

# CAPE LIME (PTY) LTD

APPLICATION FOR ENVIRONMENTAL  
AUTHORISATION FOR AN EXTENSION OF  
DOLOMITIC LIMESTONE MINE AND CONSTRUCTION  
OF LIME KILNS ON FARM WELVERDIEND NEAR  
VANRHYNSDORP, WESTERN CAPE PROVINCE

## BACKGROUND INFORMATION DOCUMENT (BID)

February 2020

**DMR Reference Number: WC 30/5/1/2/3/2/1(401) EM**



## THE PURPOSE OF THIS DOCUMENT

This Background Information Document (BID) aims to provide you, as an Interested and Affected Party (I&AP), with information regarding the environmental authorisation application to extend a Dolomitic Limestone Mine and Construction of Lime Kilns on Farm Welverdiend near Vanrhynsdorp. Any individual, company, authority or other entity that might be directly or indirectly affected by the proposed activity is invited to register as an Interested or Affected Party (I&AP). This includes, but is not limited to landowners, tenants, municipal and provincial authorities, interest groups, Non-Government Organisations and conservation groups.

The BID provides I&APs with the project information, opportunity to comment by raising any issues of concern or interest regarding the proposed project, information on how the Scoping and Environmental Impact Assessment (EIA) process will be undertaken, and creates a platform for all key interested and affected parties to be involved in the project. The sharing of information forms the basis of the Public Participation Process and offers you the opportunity to become actively involved in the project from the outset.

## STUDY AREA

The proposed extension of the dolomitic limestone mine will take place on Portion 4 of Remainder Farm Welverdiend No 511. The site is located  $\pm 9$  km south of Vanrhynsdorp,  $\pm 12$  km north-east of Klawer and  $\pm 19$  km east of Vredendal. The property is currently accessed via an existing road and intersection from the N7. The site falls within the jurisdiction of Matzikama Municipality, under West Coast District Municipality, in Western Cape Province.

## PROJECT BACKGROUND AND DESCRIPTION

Cape Lime (Pty) Ltd, a subsidiary of Afrimat (Pty) Ltd, has applied for an Environmental Authorisation to extend the current mining area of dolomitic limestone mine and construction of limekilns on Portion 4 of Remainder Farm Welverdiend No 511. Cape Lime (Pty) Ltd. (hereafter referred to as "the Applicant") has, in June 2012 been awarded a Mining Right, in terms of Section 22 of the Mineral and Petroleum Resources Development Act 2002 (Act No. 28 of 2002), for the mining of limestone and dolomite from within a 321.11ha area on the Remainder of Farm 511 (Farm Welverdiend), Vanrhynsdorp. Subsequently, environmental authorization has been obtained in June 2015 in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) related to mining activities on 6ha. It was followed by a General Authorization in terms of section 39 of the National Water Act (Act 36 of 1998) as well as authorization by the Matzikama Municipality in terms of article 25 of the Land Use Planning Ordinance, 1985 (No 15 of 1985) LUPO. The proposed expansion activities are intended to expand the already authorised mining activities of 6Ha.

The proposed project entails the clearing of 45ha of virgin (undeveloped) land for the purposes of mining limestone deposits, the erection of a crushing plant, four (4) Fluid Bed Lime Calciners and associated supporting services. The total footprint of the mining development on the Remainder of Farm 511 (Wolverdiend), Vanrhynsdorp, will be  $\pm 34$  ha and the process plant and logistical facilities will have a maximum footprint of 11ha (see Figure 1 below).

It is envisaged that the following supporting service infrastructure will be provided on site:

- Workshops for mechanical and electrical maintenance.
- Laboratory for quality control testwork.

- Administrative offices including a weighbridge.

The layout will be planned to allow the phasing in of the four (4) kilns to the process line as and when required and justified. It will also include related logistical facilities, workshops and an office complex. The application for the approval of the EIA is triggered by the enlarged mining area, still well within the approved Mining Right area of 321 ha, and the erection of Lime Kilns.

