

# MIDVAAL LOCAL MUNICIPALITY (SEDIBENG DISTRICT MUNICIPALITY)

## NEW MIDVAAL BRICK MANUFACTURING FACILITY, ON THE REMAINING EXTENT OF PORTION 3 OF THE FARM WITKOPPIE 373 IR, LOCATED IN MEYERTON (REVISION 0)



## TRAFFIC IMPACT ASSESSMENT NOVEMBER 2021



**PREPARED FOR:**

Afrimat (Pty) Ltd

**PREPARED BY:**

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## EXECUTIVE SUMMARY

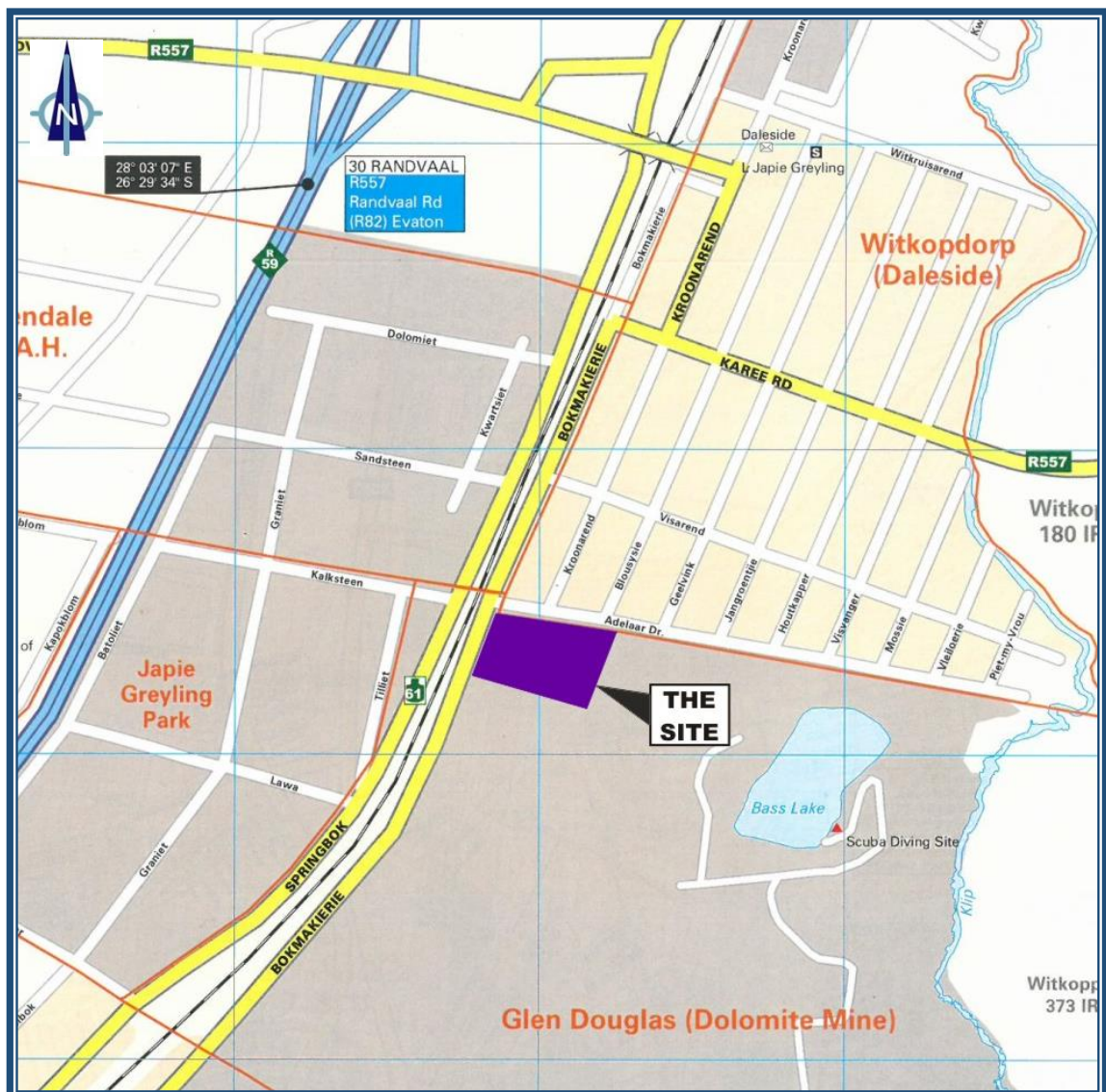
This report contains a Traffic Assessment undertaken for the following development:

- ✓ The construction of a new Midvaal Brick Manufacturing Facility, located on the Remaining Extent of Portion 3 of the Farm Witkoppie 373 IR.
- ✓ The applicant site is located in the southeastern quadrant of Bokmakierie Road & Adelaar Drive intersection and is located in the area of jurisdiction of Midvaal Local Municipality.


The development is for the new brick manufacturing facility.

The proposed development will generate approximately 8 and 11 trips, during the weekday morning and afternoon peak hours respectively.

Access to the site is proposed from Bokmakierie Road.



## MARITENG INFORMATION PAGE

<b>TITLE OF REPORT:</b> Traffic Impact Assessment – New Midvaal Brick Manufacturing Facility, located on the Remaining Extent of Portion 3 of the Farm Witkoppie 373 IR		
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<b>MARITENG PROJECT NUMBER:</b> 190/86	<b>MARITENG REPORT NUMBER:</b> 190-86-02 daleside brick manufacturing traffic report.doc	
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<b>TECHNICAL SUPPORT</b>	: Mr. R du Toit : Me. E du Toit : Me. E Muller : Me. L du Toit : Me. M.E. Nkonde	
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Revision No.	Date	Comments

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**TRAFFIC IMPACT ASSESSMENT:  
NEW MIDVAAL BRICK MANUFACTURING FACILITY, LOCATED ON THE  
REMAINING EXTENT OF PORTION 3 OF THE FARM WITKOPPIE 373 IR  
(REVISION 0)**

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## 1. INTRODUCTION

### 1.1 PROJECT DESCRIPTION

This report contains a Traffic Impact Assessment undertaken for the following development:

- ✓ The construction of a new Midvaal Brick Manufacturing Facility, located on the Remaining Extent of Portion 3 of the Farm Witkoppie 373 IR.
- ✓ The applicant site is located in the southeastern quadrant of Bokmakierie Road & Adelaar Drive intersection and is located in the area of jurisdiction of Midvaal Local Municipality.

The traffic report forms part of the EIA Report, prepared by Afrimat (Pty) Ltd for the environmental assessment of the new Midvaal Brick Manufacturing facility. Refer to extract appended in **Annexure A**.

SA Brick (Pty) Ltd is a subsidiary of Afrimat Limited. The intention is to expand the current production on a new site closure to the customer base. The development comprises of a fully automatic block production plant – refer to **Annexure B** for schematic illustration of the production plant. The plant will be operating from under a 1 500m<sup>2</sup> roof area plus a small storage yard (±5 000m<sup>2</sup>).

The intention is to manufacture approximately 120 000 units per shift or an average of 2 500 000 per month.

The product will be transported by road using trucks of varying sizes.

### 1.2 PROPERTY DESCRIPTION

The site measures 6.8ha and is located on the Remaining Extent of Portion 3 of the farm Witkoppie 373 IR.

The location of the site is shown in **Figure 1**.

