

SASOL - VULINDLELA BRIDGE - BASIC ASSESSMENT

BACKROUND INFORMATION DOCUMENT REGARDING
THE PLANNED ENVIRONMENTAL AUTHORISATION
APPLICATION FOR THE PROPOSED VULINDLELA
BRIDGE MAINTENANCE AND REHABILITATION
ACTIVITIES, IN OGIES, MPUMALANGA PROVINCE

VERSION: 1

MDT Ref: SVB 2019/01



BACKGROUND INFORMATION DOCUMENT (BID)
BASIC ASSESSMENT PROCESS – AS PER NATIONAL ENVIRONMENTAL MANAGEMENT
ACT (ACT 107 OF 1998) (NEMA). FOR THE PROPOSED VULINDLELA BRIDGE
MAINTENANCE AND REHABILITATION ACTIVITES IN OGIES, MPUMALANGA PROVINCE.

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Emalahleni Local Municipality is planning to conduct maintenance, as well as desilting activities, upstream and downstream of the Vulindlela Bridges, which are situated at Phola Township, Ogies, within the Emalahleni Local Municipality,

Mpumalanga. The activities will be undertaken at two bridge crossings. The two bridge crossings are located at 26°0'18.03"S, 29°2'18.13"E and S25°59'55.17"S, 29°1'56.67"E in the Phola Township, as indicated in Figure 1.1-1. The site falls within three wards, namely: Ward 28, 30 and 31.

Purpose of the Background Information Document (BID)

This document has been compiled as an information sharing tool to facilitate gathering of issues for a Basic Assessment Process, which is being undertaken, in terms of the National Environmental Management Act (Act 107 of 1998) as amended (NEMA). As such, the purpose of the document is to provide:

- Background information and an overview of the maintenance, as well as, desilting activities, upstream and downstream of the two bridge crossings, to Interested and Affected Parties (IAPs);
- An overview of the Basic Assessment Process;
- Details on how you, as an IAP can become involved in the Basic Assessment Process and raise issues, concerns and/or suggestions regarding this proposed project and consideration of various site environmental, social and economic dynamics.

Your input is important and will ensure that all relevant issues are evaluated in the Basic Assessment Process.

The competent authority for the Basic Assessment Process is the Mpumalanga Department of Agriculture, Rural Development, Land and Environment Affairs (DARDLEA).

An application for general authorisation for undertaking water uses listed under Sections 21 (c)

and 21 (i), in terms of the National Water Act (Act 36 of 1998), will be applied for, from the Department of Water and Sanitation (DWS).

Please complete the provided Registration Form (see end of this document) to register as an IAP; and send through your comments, concerns and/or suggestions about the project.

Please note the preliminary consultation period is commencing from 28 March 2019 to 18 April 2019 and any comments and suggestions raised by key stakeholders will be captured as part of the preliminary consultation and engagement process. The formal public review period, where you will now comment on the BAR, as well, will be opened from end April 2019 to end May 2019. Therefore, receiving this BID, because input is being sought on either: technical, procedural or regulatory administrative matters, for which attention is required for the application process.

1.1 Introduction and Background

Vulindlela Bridge works involve the rehabilitation of two bridge crossings as indicated in Figure 1.1-1. The water course has been affected by increasing and uncontrolled vegetation growth, as well as siltation caused by erosion, which has led to a reduction in river capacity, as well as altered water flow patterns. Consequently, during rainy seasons the river floods, hindering smooth traffic and pedestrian movement.

The status of the current bridge infrastructure is shown in Pictorial View 1.

The project is undertaken as part of the Local Economic Development contribution provided by Sasol Mining (Pty) Ltd (Sasol Mining) and is part of the projects committed to in their social and labour plan. The project beneficiaries, and as such project applicants, are Emalahleni Local Municipality. The project entails rehabilitating two bridge crossings.

Siyandiza Consulting Engineers (Pty) Ltd were appointed to undertake designs for the bridge

rehabilitation works. In addition, to comply with NEMA, as amended, and its regulations, Sasol has also appointed MDT Environmental (Pty) Ltd, as Environmental Assessment Practitioners (EAPs), to conduct environmental studies and apply for environmental authorisation for any listed activities that might be triggered through the execution of this project. The environmental studies will determine the potential significant environmental impacts, that will emanate from the proposed project. In addition, the study will also recommend mitigation or management measures for these significant impacts.

The development will trigger listed activities in terms of NEMA and that is the reason why an environmental authorisation application is being undertaken. The details of listed activities are provided under Section 5.