Cape Lime currently mines and processes limestone and dolomite, on the Farm Vaderlandsche Rietkuil, 7 km east of the proposed project (see Figure 2 below). The current activities entail, apart from mining of limestone and dolomite, crushing and screening of all mined material as well as calcination of limestone in an existing Fluid Bed Lime Kiln. The markets currently served are:

- Water treatment (potable and effluent)
- Glass Industry (Flat glass and container glass)
- Aggregates
- Chemical Industries (Calcium Mineral Fillers)
- Hypochlorite, mineral separation processes and tanneries)

The extent of the current limestone deposit being mined is such that it cannot support the supply of limestone to additional processing facilities without drastically reducing the life of the resource. Expansion in terms of additional capacity on the current site is also limited due to numerous constraints. Cape Lime is confronted on a regular basis with enquiries with regard to supply of high quality white lime products to potential new projects in South Africa, for which Cape Lime does not have the current production capacity.

### **Mining/Excavation**

Mining process will entail removal of overburden to expose the underlying limestone. Overburden thickness varies from virtually none on the southern end of the deposit to ±10m on the northern side. This

allows strip mining to be undertaken by drilling and blasting ±30m wide and 50m long strips on the shallow end of the deposit. This will facilitate backfilling of the southern end of the excavation to commence relatively early (±3 years after start), thereby minimizing the need for overburden stockpiles. This will assist in minimizing the visual impact of the operation and expedite rehabilitation of backfilled slopes.

Excavation of blasted limestone will be done by an excavator and trucks will haul the limestone to the crushing plant less than 500m from the excavation. The mining and crushing plant will operate on a single day shift basis.

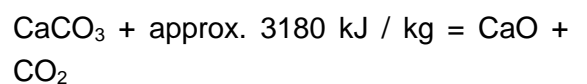
### **Processing**

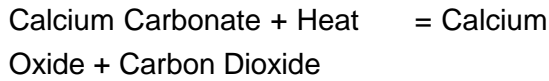
Crushing will consist of a three stage crushing operation to reduce the limestone to < 6mm particle size. Co-products in the crushing and screening process will be <1mm material which will be supplied to existing and new customers in the glass and industrial minerals industry. The <6mm material will be stockpiled for use as feed to the lime kilns.

The lime kilns will be fed by a common limestone feed conveyor, drawing from underneath the limestone stockpile. The coal to be used as fuel in the kilns will also be fed from underneath a coal stockpile, via a common coal conveyor, to the respective kilns.

The kilns will be replicas of the existing Fluid Bed Calciner, which has been in operation at Cape Lime's Vredendal operation since 2004. Lime produced will be stored in silos before being dispatched to various clients in bulk tanker or bulk bags. The operation of the kilns will be, by nature of the process, a continuous operation.

The calcination or burning of limestone is a simple chemical process. When heated the carbonate decomposes according to the equation:





The decomposition temperature depends on the partial pressure of the carbon dioxide present in the process atmosphere. In a combustion gas atmosphere of normal pressure and 25% CO<sub>2</sub>, the dissociation of limestone commences at 810 °C. In an atmosphere of 100% CO<sub>2</sub>, the initial dissociation temperature would be 900 °C. In order to fully calcine the stone and to have no residual core, heat supplied to the stone surface must penetrate via conductive heat transfer to the core. A temperature of 900 °C has to be reached in the core at least for a short period of time since the atmosphere inside the material is pure CO<sub>2</sub>. The stone surface must be heated to greater than 900 °C to maintain the required temperature gradient and overcome the insulating effect of the calcined material on the stone surface. When producing soft-burnt lime the surface temperature must not exceed 1100 to 1150 °C as otherwise re-crystallisation of the CaO will occur and result in lower reactivity and thus reduced slaking properties of the burnt product.

The limestone is then crushed and sized to between 1 and 6mm. The limestone fed to the kiln is set according to the production rate. The feed is introduced via the preheater in which it is contacted with hot gases from the hot product cyclone. The heated limestone falls into the bed from the port in the freeboard. Pea sized coal is also introduced to the kiln via this feed port. The feed rate is set to control the heat input into the kiln.

The kiln operates by maintaining a bed of material about 1m deep through which preheated air is blown. The air is distributed evenly over the kiln floor area by specially designed jetcaps making "bubbles" which pass through the bed and exit into the freeboard. The bed and jetcaps cause a significant pressure drop requiring positive displacement air blowers. The bed contains a mixture of

limestone, partially calcined limestone and coal which burns in the bed transferring heat to the air and stone at a relatively constant temperature. The decrepitated burnt lime – typically finer than 0,5mm is carried out of the kiln riser by the upflowing gases – is recovered in the hot product cyclone. The product is cooled by quenching in air after which it is collected by the cold product cyclone and transferred to storage silos.