### 1.3 CLIENT DETAILS

The details of the developer/client involved with the projects/development are:

- ✓ Afrimat (Pty) Ltd  
P.O. Box 768  
**Bellville**  
6850

### 1.4 BACKGROUND OF RESPONSIBLE TRAFFIC ENGINEER

This study was undertaken by traffic engineer:

Mr. Louis du Toit, P.O. Box 8864, Verwoerd Park, 1453

The traffic engineer has the following qualifications for undertaking Traffic Impact Assessment:



- 
- ✓ Registered as a professional engineering technologist (Registration No. 200270072);
  - ✓ Baccalaureus Technologiae – Engineering Civil (Transportation) (1997); and
  - ✓ Experienced in the field of evaluating the traffic impact of developments since 1990.

*“I Louis du Toit, author of this report, hereby certify that this study has been prepared according to requirements of the South African Traffic Impact and Site Traffic Assessment Manual (TMH 16 - Volume 1). I take full responsibility for the content of the report, including all calculations, conclusions and recommendations made herein”.*

**DECLARATION**

I, Louis du Toit, declare that:

- ✓ *I act as the independent specialist in this application;*
- ✓ *I will perform the work relating to the application in an objective manner, even if this results in the views and findings that are not favourable to the client;*
- ✓ *I declare that there are no circumstances that may compromise my obligation in performing such work;*
- ✓ *I have expertise in conducting the specialist report relevant to this application, including knowledge of my responsibility under ECSA regulations;*
- ✓ *I will comply with the ECSA regulations and all other applicable legislations;*
- ✓ *I have no, and will not engage in, conflicting interests in the undertaking of the activities;*
- ✓ *I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonable has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;*
- ✓ *All the particulars furnished by me in this form are true and correct; and*
- ✓ *I realise that false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.*

Signature: .....  
Traffic engineering specialist  
Mariteng Consulting Engineers  
November 2021



## 2. STUDY METHODOLOGY

### 2.1 INTRODUCTION

The South African Department of Transport (DoT) Manual for Traffic Impact Studies (RR 93/635, of 1995) is a guideline document used for undertaking traffic impact assessments and the THM 17 Volume 1, South African Trip Data Manual (Version 1, September 2014) was used to calculate the additional development traffic.

According to the DoT 1995 Manual definition for a TIA, "A traffic impact study may be considered as a procedure to determine the effect that a change in land use or transportation infrastructure may have on existing and future traffic conditions". The Manual sets out various principles and guidelines for implementation in a Traffic Impact Assessment and the following criteria (in **Tables 1, 2 and 3**) are recommended for defining the thresholds (i.e. the minimum size of development).

**Table 1: Trip Generation Threshold Value for a Traffic Impact Study (DoT)**

Recommended Threshold	
i)	More than 150 peak hour trips <sup>(a)</sup> – prepare a Traffic Impact Study (TIS)
ii)	Less than 150 and more than 50 peak hour trips - prepare a Traffic Impact Statement (TISm)
iii)	Less than 50 peak hour trips - no study required except if the surrounding road network is operating at or above capacity
iv)	Discretion of the responsible authority <sup>(b)</sup>

(a) Refers to "trip-ends" which includes primary and pass-by trips.

(b) Based on the discretion of the responsible road authority, a Traffic Impact Study or Statement can be required e.g. if the development is located in a sensitive area, even though less than 50 peak trips are generated. Alternatively, only a Traffic Impact Statement can be required although the development generates more than 150 trips but is for example located in an insensitive area.

The Manual recommends that a Traffic Impact Assessment include the following:

- ✓ Description of the proposed development and trips generated.
- ✓ An evaluation of the existing operational conditions of the road network in the immediate vicinity of the proposed development.
- ✓ Analysis of the operation of the proposed access (es) to the development.
- ✓ Conceptual geometric arrangement of the proposed access (es).
- ✓ Analysis of the operation of the first intersection on either side of the access (es) to the development.
- ✓ Analysis of forecasted operational conditions of the road network taking into consideration development and background traffic at the expected critical peak hour.
- ✓ Assessment of mitigation measures to maintain a reasonable level of service (LOS).
- ✓ Assessment of parking sufficiency.

The impact of traffic generated by a development usually decreases with distance away from the development due to the dilution of traffic over a greater road network and therefore the limit of assessment seldom exceeds 1.5km from the site.

**Table 2: Defining the Study Area for the Traffic Impact Study (DoT)**

Recommended Study Area	
i)	All elements of the road infrastructure in the TISm.
ii)	All further elements of the road infrastructure where 75 additional <sup>(a)</sup> development trips are added to the sum of the critical lane volumes.
iii)	In the case of denser urban road network, a cut-off distance of 1 to 1.5km from the site along the road network (not as crow flies) can be considered to limit the extent of the study.
iv)	Discretion of the responsible authority <sup>(b)</sup> .

(a) *In case of a development where a percentage of the trips attracted are bypass trips (e.g. retail, this refers to primary trips, i.e. total trips generated by the development minus bypass trips where applicable.*

(b) *The responsible authority can require that intersections beyond 1 to 1.5km from the site be included, based on site-specific issues or to include intersections where less than 75 additional trips are added to the sum of the critical lane volumes.*

The Manual further recommends that a relevant forecast period should be considered and the following assessment years are recommended.

**Table 3: Assessment Years for a Traffic Impact Study (DoT)**

TIS m - (50-150 trips in the peak hour)	<ol style="list-style-type: none"> <li>1. Base year (assuming full development and base and opening year is the same year);</li> <li>2. Any other year on discretion of the responsible road authority.</li> </ol>
Single phase development – (150-2000 trips in the peak hour)	<ol style="list-style-type: none"> <li>1. Base year (assuming full development); and</li> <li>2. Five years after the base year;</li> <li>3. Any other year on discretion of the responsible road authority.</li> </ol>
Single phase development – > 2000 trips in the peak hour	<ol style="list-style-type: none"> <li>1. Base year (assuming full development); and</li> <li>2. Ten years after the base year;</li> <li>3. Any other year on discretion of the responsible road authority.</li> </ol>
Multi-phase developments	<ol style="list-style-type: none"> <li>1. Opening year; and</li> <li>2. Five years after the base year or completion of important phases if development generates &lt; 2000 peak hour trips;</li> <li>3. Ten years after base year assuming full development if development generates &gt; 2000 peak hour trips; and</li> <li>4. Any other year on discretion of the responsible road authority.</li> </ol>

Based on the aforementioned discussion it is not required to prepare a traffic study. However, for the purpose of this study a traffic impact statement was undertaken to determine the impact the additional development traffic will have on the road network. In light of this, the study was

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executed in accordance with the following guideline documents:

- ✓ Committee of Transportation Officials (COTO), August 2012, **South African Traffic Impact and Site Traffic Assessment Manual (TMH 16 - Volume 1) (Version 1.0)**.
- ✓ Committee of Transportation Officials (COTO), TMH 17, September 2012, **South African Trip Data Manual (Draft)**.
- ✓ Department of Transport, 1995, **Manual for Traffic Impact Studies**.

## 2.2 SCOPE OF WORKS

The scope of works in executing the report, is as follows:

- ✓ Conduct desktop study;
- ✓ Where necessary undertake site investigation;
- ✓ Determine warrant for traffic assessment and intersections to be included as part of the assessment;
- ✓ Description of the proposed development (land use, FAR, density, etc.);
- ✓ Discuss the existing and future road network for the study area;
- ✓ Determine the need for traffic counts;
- ✓ Assess impact on provincial and national roads;
- ✓ Address access arrangement and assess level of service of access control system;
- ✓ Address public transport and non-motorized transport requirements;
- ✓ Investigate future road master plan for the study area; and
- ✓ Conclusions and recommendations.