2. Project Description

The main objective of the study is to maintain the Vulindlela Bridge and various inherent objectives will be realised as part of this project.

Within that context, the key objectives of the project, for which the environmental authorisation is being conducted for, is outlined below.

- To establish mechanisms that will minimize sedimentation and debris accumulation at the bridge openings.
- To rehabilitate and clean both bridges in order to improve safety status.
- To Improve storm water control measures.
- To undertake dredging methods that are well investigated to reduce impact on the ecosystem.
- Achieve functional structures, which can be maintained in association with the asset management system for the Local Municipality.

2.1 Proposed infrastructure

Proposed site office and storage area complete with the following:

- · Site Office.
- 2 storage containers.
- Parking area for plant.
- Fuelling point.
- 3m high boundary fence with access
- · gate facing main road.
- Security boom.
- Sediment offloading site for collection
- to take to spoiling or designated waste sites.

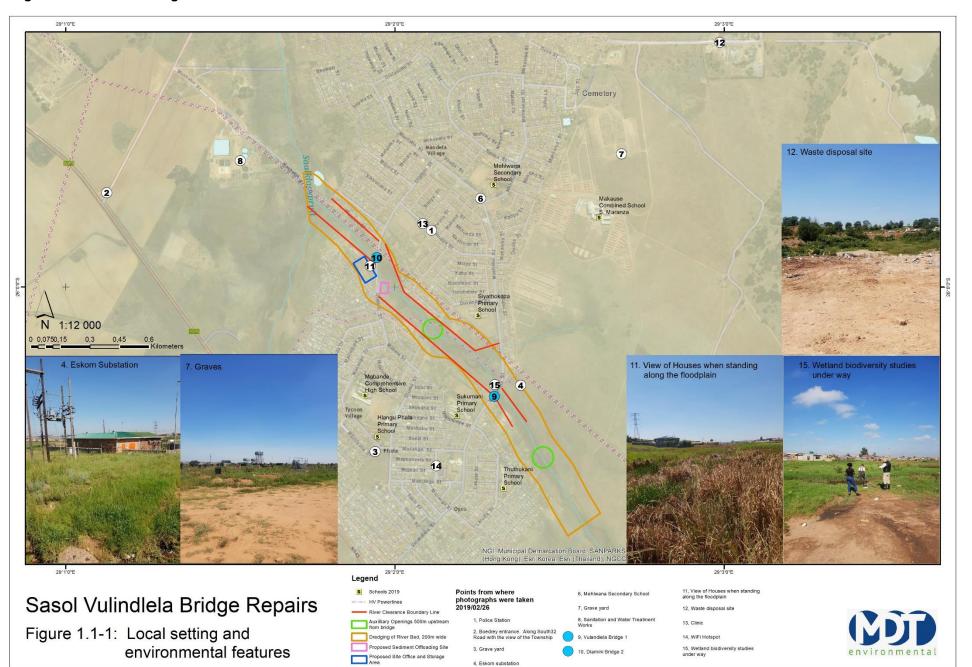
2.2 Activities to be undertaken

The project activities that will be undertaken to realise the above objectives are outlined below.

2.2.1 General activities

- There will be identification and implementation of emergency measures, which will handle any debris accumulation during the construction phase.
- Community engagement through Environmental awareness programs.
- Dredging and clearing of both Bridges approach areas using frontend loaders and tipper trucks.
- Erosion bags installations at defined points along the stream, (highlighted on layout drawing).
- Rubble placement and compaction for construction vehicles movement.

Figure 1.1-1: Local Setting and Environmental Features



Pictorial view 1: Project site and surroundings



Current bridge infrastructure – highly sedimented and constricted walkway path. (26°00'16.3"S; 29°02'19.4"E)



Households close to the floodplain. Waste disposal skip container and illegal dumping observed. (26°00'15.9"S; 29°02'22.5"E)



Riparian vegetation predominant in the project area. (26°00'15.9"S; 29°02'22.5"E)



Surronding Households in (26°00'16.3"S; 29°02'19.4"E)



Livestock Grazing. (25°59'33.1"S 29°01'29.1"E)



Soil erosion. (26°00'16.3"S; 29°02'19.4"E)



Illegal waste disposal along the access road. (26°00'16.3"S; 29°02'19.4"E)



Substation. (26°00'16.2"S 29°02'23.0"E)

2.2.2 Cleaning of the riverbed

- Removal of material from riverbed shall be end-hauled to safe, stable disposal sites.
- Environmental considerations pertaining to riparian ecosystem will be considered and a wetland and aquatic studies were undertaken.
- Excavation of excess material in the channel will be done to the original base level of the streambed, not below it, to avoid head cuts and / or water stagnation.
- Culvert cleaning may be done using horizontal drilling or jetting.