The product in the silos is quality tested and then transferred either into bulk bags for storage or sales, tankers for direct sales, or to the hydrater plant for further processing.

It is anticipated that 26 people will be employed at the commencement of operations and this will be a combination of permanent skilled operators and local workers will be employed at the site. The workforce will increase as each kiln is required to be brought into production. Mining and crushing will involve 10 employees. The first kiln will require 16 employees and each additional kiln 12 per kiln. Maintenance, laboratory, sales and weighbridge and management will be 16 employees. In full production a total of 78 employees is envisaged.

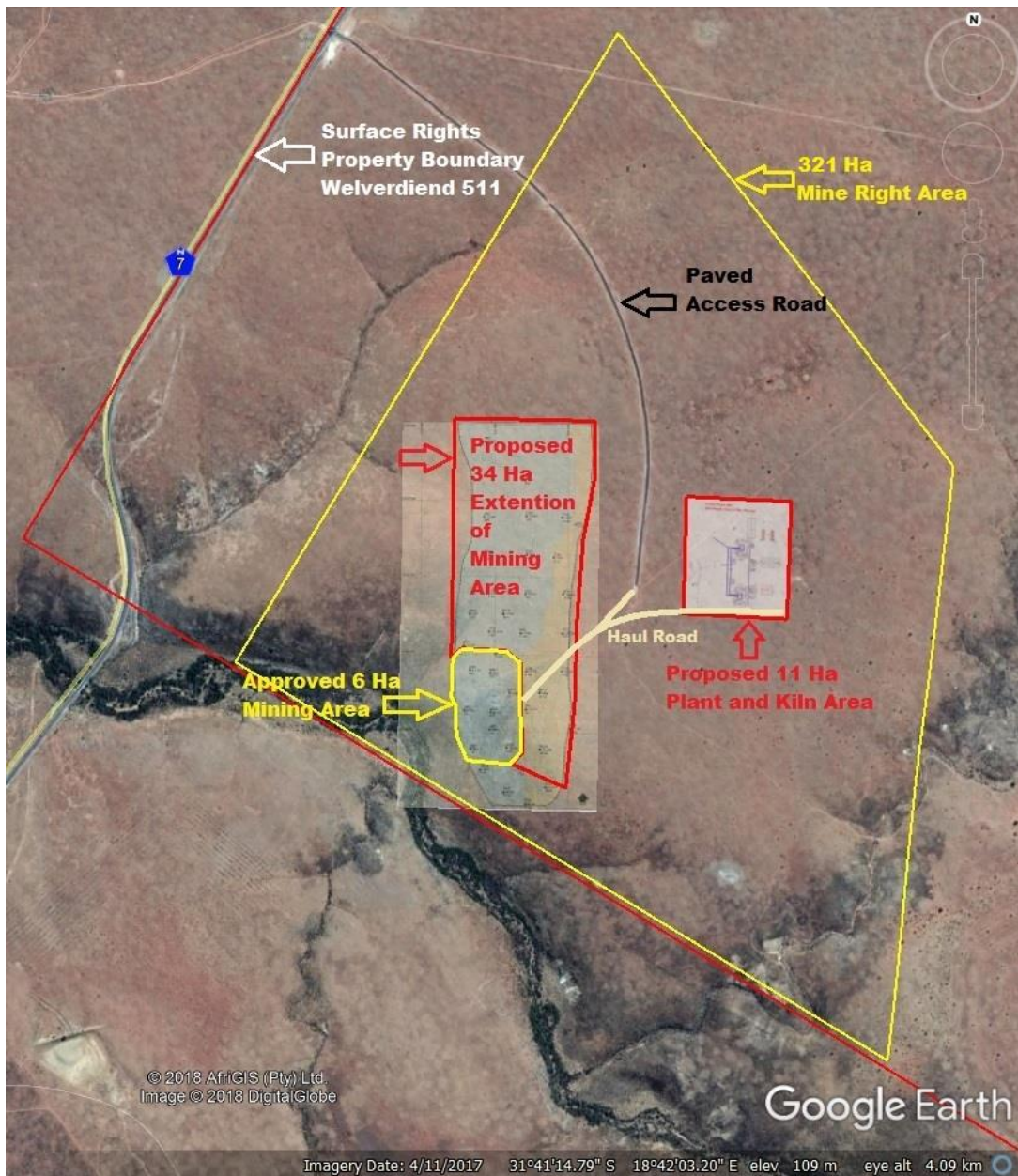


Figure 1: Aerial view of the site showing the position of the proposed mining extension area and mine kilns site. The mining rights area is outlined in Yellow