## 2.3 INTERSECTIONS INCLUDED IN STUDY

In terms of the ***guideline document*** the intersections to be included as part of the traffic report are based on the following parameters:

- ✓ Include elements on which the development is likely to impact;
- ✓ Element shall be restricted to Class 4 and 5 roads in the vicinity, up to the first Class 1 to 3 roads that can be reached by the Class 4 and 5 road networks.
- ✓ In denser urban areas the cut-off distance limit is 1.5km along the road network, provided there is at least one intersection. Where there is no such intersection, then the distance is to the first intersection;
- ✓ At least one intersection on either side of the development access;
- ✓ Judgement by the Assessor in selecting element that must be included in the study area (including first intersection on Class 1 to 3 road); and

- 
- ✓ Discretion of the local authority.

Considering the above, no intersections or capacity analysis assessments are required as part of this application. Also refer to Section 6 of this report for detailed trip generation calculations.

## 2.4 TECHNICAL DOCUMENTS CONSULTED AS PART OF THE ASSESSMENT

The following documentations are also used as part of this study:

- ✓ Institute of Transportation, 2<sup>nd</sup> Edition, **Transportation and Traffic Engineering Handbook**.
- ✓ Akcelik and Associates (Pty) Ltd, 2011, **Sidra Version 7.0**.
- ✓ Dr J Sampson, June 2018, **AutoJ**.
- ✓ Transport Research Board, 1994, **Highway Capacity Manual**.
- ✓ Committee of Transportation Officials (COTO), February 2014, **South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual (TMH 16 - Volume 2) (Version 1.01)**.
- ✓ Committee of Transportation Officials (COTO), August 2012, **South African Road Classification and Access Management Manual (TRH 26) (Version 1.0)**.
- ✓ Department of Transport, South African Development Community, **Road Traffic Signs Manual (SARTSM) Volume 1, Chapter 4 (3<sup>rd</sup> Edition)**.
- ✓ Department of Transport; 2006; **Guidelines for the design of Combi-Taxi Facilities**.
- ✓ Afrimat (Pty) Ltd, June 2021, **Draft Basic Assessment Report – The Proposed Midvaal Brick Manufacturing Facility, Located in the Town of Meyerton, Gauteng Province**.

## 3. PROPOSED DEVELOPMENT

### 3.1 DESCRIPTION

This traffic assessment is undertaken for the new Midvaal Brick Manufacturing Facility.

### 3.2 EXISTING ZONING AND LAND USE RIGHTS

The existing zoning is “Agricultural” and the site is vacant.

### 3.3 APPLICATION

The development is for the new fully automatic block production plant, with a roof area of approximately 1 500m<sup>2</sup>, and a storage yard of 5 000m<sup>2</sup>.

**NOTE:** No site plan is at present available for the development. However, a schematic illustration of the plant layout is appended in **Annexure B**.

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### 3.4 TIME FRAME OF DEVELOPMENT

The development will be undertaken in a single phase and will be operational within a five-year period. The expected life span of the operations is between 10 and 15 years (market dependent), where after the site will be decommissioned.

## 4. STUDY AREA

### 4.1 EXTENT OF STUDY AREA

The study area is shown in **Figures 1 and 2**, and is surrounded by the following key roads:

- ✓ To the north the site abuts Adelaar Drive.
- ✓ To the west the site abuts Bokmakierie Road.

### 4.2 LATENT DEVELOPMENTS IN STUDY AREA

As part of the study no latent developments were identified that could affect the outcome of this report.

### 4.3 EXISTING ROAD AND STREET NETWORK

The existing surrounding road network is briefly discussed hereafter and the location of the roads is shown in **Figure 1 and 2** respectively. The following road is included in the study area:

- ✓ **Bokmakierie Road:** The road is a single lane surfaced road, running in a north south direction. To the north the road links the applicant site with the R59, via Karee Road/Kroonarend Road/Randvaal Road. To the south the road links the study area with the R59, via Henley Drive. In terms of the data available Bokmakierie Road is Provincial Road D1289. Bokmakierie Road falls under the jurisdiction of Midvaal Local Municipality.
- ✓ **Adelaar Drive:** The road is a single lane surfaced road, running in an east-west direction. The existing surfaced roadway is less than 7.0m wide. Adelaar Drive falls under the jurisdiction of Midvaal Local Municipality.

## 5. IMPACT ON PROVINCIAL ROADS

The application was also evaluated in terms of the Gauteng Transport Infrastructure Act of 2001. Based on the provincial Gauteng Strategic Road Master Plan (refer to **Figure 3**) the future K89, is planned to the west of the railway line. The applicant site is not directly affected by the said route but is located within 200m from the site and the Department will be contacted to obtain comments.

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## 6. PROPOSED DEVELOPMENT TRAFFIC

### 6.1 INTRODUCTION

The proposed development is for the new Midvaal Brick Manufacturing facility, with a covered roof size of approximately 1 500m<sup>2</sup> and a yard of approximately 5 000m<sup>2</sup>.

### 6.2 TRIP GENERATION BY PROPOSED DEVELOPMENT

The trip generation rates for the land use is obtained from the guideline document entitled "**South African Trip Data Manual**", and summarised as follows:

#### a) Heavy industry/manufacturing (COTO 120)

In terms of the COTO document "**heavy manufacturing/industry land use covers developments where the primary activity is the conversion of raw materials or parts into products and where the materials or parts have a heavy nature. Examples of this land use includes brick manufacturing, machinery, metal, electrical power generation, etc. The land use also includes offices, warehouse and other facilities associated with the main activity**".

Also refer to **Annexure C** for extract from COTO document.

- ✓ Weekday morning peak hour: 0.50 trips/100m<sup>2</sup> GLA, with a directional split of 75:25 (in:out)
- ✓ Weekday afternoon peak hour: 0.70 trips/100m<sup>2</sup> GLA, with a directional split of 25:75 (in:out)

In terms of the "**guideline document**", trip generation adjustment factors can be applied provided the site meets the necessary requirements. These factors are as follows:

- ✓ Mixed-use development : 5%
- ✓ Low vehicle ownership : 20%
- ✓ Very low vehicle ownership : 30%
- ✓ Transit nodes or corridors : 15%

Considering the lower trip generation, no trip generation adjustment factors are applied.

### 6.3 SUMMARY OF TRIP GENERATION BY PROPOSED DEVELOPMENT

Considering the discussions in **Section 6.2** the total trip demand is summarised in **Table 4**. Also refer to **Annexure D** for detailed calculations.

**Table 4: Total Number of Development Trips**

DESCRIPTION	EXTENT OF LAND USE	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Brick manufacturing	1 500m <sup>2</sup> GLA	6	2	8	3	8	11

**NOTE:** Trip calculations roundup for purpose of this study.

Based on the results the proposed development will generate approximately 8 and 11 trips, during the weekday morning and weekday afternoon peak hours respectively.

## 7. ACCESS ARRANGEMENTS ASSESSMENT

### 7.1 INTRODUCTION

At present no site development plan is available for the site. In the absence of such details the following minimum access arrangements are proposed for the site (also refer to **Mariteng Plan No.: 190-86-01**, appended in **Annexure E**):

- ✓ Access from Bokmakierie Road, on the most southern boundary of the site;
- ✓ Two inbound lanes (1 x 3.7m & 1 x 4.5m);
- ✓ One outbound lane, minimum width 4.5m;
- ✓ Minimum throat length of 25.0m. Distance measured from road reserve boundary to the center of the access control system;
- ✓ Any structures provided as part of the access control system to have a minimum vertical clearance of 5.2m;
- ✓ Minimum access bellmouth radii on local authority road to be 12.0m; and
- ✓ 5m x 5m splays at the site access.

