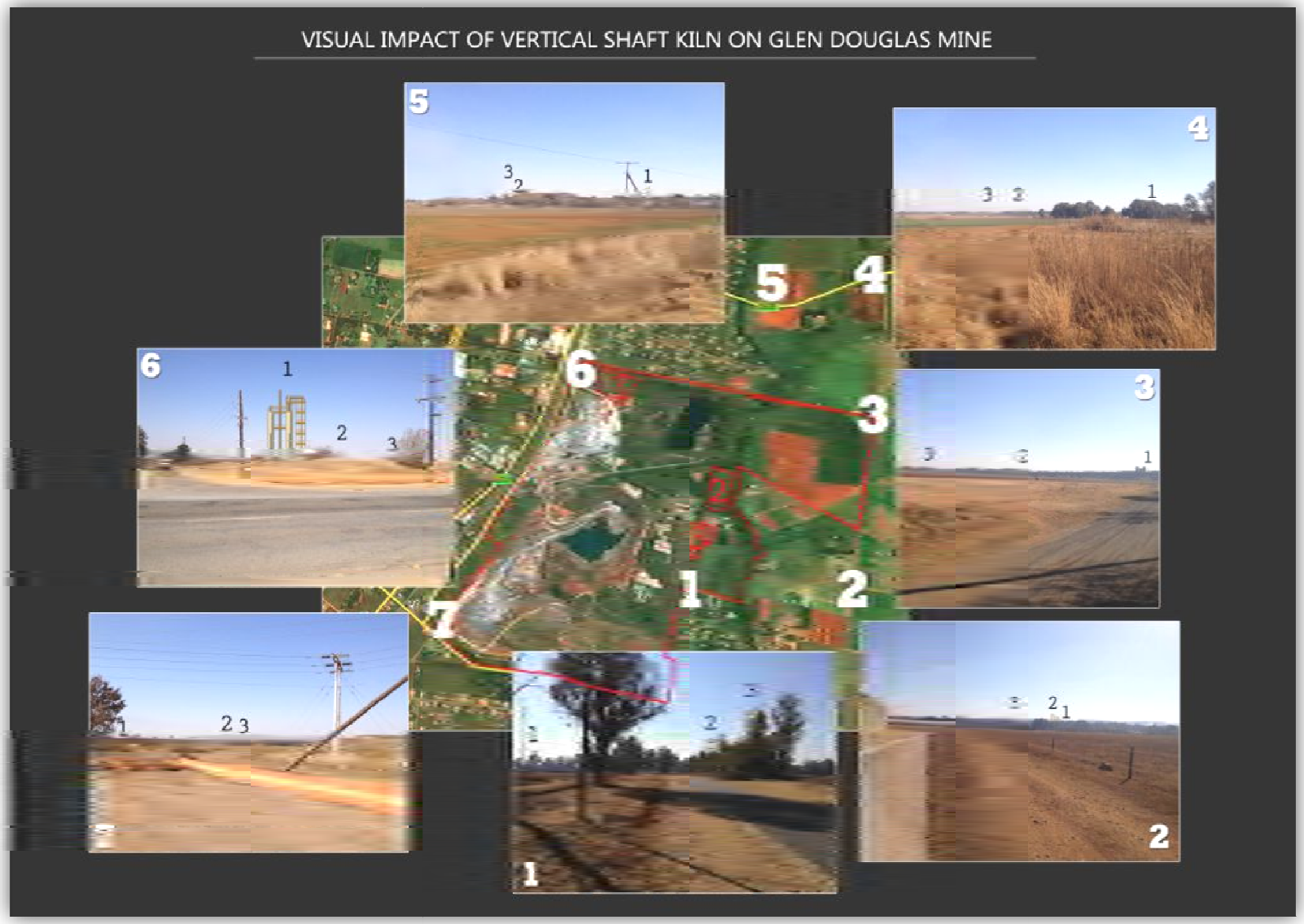

Figure 6: Conceptual visual representation of the kilns on site

- Overall Site 1 has the lowest visual impact and the kilns will only be clearly seen from the north west of the site from the R59.
- From the south and south-east (photo 1) the kilns on Site 1 would have the least visual impact because it is mostly hidden from view by the tree line. The kilns are the most visible from Site 2 and 3, although the tree line does hide the kilns somewhat. From this view the kilns would be preferred on Site 1 from a visual perspective.
- From the south east (photo 2) the kilns are partially hidden from sight by the tree line on sites 1-3. Although the kilns are visible on all the sites, the impact is lowest for Site 1.
- From East from the farms (photo 3) the kilns are hidden from view on Site 1-3 although the visual impact for site 1 is the lowest. On site 1 only the top-most tip of the kiln is visible. For site 2 and Site 3 approximately a third of the kiln is visible. Site 1 is the preferred site from a visual perspective.
- From North East (photo 4) the kiln is completely hidden from view by the treeline for Site 1. The kilns are more hidden from sight at Site 2 than site 3 but the visual impact is low for both of these sites. Site 1 is the preferred site from a visual perspective.
- From North East on the R557 (photo 5) the kilns are completely hidden from view on Site 2, while Site 3 it is barely visible. The kilns are visible on Site 1 with the top half of the kiln showing
- From North in the residential area(photo 6) the kilns are visible on Site 1 from this vantage point, while it is not visible on Site 2 and Site 3. The kilns are the most prominently visible from photo site 6 – but this is averaged out by Site 1 having the lowest visual impact on photo site 1-4 and 7.
- From West(photo 7) the kilns on Site 1 is completely hidden from sight, while the kilns on Site 2 and Site 3 will be visible (the top third).

3 ENVIRONMENTAL AUTHORIZATION PROCESS

The Environmental Impact Assessment (EIA) Process is a requirement of the National Environmental Management Act 107 of 1998 (NEMA)as amended and the Environmental Impact Assessment Regulations, 2010.

The proposed development requires authorization/approval from theGauteng Department of Agriculture and Rural Development.Application is made for authorisation of the following listed activities:

The following NEMA listed activities were applied for:
Listing Notice 1: GN No 544; **Activity** 2, 23
Listing Notice 2 GN No 545 **Activity** 5
Listing Notice 3: GN No 546 **Activity** 16

4 AIR EMISSIONS

An application has been made for an Atmospheric Emission Licence for Glen Douglas Dolomite (Pty Ltd in terms of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) for the following listed activities:

The following NEMAQA listed activities were applied for:	
Category of Listed Activity	Sub-category of Listed Activity
5	5.5

5 REGISTRATION AND PUBLIC MEETING

In order to ensure that you are **registered** as an interested and/or affected party (I&AP) or if you require further information on the application and or activity, please submit your name, contact information, interest and relevant issues on the matter by 1**3 November 2013** to the EAP listed below.

An open day will take place on the **23rd of October 2013** at **15:00 until 19:00** at the O'Connor Hall in Pretorius Road, Henley-on-Klip.

The draft Basic Assessment Report will be available for **viewing** at the **Henley-on-Klip library** or **digitally** on request from the EAP from **30 October 2013**.

Street Address of library: 1884 Regatta Rd, Henley-on-klip, 1961

Library telephone number: 016 366 0112

Details of EAP:

Nerine Coertzen

Pieter Badenhorst Professional Services

Telephone Number:082 052 6122

Fax Number: 086 672 1916

Email address: nerinelerm@gmail.com

Postal address: PO Box 1058, Wellington, 7654