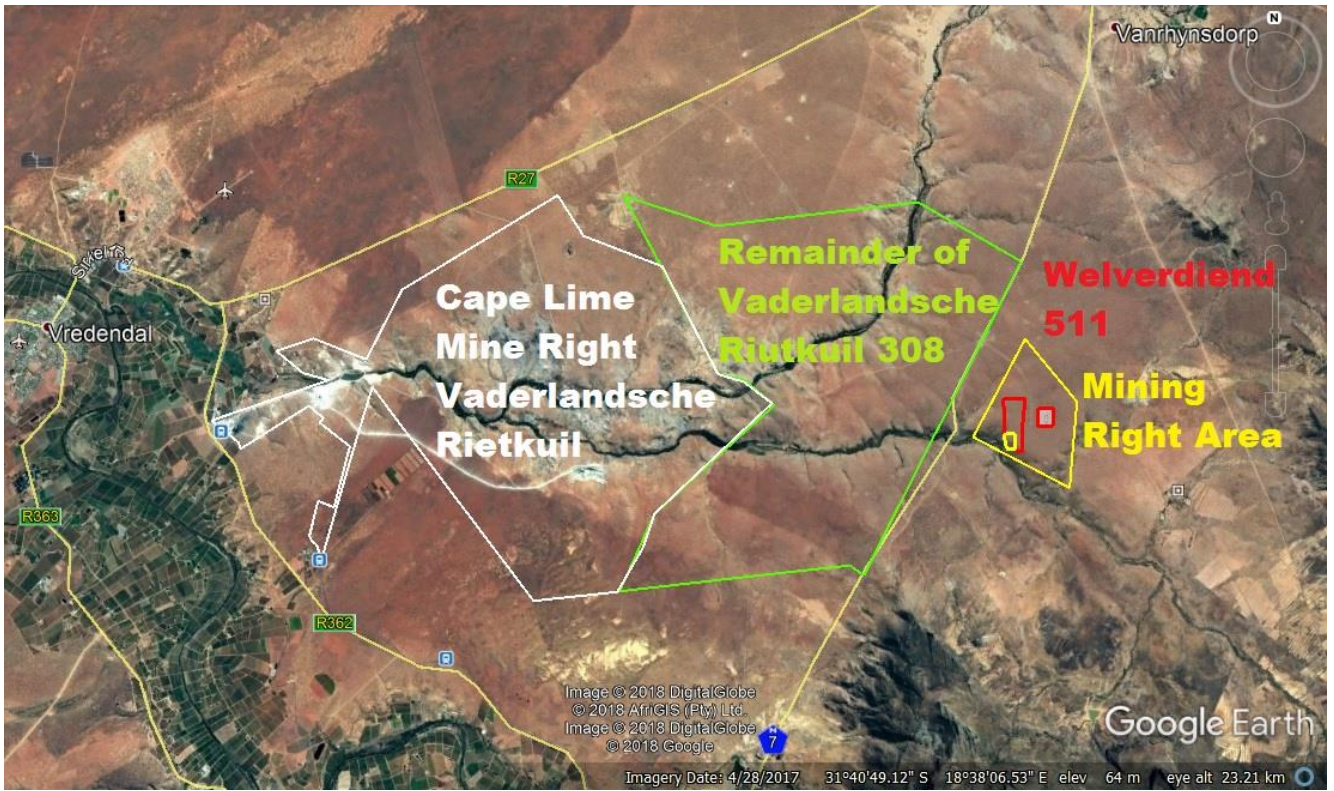


Figure 2: Google Earth Map showing the two Cape Lime mining rights: Farm Vaderlandsche Rietkuil and Welverdiend Farm

## LEGAL FRAMEWORK

In terms of Sections 24(2) and 24D of the National Environmental Management Act (Act No. 107 of 1998), as amended, and as read on Listing Notice 2 (Government Notices R. 984 in Government Gazette 38282 of 4 Dec 2014) a Scoping and EIA is required for the project as per the following listed activities:

- **GN R 983, Listing Notice 1, Activity 21:** The decommissioning of any activity requiring -
  - (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002);
- **GN R 984, Listing Notice 2, Activity 6:** The development of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation of release of emissions, pollution or effluent
- **GN R 984, Listing Notice 2, Activity 15:** The clearance of an area of 20 ha or more of indigenous vegetation
- **GN R 984, Listing Notice 2, Activity 28:** Commencing of an activity, which requires an atmospheric emission license in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
- **GNR 985, Listing Notice 3, Activity 28:** The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

The proposed mine extension will take place within 150m of the Wiedou River and a borehole would need to be drilled to serve as water supply for dust suppression and small quantities of process water, therefore, in terms of the National Water Act No. 36 of 1998, a Water Use license is required as per the following listed activities:

- (a) Taking water from a water resource – drilling of 2 boreholes to use ground water
- (c) Impeding or diverting the flow of water in a watercourse – mining within 500m of a water course (Wiedou River)
- (i) Altering the bed, banks, course or characteristics of a watercourses - mining within 500m of a water course (Wiedou River)

The proposed development includes the construction of 4 Fluid Bed Lime Kilns. As such, in terms of the National Environmental Management Air Quality Act (Act No. 39 of 2004) (NEM: AQA) an Air Emissions License (AEL) is required.

## SCOPE OF PROJECT

The Environmental Impact Assessment application process will include:

- Submission of Environmental Impact Assessment (EIA) application forms to Western Cape Department of Mineral Resources (DMR).
- Consultation with Interested and Affected Parties (I&APs).
- A number of potential environmental impacts associated with the project have been identified. As part of the environmental authorisation, these potential impacts will be assessed through the following specialist studies:
  - Heritage Assessment;
  - Palaeontological Assessment;
  - Archaeological Assessment;
  - Ecological Assessment (flora and fauna); and
  - Air Quality Assessment
- Submission of Final scoping report to DMR following consultation with I&APs.
- Compilation and submission of an EIA report and Environmental Management Programme (EMPr) to DMR following consultation with I&APs.

- Decision making by DMR – the competent authority use the documents to decide if the project should go ahead or not
- Notification of I&APs of the competent authority's decision and appeal process

#### **YOUR ROLE AS AN INTERESTED & AFFECTED PARTY**

As a stakeholder are invited to register as an Interested and Affected Party (I&APs) and to participate in the scoping process by commenting on the proposed mining permit application.

You can participate in the following manner:

- Contact the public participation office if you would like to further information on the project;
- Review all project documentation provided to you;

- Attend focus group meetings and key stakeholder workshops should there be any;
- Raise issues that you are concerned about, make suggestions for enhanced project benefits, and provide the project team with information on issues relevant to the proposed routes;

#### **COMMENTS AND QUERIES**

Contact Details: Public Participation Office  
Please direct all comments, queries or issues to:

**Ntsanko Ndlovu**

Tel: 016 366 0321

Cell: 082 728 8975

Fax: 086 607 1354

E-mail: [ntsanko.ndlovu@afrimat.co.za](mailto:ntsanko.ndlovu@afrimat.co.za)