**NOTE:** Final access configuration subject to approval by the road authority.

### 7.2 ROAD SAFETY ASSESSMENT

The proposed access will be provided opposite an existing access. The access design will comply with local authority standards to optimize road safety.



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## **8. PUBLIC TRANSPORT & NON-MOTORIZED TRANSPORT REQUIREMENTS**

### **8.1 INTRODUCTION**

In terms of the National Land Transport Transition Act, Act 5 of 2009 (Section 38), the study also addresses the impact of the development on the public transport network. The assessment assesses the additional transport trips that will be generated, the expected traveling pattern of these users, as well as the impact it may have on the existing public transport network.

### **8.2 EXISTING PUBLIC TRANSPORT INFRASTRUCTURE**

During the site visit, taxis were observed operating along Bokmakierie Road. No formal public transport stops are provided, and taxi makes unscheduled stops as and when required.

### **8.3 PROPOSED PUBLIC TRANSPORT INFRASTRUCTURE**

To improve road safety, taxi stops to be provided on Bokmakierie Road, downstream of the new access.

### **8.4 EXISTING NON-MOTORIZED TRANSPORT INFRASTRUCTURE**

No paved walkways provided along Bokmakierie Road or Adelaar Drive.

### **8.5 PROPOSED NON-MOTORIZED TRANSPORT FACILITIES**

To improve road safety, a 1.5m paved walkway to be provided around the taxi stops.

## **9. RISK ASSESSMENT & MITIGATION MEASURES**

From a traffic engineering view point it is confirmed that the impact of the new brick manufacturing facility will be negligible on the traffic flow along Bokmakierie Road.

To compensate for the turning vehicles an exclusive right-turn lane (storage length = 25) should be provided on the southern leg of Bokmakierie Road. Refer to **Mariteng Plan No.: 190-86-01**, appended in **Annexure E**.

## **10. EXTERNAL ROAD UPGRADE ALONG ADELAAR DRIVE**

Construct access arrangements and exclusive right-turn lane on the southern leg of Bokmakierie Road, as shown in **Mariteng Plan No.: 190-89-01**, appended in **Annexure E**.

## **11. PROTOCOL CHECKLIST**

Refer to **Annexure F** for protocol checklist as per EIA regulations.

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## 12. CONCLUSIONS AND RECOMMENDATIONS

### 12.1 CONCLUSIONS

The findings of the report are summarised as follows:

- i. The report is in support of the expansion of the existing mining development. The land uses are discussed under the "**Recommendations**".
- ii. **Impact of latent rights:** No latent development identifies that could affect the outcome of this report.
- iii. **Impact of provincial roads:** The applicant site is located within future K89 road influence area, planned to the west the railway line. The technical aspects related to the road is discussed under the "**Recommendations**".
- iv. **Development trips:** The proposed development will generate approximately 8 and 11 trips, during the weekday morning and afternoon peak hours respectively.
- v. **Access arrangements:** The access requirements are discussed under the "**Recommendations**".
- vi. **Public transport assessments:** No additional facilities are required.
- vii. **Non-motorized public transport assessments:** No additional facilities are required.

### 12.2 RECOMMENDATIONS

Based on the traffic impact assessment, it is recommended that the proposed new Midvaal Brick Manufacturing facility, located on the Remaining Extent of Portion 3 of the Farm Witkoppie 373 IR, be approved.

The following recommendations should form part of the conditions in the Environmental Assessment and should be implemented prior to the start of any construction of the new mining area:

- i. Obtain approval from Gauteng Province and Midvaal.
- ii. Implement the following access arrangements (also refer to **Mariteng Plan No.: 190-86-01**):
  - ✓ Access from Bokmakierie Road, on the most southern boundary of the site;
  - ✓ Two inbound lanes (1 x 3.7m & 1 x 4.5m);
  - ✓ One outbound lane, minimum width 4.5m;
  - ✓ Minimum throat length of 25.0m. Distance measured from road reserve boundary to the center of the access control system;

- ✓ Any structures provided as part of the access control system to have a minimum vertical clearance of 5.2m;
- ✓ Minimum access bellmouth radii on local authority road to be 12.0m; and
- ✓ 5m x 5m splays at the site access.

**NOTE:** Final access configuration subject to approval by the road authority.

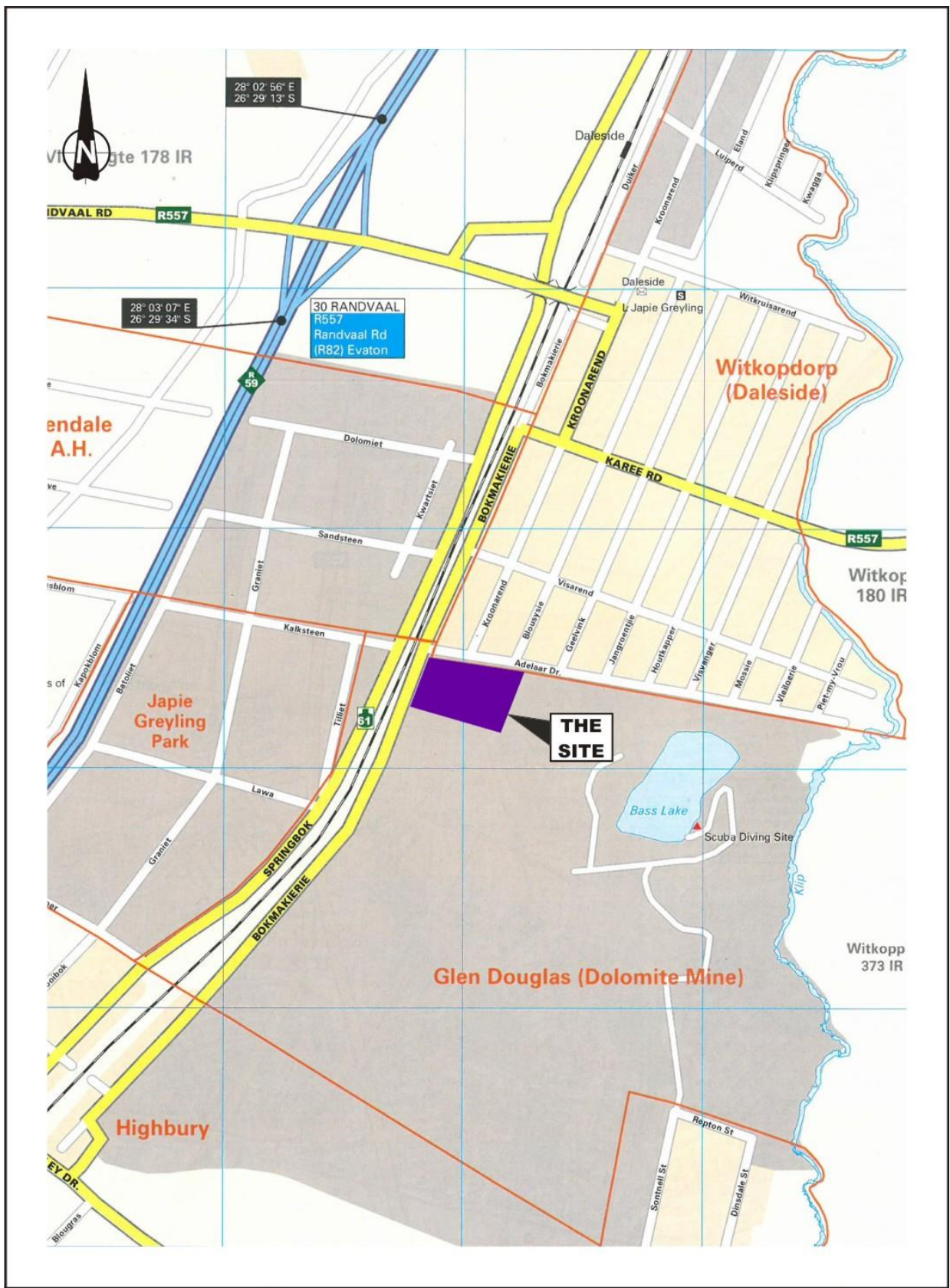
- iii. Provide taxi bays on Bokmakierie Road, downstream of the new access point (also refer to **Mariteng Plan No.: 190-86-01**).
- iv. A site traffic assessment to be prepared for the applicant site, prior to the approval of the site development plan.
- v. The findings of this report are valid for 5 years.