2.2.3 Structural health monitoring of the bridge

Assessment of the bridge structures will take into account the corrosion of the culvert reinforcement, cracks, abrasion extents and differential settlements if any are observed. The purpose of this exercise is to determine if there are any structural safety concerns that may require rehabilitation of the bridges themselves or their replacement (*Note this is not the scope of this project, at this stage, repair work has been commissioned and the designs are looking at various feasible alternatives to achieve repair and leave stable, safe and operational structures)*

2.2.5 Strom water management and Erosion control

- To minimize donga formation due to erosion and promote stabilization storm water control measures will be implemented
- Road kerbs and channel combination, with down-chutes will be used to drain the surface water from the road
- Walkway enlargement will be done

2.2.4 Walkways and road furniture

Due to high pedestrian movements, there
are considerations for the refurbishment
and construction of dedicated walkways on
both sides of the bridges. The walkways
are to have handrails on the outer edge
and a barrier on the inner road edge to
protect the pedestrians from vehicular
traffic.

There are a number of risks posed by the current state of the bridge and most of these risks emanate from flooding that frequently occurs during the rainy season. Below is a summary of the major risks that are posed by the current state of the bridge and this indicate the importance of repairing this bridge as this will act as a mitigation measure in avoiding such risks.

- During the rainy season, the two access points become submerged resulting in flooding in the area. The neighbouring households that are on the floodline are at a higher risk to be affected by the floods. The flooding will potentially result in damage to property including injury and loss of life to the community members.
- The crossing carriageway for both vehicles and pedestrians has damaged guardrails which are not safe for operational use.
- From a structural safety point of view, investigations have been carried out in relation to corrosion of the culvert reinforcement, existence of cracks, abrasion extents and differential settlements if any are observed. The correct load capacity of the bridges and culvert oscillations during the dredging process including the vehicular movement across the bridges present a risk of vibrational activity which will have to be closely monitored.
- Dilapidated guardrails pose a safety risk to functional bridge operation.

- Floodwaters can concentrate garbage, debris, and toxic pollutants that cause secondary effects of health hazards.
- Flooding pose a safety risk to the community considering that children staying in the nearby areas might risk crossing while the bridge is submerged resulting in them being washed away.
- Frequent flooding also affects the bridge itself and this is a safety concern as there will be defects of the bridge in the long term.
- The environmental aspects of concern which are a result of the observed potential impact such a flooding are:
- Clogging as a result of siltation and vegetation encroachment
- Cumulative sedimentation and debris discharge at a level almost flash with the underside of the bridge decks.
- Habitat destruction.
- Currently there is no roadside furniture on the approach.
- Erosion control mechanisms alternative considerations.

After investigations and 2D modelling of various flood events routed through the compiled model of the river course way, fifteen areas were identified that were erosion prone and where severe flooding could occur during, specifically a 1 in 20-year flood event. Conceptual erosion protection measures were then designed for these locations and the model re-run to ensure the preservation and protection of the identified areas and to ensure the surrounding properties are not negatively affected during a 1 in 20-year storm event.

Three typical designs were considered as erosion protection structures and would be implemented based on space constraints and practicality.

There are three proposed typical erosion protection structures considered, namely,

- (a) Typical protection structure 1 (Riprap & vegetated berm): Wide floodplains: Berm with 1:2.5 side slope on both sides, Riprap protection on one side face to river, riprap toe below 1:20 year flood erosion level
- (b) Typical protection structure 2 (Riprap & vertical wall): Limited space and deep alluvial material: Concrete wall with 1:2.5 bank slope and Riprap protection on one side, riprap toe below 1:50 year flood erosion level
- (c) Typical protection structure 3 (Vertical wall): Limited space and shallow bedrock: Concrete wall without side slope, toe below 1:50 year flood erosion level or to bedrock.