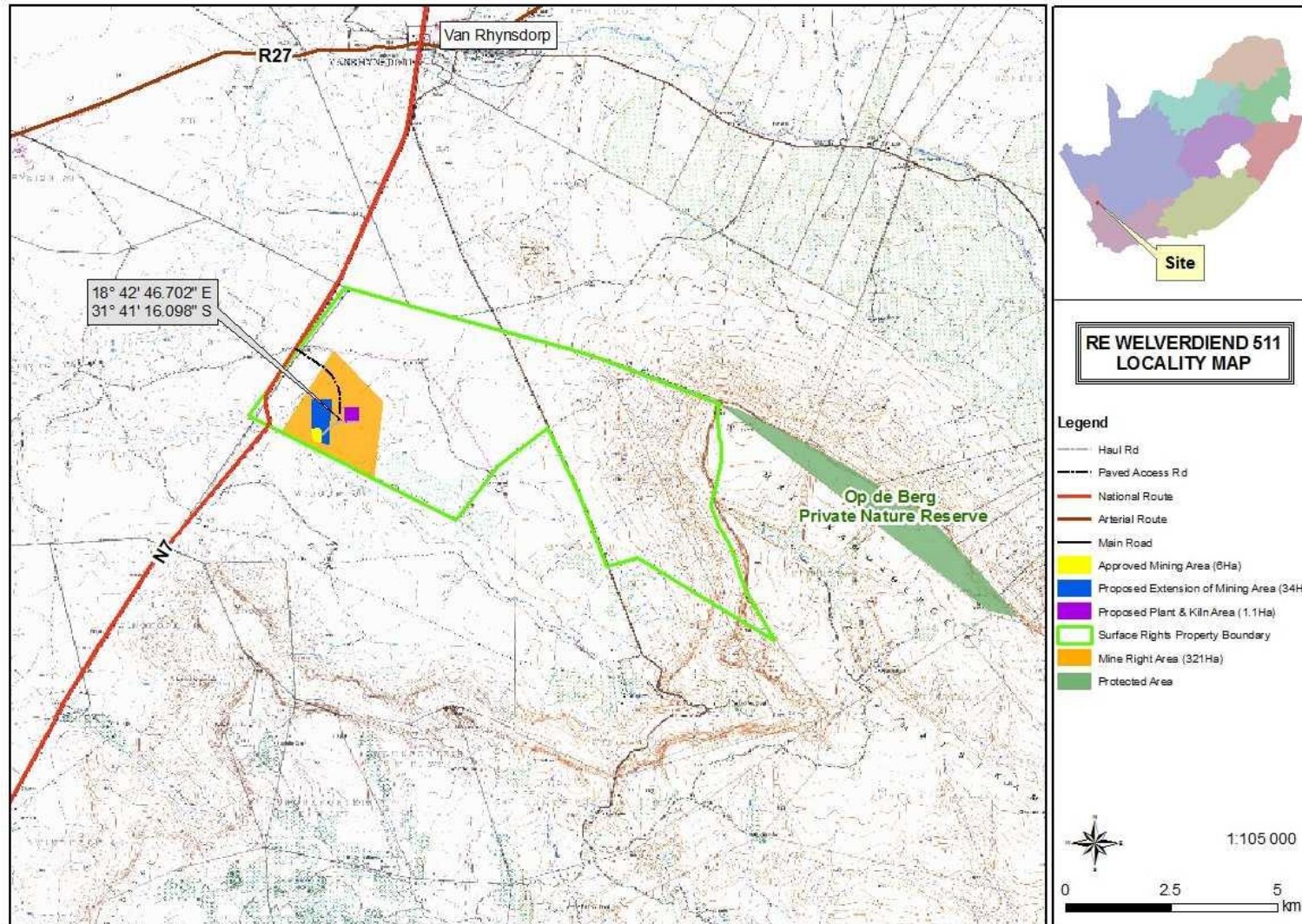


Figure 3: PROJECT LOCALITY MAP

**ENVIRONMENTAL AUTHORISATION FOR AN EXTENSION OF DOLOMITIC LIMESTONE MINE AND CONSTRUCTION OF LIME KILNS ON FARM WELVERDIEND NEAR VANRHYNSDORP, WESTERN CAPE PROVINCE**

**REGISTRATION AND SHEET, FEBRUARY 2020**

**Please complete and return to the address below by Tuesday the 10<sup>th</sup> March 2020:**

Ntsanko Ndlovu  
Afrimat (Pty) Ltd  
Tel: 016 366 0321  
Cell: 082 728 8975  
Fax: 086 607 1354  
E-mail: [ntsanko.ndlovu@afriam.co.za](mailto:ntsanko.ndlovu@afriam.co.za)

<b>NAME</b>		<b>SURNAME</b>	
<b>ORGANISATION</b>		<b>EMAIL</b>	
<b>TITLE/POSITION</b>			
<b>POSTAL ADDRESS</b>			<b>POSTAL CODE</b>
<b>TEL NO</b>		<b>FAX NO</b>	

**COMMENTS** (please use separate sheets if necessary)

1. The following environmental, social and economic issues must be addressed by the EMP

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2. My comments on the public participation and/or technical processes as outlined in the BID are as follows:

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3. I suggest that the following stakeholder/s or role player be included in the consultation process:

Please list their names and contact details below:

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4. Any other comments:

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