## **FIGURES**

Figure 1: Locality Plan

Figure 2: Aerial View of Study Area

Figure 3: Gauteng Strategic Road Network



 <p>P.O. Box 8864 Verwoerd Park 1453</p> <p>Tel: 087 821 7071 Fax: 086 547 8882 Cell: 082 854 7358</p>	<p><b>PROPOSED NEW MIDVAAL BRICK MANUFACTURING FACILITY</b></p> <hr/> <p><b>LOCALITY PLAN</b></p>	<p><b>FIGURE</b></p> <p><b>1</b></p>
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**PROPOSED BRICK MANUFACTURING FACILITY IN THE DALESIDE AREA (MEYERTON)**

**AERIAL VIEW OF STUDY AREA**

**FIGURE**

**2**







**ANNEXURE A:  
EXTRACT FROM DRAFT BASIC ASSESSMENT  
REPORT**



**THE PROPOSED MIDVAAL BRICK MANUFACTURING  
FACILITY, LOCATED IN THE TOWN OF MEYERTON,  
GAUTENG PROVINCE.**

**Draft Basic Assessment Report**

**GDARD Reference Number: GAUT 002/21-22/E2872**

**June 2021**

**COMPILED BY:**

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Draft Basic Assessment Report for the proposed Midvaal Brick Manufacturing Facility, located in the town of Meyerton, Gauteng Province.

## **PUBLIC REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT**

The Draft Basic Assessment Report (BAR) has been prepared by Afrimat Limited and has been reviewed by MPG Environmental Consultants to comply with Regulation 13 (2) of the National Environmental Management Act 107, of 1998 (NEMA 107, of 1998), Environmental Impact Assessment (EIA) Regulations 2014, as amended in 2017, in order to assess the potential environmental impacts associated with the Proposed Midvaal Brick Manufacturing Facility, located in the town of Meyerton, Gauteng Province

The report is made available for public review for 30-day review period from **01 June 2021 to 01 July 2021** at the following link:

<https://afrimat.co.za/index.php/sustainability/environmental-conservation/midvaal-block-manufacturing-facility>

In order to obtain further information, register on the project database or submit your written comment to:

### **Environmental Assessment Practitioner (EAP)**

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**The due date for comments on the Draft Basic Assessment Report is 01 July 2021.**

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## 1. SECTION A: ACTIVITY INFORMATION

### 1.1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

#### 1.1.1 PROJECT TITLE

The proposed Midvaal Brick Manufacturing Facility, located in the town of Meyerton, Gauteng Province.

#### 1.1.2 PROJECT BACKGROUND

From the beginning of civilization bricks have been used as an important material for the building of houses and other infrastructure; influencing economic progress. Rapid population growth and urbanization have created an increasing demand for residential, commercial, industrial, public buildings and other infrastructure in South Africa. For this increasing demand, bricks are the most productive construction materials for both urban and rural areas. The brick making sector influences the country's economic growth by contributing to the country's gross domestic product (GDP) and generating employment for local communities.

SA Block (Pty) Ltd, a subsidiary of Afrimat Limited, intends to expand its production capacity on a new premises closer to its customer base. SA Block is a brick making plant which mainly focuses on the production of clinker bricks. Clinker is a product derived from the burning of coal and the bricks made of clinker are considered to be light in weight when compared to regular cement bricks. SA Block produces SABS approved bricks that are mainly used for the building of housing (residential and commercial) developments.

SA Block has received permission from Glen Douglas mine, another subsidiary of Afrimat Limited located on the Remaining Extent of Portion 3 of the farm Witkoppie 373 IR, to erect a brick making plant on their property, outside their mining area. SA Block will erect an automated brick manufacturing plant under a 1500m<sup>2</sup> roof and have a small storage yard (+5000m<sup>2</sup>) outside with temporary building structures (100m<sup>2</sup>) as offices, bathroom facilities and stores.

There is also a possibility to expand the operation in future to include a ready-mix concrete batching facility as well as a basic asphalt plant at a later stage. SA Block wants to grow in the business not only for the increase of production and income, but to create sustainable job opportunities to increase to the GDP of the Midvaal Local Municipality. They want to sell their bricks at market related prices to contribute to the economic upliftment of the Midvaal community.

SA Block wants to produce SABS approved stock bricks and maxi bricks used in residential construction, as well as paving bricks. The planned output will be 120,000 units per shift or an average of 2,500,000 per month.

Clinker is a brick with a vitrified surface and consists mainly of the stony residue from burnt coal. Clinkers hardly take up water and are thus very durable. The bricks will be made of the old clinker and cement mixed with water. The cement bricks will be produced in two different sizes which will be called stock bricks and block bricks. They are made by mixing cement and water. Cement bricks are mainly used for the building of houses, but is not as cost effective and attractive as a clinker. When the cement bricks are used for building purposes they should be plastered as cement walls are prone to crack in severe weather conditions. The automated brick production process is described in Figure 1 below.