The activities that will be undertaken as part of these planned alternatives for erosion protection measures are provided in the table below

3.1 Proposed Erosion Protection Structures

(a) Typical protection structure 1 (Riprap and vegetated berm)

- Site Clearance and establishment.
- All necessary traffic accommodation and construction warning signage will be erected as necessary.
- River diversion and dewatering where required. (To be avoided)
- 4. Surveying and setting out.
- Removal of failed gabion structures and other debris down to the founding rock embankment
- Importing and placement of appropriate fill material.
- 7. Preparation and compaction of the river bank.
- 8. Riprap installation:
- a. Ensure correct gradient.
- b. Provide specified fabric.
- c. Fabric should be thoroughly stapled to the ground.
- d. Provide the specified type and size of riprap.
- A rock bucket should be used during the installation of the riprap.
- Place riprap according to engineering specifications and guidelines provided during detailed design.
- 9. Berm:
- a. Provide enough material to construct berm to required height.
- b. Place and compact material according to engineering specifications and guidelines provided during detailed design.
- c. Ensure that the berm ties in with the riprap to form one structure.
- Landscaping, shaping of ground, planting of vegetation where required and consideration of green engineering around all structures.
- Rehabilitation and site de-establishment and Maintenance of the rehabilitated areas

(b) Typical protection structure 2 (Riprap & vertical wall)

Same as (a) with the exception that a vertical wall is provided

(c) Typical protection structure 3 (Vertical wall)

Same as (a) and (b) with the exception that there is no riprap installation activities

(d) Concrete stilling basin (site 2)

- Site Clearance and establishment.
- All necessary traffic accommodation and construction warning signage will be erected as necessary.
- 3. River diversion and dewatering where required.
- 4. Surveying and setting out.
- All existing failed gabion structures and other debris will be removed down to the founding rock embankment with the use of an excavator where possible or by hand.
- 6. Importing and placement of appropriate fill material.
- 7. Preparation and stabilisation of the river banks.
- 8. Concrete stilling basin:
- a. Excavation into river bank up to bedrock.
- b. Prepare base with proper compaction of the soil and to the correct level.
- c. Erect formwork and steel fixing.
- d. Tie into existing upstream culverts and downstream canal.
- e. Cast concrete.
- f. Curing.
- g. Stripping of shutters.
- h. Backfill and compact where necessary.
- Landscaping, shaping of ground, planting of vegetation where required and consideration of ground all structures.
- green engineering around all structures.
- Rehabilitation and site de-establishment including the removal of all debris and waste
- products off the site to an approved and licensed disposal site.
- 11. Maintenance of the rehabilitated areas

4. Environmental Legal Framework

4.1 The Activities to be Undertaken under this Application

Basic Assessment Process

The activities to be undertaken under this planned application which are triggered under NEMA Regulations include Listed Activities provided in Table 4.1-1 and therefore, basic assessment procedures will be followed.

The Basic assessment and the general authorisation processes, which will be undertaken in terms of National Water Act are illustrated in the Flow chart 1 and 2, respectively.

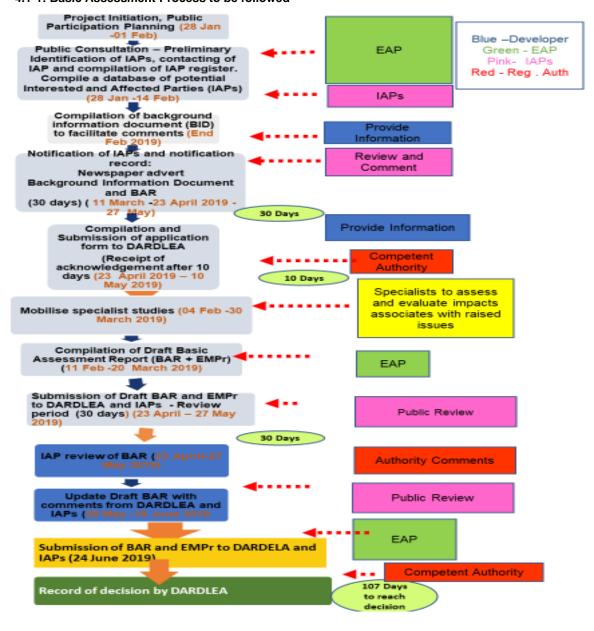
Table 4.1-1: Triggered Listed Activities (Yellow shaded sections, refer to the listed activities which are being applied for under that specific activity number)