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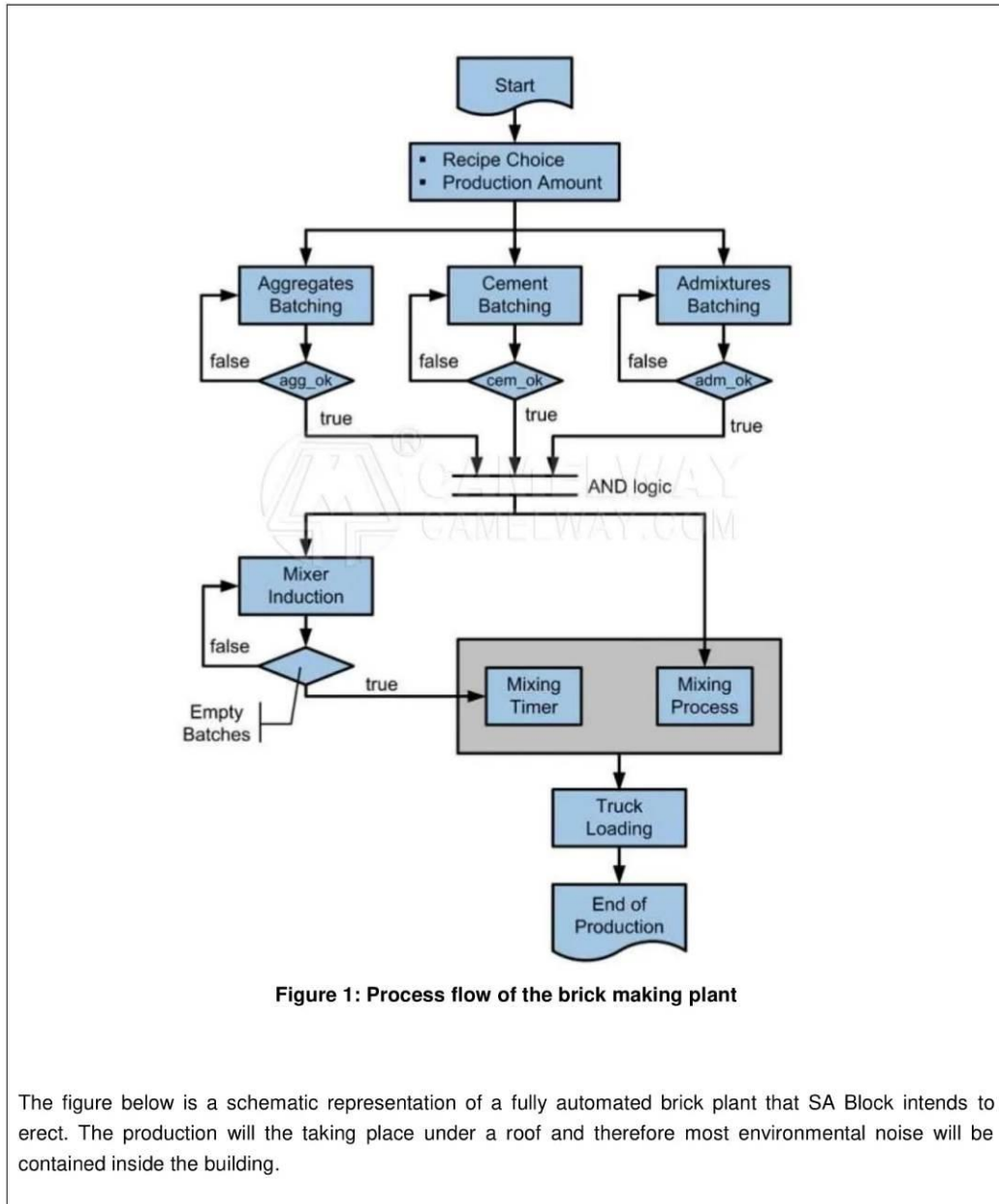


Figure 1: Process flow of the brick making plant

The figure below is a schematic representation of a fully automated brick plant that SA Block intends to erect. The production will be taking place under a roof and therefore most environmental noise will be contained inside the building.

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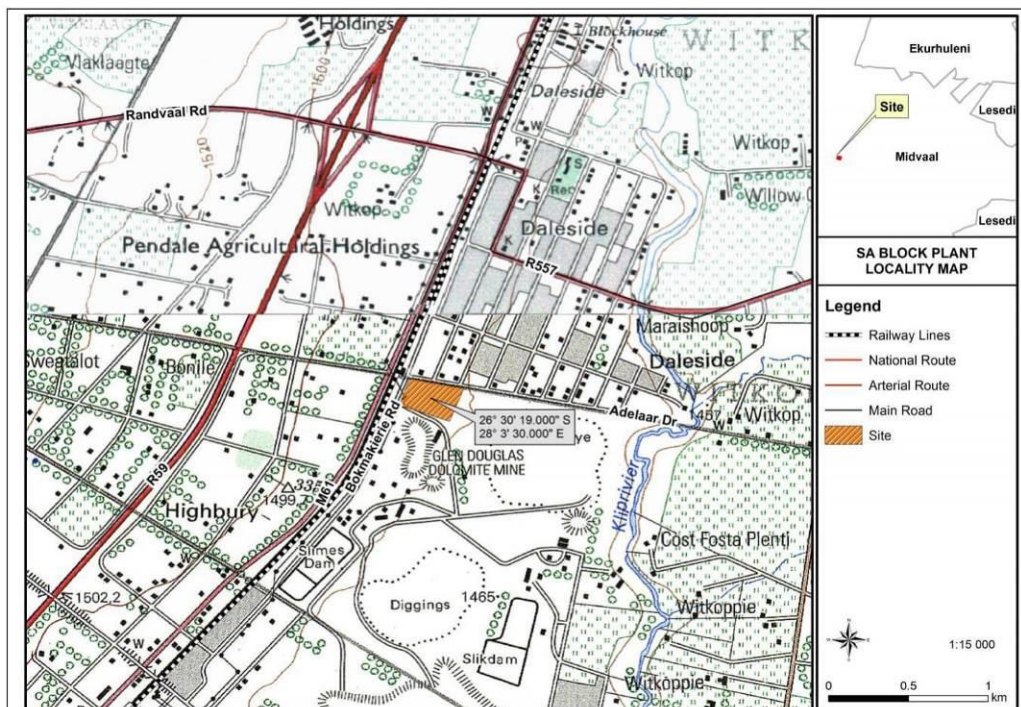


Figure 4: Locality Map of the proposed project

#### 1.1.4 REQUIREMENT FOR A BASIC ASSESSMENT PROCESS

In terms of sections 24(2) and 24D of the National Environmental Management Act (Act No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GNR 982 to R985 (as amended 07 April 2017 (GNR 326)), a Basic Assessment process is required for the proposed project. Table 2 contains the listed activities in terms of the EIA Regulations and includes a description of those project activities which relate to the applicable listed activities.

Listed activities	Description of project activity that triggers listed activity
Residential, retail, recreational, tourism, ±commercial or institutional developments of 1 000 square meters or more, on land previously used for mining or heavy industrial purposes; — excluding — (i) where such land has been remediated in terms of part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; or (ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in	This is a commercial development that will be located on area that will be more than 1 000 square meters that has been under a mining area and is currently excluded by Glen Douglas mine.



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In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

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### 1.4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity ( <b>Total environmental (landscaping, parking, etc.) and the building footprint</b> )	6.8 ha
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	Ha/ m <sup>2</sup>

or, for linear activities:

	Length of the activity:
Proposed activity	N/A
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity	N/A
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	Ha/m <sup>2</sup>

### 1.5. SITE ACCESS

<b>Proposal</b> Does ready access to the site exist, or is access directly from an existing road? If NO, what is the distance over which a new access road will be built Describe the type of access road planned:	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> m
---	--

The study area can be directly accessed from Bokmakiere Road on Witkopdorp (Daleside)
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Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

<b>Alternative 1</b> Does ready access to the site exist, or is access directly from an existing road? If NO, what is the distance over which a new access road will be built Describe the type of access road planned:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> m
--	--

The site has an already existing access and no alternative access were considered
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Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

<b>Alternative 2</b> Does ready access to the site exist, or is access directly from an existing road? If NO, what is the distance over which a new access road will be built Describe the type of access road planned:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> m
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Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

**PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives**



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## 2.1. PROPERTY DESCRIPTION

**Property description:**  
(Including Physical Address and Farm name, portion etc.)

<b>Farm Name:</b>	Remaining Extent of Portion 3 of the farm Witkoppie 373 IR
<b>Application area (Ha)</b>	Approximately 6.8 ha
<b>Magisterial district:</b>	Midvaal Local Municipality which is an administrative area within the Sedibeng District Municipality, Gauteng Province
<b>Distance and direction from nearest town</b>	The study area is situated approximately 0.6 km southwest of Witkopdorp, and approximately 2.5 km northeast of Highbury. The study area is located approximately 1 km east of the R59 Provincial Route and 0.8 km southwest of the R557 Regional Route. The study area neighbours the northern section of the Glen Douglas Dolomite Mine
<b>21 digit Surveyor General Code</b>	T0IR00000000037300003

## 2.2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

<b>Alternative:</b>	<b>Latitude (S):</b>	<b>Longitude (E):</b>
	26° 30' 19.000"	28° 3' 30.000"

In the case of linear activities:  
Alternative:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

<b>Latitude (S):</b>	<b>Longitude (E):</b>
°	°
°	°
°	°

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

<b>PROPOSAL</b>	T	0	I	R	0	0	0	0	0	0	0	0	0	0	3	7	3	0	0	0	0	3	
<b>ALT. 1</b>																							
<b>ALT. 2</b>																							
<b>etc.</b>																							

**ANNEXURE B:  
SCHEMATIC REPRESENTATION OF THE  
PRODUCTION PLANT & CONCEPT SITE LAYOUT**

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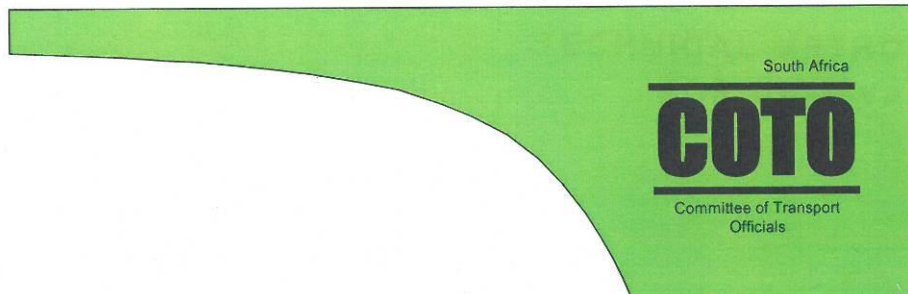
Figure 2: Schematic representation of the fully automatic block production line

### 1.1.3 PROJECT LOCALITY

The proposed Midvaal Block Manufacturing plant will be located on the Remaining Extent of Portion 3 of the farm Witkoppie 373 IR. The study area is situated along Bokmakiere Road, approximately 0.6 km southwest of Witkopdorp (Daleside), and approximately 2.5 km northeast of Highbury. The study area is located approximately 1 km east of the R59 Provincial Route and 0.8 km southwest of the R557 Regional Route. The study area neighbours the northern section of the Glen Douglas Dolomite Mine.



**ANNEXURE E:  
EXTRACT FROM COTO DOCUMENT –  
SOUTH AFRICAN TRIP DATA MANUAL  
(TMH17)**



**TMH 17**

**South African  
Trip Data Manual**

**Version 1.01  
September 2013**

**Committee of Transport Officials**



**Table 3.2: Trip Generation Adjustment Factors**

Land Use	Size Units	Percentage reduction for developments in areas with			
		Mixed-use Development	Low vehicle Ownership	Very Low Ownership	Transit nodes or Corridors
<b>100 Industrial</b>					
110 Service Industry	100 sqm GLA	5%	20%	30%	15%
120 Heavy industry/manufacturing	100 sqm GLA	5%	20%	30%	15%
121 Mining	1 Employees	5%	20%	30%	15%
130 Industrial Area (Park)	100 sqm GLA	5%	20%	30%	15%
140 Manufacturing	100 sqm GLA	5%	20%	30%	15%
150 Warehousing and Distribution	100 sqm GLA	5%	20%	30%	15%
151 Mini-Warehousing	100 sqm GLA	5%	20%	30%	15%
<b>200 Residential</b>					
210 Single Dwelling Units	1 D/Unit	10%	40%	70%	15%
220 Apartments and Flats	1 D/Unit	15%	30%	50%	15%
225 Student Apartments and Flats	1 D/Unit	25%	50%	80%	15%
231 Townhouses (Simplexes and Duplexes)	1 D/Unit	15%	30%	50%	15%
232 Multi-Level Townhouses	1 D/Unit	15%	30%	50%	15%
251 Retirement Village	1 D/Unit	5%	50%	80%	15%
254 Old-Age Home	1 D/Unit	5%	50%	80%	15%
260 Recreational Homes	1 D/Unit	10%	20%	30%	15%
<b>300 Lodging</b>					
310 Hotel, Residential	1 Room	20%	20%	30%	15%
330 Hotel, Resort	1 Room	20%	20%	30%	15%
350 Guest House	1 Room	20%	30%	50%	15%
<b>400 Recreational and Sport</b>					
430 Golf Course	1 Course	5%	0%	0%	0%
473 Casino	100 sqm GLA	5%	20%	30%	15%
480 Amusement Park	1 ha	5%	30%	50%	15%
488 Sport Stadium	1000 Seat	5%	30%	50%	15%
492 Health and Fitness Centre	100 sqm GLA	15%	20%	30%	15%
<b>500 Institutional</b>					
520 Public Primary School	1 Student	30%	50%	80%	15%
530 Public Secondary School	1 Student	30%	50%	80%	15%
536 Private School	1 Student	30%	50%	80%	15%
550 University / College	1 Student	20%	40%	60%	15%
560 Places of Public Worship (Weekend)	1 Seat	10%	50%	80%	15%
561 Places of Public Worship (Weekday)	1 Seat	10%	50%	80%	15%
565 Pre-School (Day Care Centre)	1 Student	5%	50%	80%	15%
566 Cemetery	1 Ha	0%	30%	50%	15%
<b>600 Medical</b>					
611 Public Hospital	1 Bed	0%	50%	80%	15%
612 Private Hospital	100 sqm GLA	0%	20%	30%	15%
620 Nursing Home	1 Bed	0%	50%	80%	15%
630 Medical Clinic	100 sqm GLA	0%	50%	80%	15%
<b>700 Office</b>					
710 Offices	100 sqm GLA	20%	20%	30%	15%
713 Home offices and undertakings	1 House	10%	20%	30%	15%
720 Medical consulting rooms	100 sqm GLA	10%	30%	50%	15%
770 Business Centre (Park)	100 sqm GLA	15%	20%	30%	15%
780 Conference Centre	1 Seat	10%	20%	30%	10%

**Table 3.3: Peak-hour Trip Generation Rates and Parameters**

								Size Adjustment Factor	
								1+A/(1+sqm Size/B)	
								100 sqm GLA	
Description	AM Peak	PM Peak	Friday PM	Midday	Evening	Saturday	Sunday	Factor A	Factor B
<b>110 Service Industry</b>									
Trip Rate	0.90	0.90		0.90		0.15			
% Heavy									
In/Out	75:25	25:75		50:50		50:50			
PHF Dev									
PHF Street									
Veh Occupancy									
% Pass-by									
% Diverted									
<b>120 Heavy industry/manufacturing</b>									
								100 sqm GLA	
Description	AM Peak	PM Peak	Friday PM	Midday	Evening	Saturday	Sunday	Factor A	Factor B
Trip Rate	0.50	0.70							
% Heavy									
In/Out	75:25	25:75							
PHF Dev									
PHF Street									
Veh Occupancy	1.80								
% Pass-by									
% Diverted									
<b>121 Mining</b>									
								1 Employees	
Description	AM Peak	PM Peak	Friday PM	Midday	Evening	Saturday	Sunday	Factor A	Factor B
Trip Rate									
% Heavy									
In/Out									
PHF Dev									
PHF Street									
Veh Occupancy									
% Pass-by									
% Diverted									
<b>130 Industrial Area (Park)</b>									
								100 sqm GLA	
Description	AM Peak	PM Peak	Friday PM	Midday	Evening	Saturday	Sunday	Factor A	Factor B
Trip Rate	0.80	0.80				0.40			
% Heavy									
In/Out	70:30	25:75				30:70			
PHF Dev									
PHF Street									
Veh Occupancy	1.80								
% Pass-by									
% Diverted									
<b>140 Manufacturing</b>									
								100 sqm GLA	
Description	AM Peak	PM Peak	Friday PM	Midday	Evening	Saturday	Sunday	Factor A	Factor B
Trip Rate	0.60	0.60				0.30			
% Heavy									
In/Out	80:20	20:80							
PHF Dev									
PHF Street									
Veh Occupancy	1.50	1.50							
% Pass-by									
% Diverted									



**Table 6: Land-Uses and Size Units**

**100 Industrial**

<b>110</b>	<b>Service Industries</b>	<b>100 sqm GLA</b>
	Service industries provide industrial services to the general public. Typical service industries include vehicle repairs, appliance and television repairs, etc.	
<b>120</b>	<b>Heavy industries/manufacturing</b>	<b>100 sqm GLA</b>
	The heavy manufacturing/industry land use covers developments where the primary activity is the conversion of raw materials or parts into products and where the materials or products have a heavy nature. Examples of this land use include brick manufacturing, machinery, metal, electrical power generation, etc. The land use also includes offices, warehouses and other facilities associated with the main activity.	
<b>121</b>	<b>Mining</b>	<b>No of employees</b>
	The extraction of raw materials, either from the surface or underground. Examples include sand, clay, stone, kaolin, ores, minerals and precious materials.	
<b>130</b>	<b>Industrial Area (Park)</b>	<b>100 sqm GLA</b>
	The industrial land-use includes industries that do not generally provide services directly to the general public. The industrial area or park may also contain related facilities such as services and warehousing. A small amount of retail may be included.	
<b>140</b>	<b>Light manufacturing</b>	<b>100 sqm GLA</b>
	The light manufacturing land-use covers developments where the primary activity is the conversion of raw materials or parts into products. Both materials and products must be of a light nature. Examples of this land use include clothing, food and furniture manufacturing. The land use also includes offices, warehouses and other facilities associated with manufacturing.	
<b>150</b>	<b>Warehousing and Distribution</b>	<b>100 sqm GLA</b>
	Warehouses are primarily used for the storage and distribution of materials, but may include office and other functions associated with such storage. Goods are often sorted and distributed from these warehouses.	
<b>151</b>	<b>Mini-Warehousing</b>	<b>100 sqm GLA</b>
	Mini-Warehousing contain a number of storage units which are rented for the storage of goods. These are typically "self-storage" facilities for use by the public.	

**ANNEXURE D:  
TRIP GENERATION CHARACTERISTICS –  
PROPOSED DEVELOPMENT**

# Proposed Midvaal Brick Manufacturing

## Heavy industry/manufacturing - COTO 120

Mariteng Project: 190/86

Date: 18 November 2021

### Trip Generation Calculations

Description	Erf No.	Land Use	Dev Area (ha)	FAR	Height (No. Storeys)	GLA (m <sup>2</sup> )	Trip Rate/Unit			No. of Trips			Trip Reduction (No. of Trips)			
							AM	PM	SAT	AM	PM	SAT	AM	PM	SAT	
Industrial 02	Erf 1	Industrial	6.8000	-	2	1500	0.5	0.7	0	8	11	0	0	0	0	0
		<b>TOTAL Erf 1</b>	<b>6.8000</b>	<b>-</b>	<b>-</b>	<b>1500</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>8</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Heavy industry/manif. - COTO 120	
Trip reduction factor	Factors Use for Pc
Mixed use dev (Pm)	5%
Low vehicle ownership (Pv)	20%
Very low vehicle ownership (Pv)	30%
Transit nodes or Corridors (Pt)	15%
Total reduction factor	<b>0.00%</b>

Final No. of Trips		AM			PM			SAT			
AM	PM	SAT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
8	11	0	75%	25%	6	2	3	8	0	0	
<b>8</b>	<b>11</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	
				-		8				0	

**ANNEXURE E:  
PROPOSED ACCESS ARRANGEMENTS –  
MARITENG PLAN NO.: 190-86-01**



## **ANNEXURE F: PROTOCOL CHECKLIST**

**Protocol Checklist – Appendix 6 of the EIA Regulation – Specialist Report (Traffic)**

Ref	Item	Par	Pages	Comments
a(i)	Details of the specialist who prepared the report.	1.4	2	Louis du Toit
a(ii)	The expertise of that specialist to compile a specialist report including curriculum vitae.	1.4	2	ECSA Registration – 200270072 Preparing traffic reports since 1990.
b	A declaration that the specialist is independent in a form as may be specified by the competent authority.	1.4	2	Report signed by Louis du Toit.
c	An indication of the scope of, and the purpose for which, the report was prepared.	2.2	5	-
c(A)	An indication of the quality and age of the base data used for the specialist report.	6.3	8	Base Year – November 2021
c(B)	A description of existing impact of the site, cumulative impact of the proposed development and levels of acceptable changes.	6.2	8	Less than 50 peak hour trips – refer to Table 6.
d	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.	6.2	8	Typical weekday morning and afternoon. Selected typical weekday as per COTO requirements.
e	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used.	2	3	Undertook site visit during typical weekday period.
f	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternative.	-	-	None
g	An identification of any areas to be avoided, including buffers.	-	-	Not applicable to the traffic engineering section.
h	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	1.2 & 7.1	1 & 9	<b>Figure 1 and Mariteng Plan No.: 190-86-01</b> illustrates the site and access point in relation to surrounding road network.
i	A description of the assumptions made and any uncertainties or gaps in knowledge.	6.2	8	Trip generation derived from COTO guidelines.
j	A description of the findings and potential implication of such findings on the impact of the proposed activity or activities.	12.1 & 12.2	11 & 12	Refer to “Conclusions” and “Recommendations”.
k	Any mitigation measures for inclusion in the EMPr.	7.1 & 10	9 & 10	Construct a safe access to the new development.
l	Any conditions for inclusions in the environmental authorization.	12.2	11	Refer to “Recommendations” to be included in the EIA.
m	Any monitoring requirements for inclusion in the EMPr or environmental authorization.	12.2	11	Construction of the access point.
n	A reasoned opinion:			
(i)	Whether the proposed activity, activities or portions thereof should be authorized.	12.2	11	From traffic engineering viewpoint development is supported; A detailed design of the access point to be prepared by a profession registered civil engineer; and Relevant wayleave to be obtained before working in the road reserve.
(iA)	Regarding the acceptability of the proposed activity or activities			
(ii)	If the opinion is that the proposed activity, activities or portion thereof should be authorized, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, closure plan			
o	A description of any consultation process that was undertaken during the course of preparing the specialist report.	-	-	No discussions with road authority yet. Traffic report will be submitted to Gauteng Province and Midvaal for comments.

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**Table continuous....**

P	A summary and copies of any comments received during the consultation process and where applicable all responses thereto.			Recommendations to be included in the EIA.
q	Any other information requested by competent authority.	-	-	-