Act	Number and date of relevant Notice (Regulations)	Activity	As described in the Legislation	Implications for site or motivation or reason for interpretation
National Environmental Management Act, Act 107 of 1998	GNR 327 (GNR983) as amended in April 2017 (Listing Notice 1)	12	[The development of— (iii) bridges exceeding 100 square metres in size; The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—]	The development of the bridge might exceed 100 square metres in size. Activity number (ii) is triggered due to the fact that the development of infrastructure (bridge) require the clearance of the river and other areas surrounding the watercourse for the purposes of site establishment and the physical development footprint might exceed 100 square metres.
National Environmental Management Act, Act 107 of 1998	GNR 327 (GNR983) as amended in April 2017 (Listing Notice 1)	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; but excluding where such infilling, depositing, dredging, excavation, removal or moving— (b) is for maintenance purposes undertaken in accordance with a	The development will involve infilling of materials, dredging, excavation and removal of soil and sand from a watercourse. This activity 19 is excluded if the rehabilitation exercise is activity is solely for maintenance purposes.

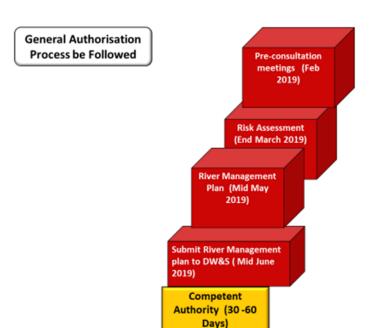
			maintenance management plan; [or]	
National Environmental Management Act, Act 107 of 1998	GNR 324 (GN R985) as amended in April 2017 (Listing Notice 3)	12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan f.Mpumalanga i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; or	The proposed development will involve the clearance of land and the clearance might involve clearance of indigenous vegetation for an area exceeding 300 square metres. However, this activity can only be triggered if (f) (i) and (ii) are applicable that is if the area fall within a critically endangered of or endangered ecosystem as identified by the National spatial Biodiversity Assessment 2004 or in bioregional plans. (f) (i) and (ii) are applicable because wetlands are considered as endangered ecosystems in terms of

28 March 2019

4.1-1: Basic Assessment Process to be followed



28 March 2019



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5. Potential Environmental Impacts

5.1 Site establishment, Construction Phases of the project.

The preliminary identified impacts include:

- Soil disturbance during site establishment for bridge repairs and rehabilitation activities.
- Soil pollution due to leakages and spills of oil and diesel during refuelling.
- Soil erosion due to the loss of soil during clearing, dredging and from storm water runoff etc.
- Noise pollution due to vehicular movement and site workers on site during dredging and rehabilitation.
- Air quality due to dust generated by all movement of vehicles and personnel on site
- Deterioration of Water quality due to soil erosion and sedimentation as well as from hydraulic fluid from site machinery and vehicles.
- Groundwater resources: Contamination of water due to fuel, oil and chemical storage on site.
- Sedimentation and river bed erosion due to dredging.
- · Potential road accidents.
- Mistrust due to the lack of communication channels.
- Vibration of bridge due to dredging and vehicular movement crossing the bridge.

 Increase in job-seekers might result in influx of outsiders in search of employment.

5.2 Decommissioning and rehabilitation Phase

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

- Impacts on soil resources include loss of land capability, disturbance to river bed structure from the dredging.
- Potential contamination of soil due to hydrocarbon spillages.
- Air pollution generation of dust.
- Dust will be generated during the dismantling of structure and infrastructure.
- Noise pollution, the demolishing of site establishment and operational infrastructure.
- After the dismantling of infrastructure, revegetation of the site will be undertaken.
 River banks will be grassed along the design section. 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 Phola community.

5.3 Cumulative impacts per project phase

Table 5.3-1: Cumulative impacts at each project stage

Project Phase	Cumulative impacts
Site Establishment and Construction	 Traffic congestion from the provided bypass and deterioration of road infrastructure due to movement on the two bridges
Operational	 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. Continuous degraded water quality upstream could result in reduced water quality downstream, resulting in health diseases such as cholera and diarrhoea.
Decommissioning and rehabilitation	 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. Training opportunities to be offered during the rehabilitation have potential to increase skill pool of the area in soil erosion control measures construction such as gabions (box gabions and mattress gabions), research through sampling method, soil testing and classification, data analysis and reporting writing. Re-vegetation of river banks with indigenous grass species; knowledge in South African indigenous grasses, shrubs, weeds and biodiversity including animal species found in the area; Waste audit and waste management planning and waste management project implementation including recycling and generation of income from waste. Training service providers to be sourced from Phola, if available. Loss in local SMME support from the project team. Procurement of supplies, food and water would have been sourced from a local supplier(s).

5.4 Socio-economic impacts

The proposed activity will have socio-economic impacts to the surrounding areas due to activities which might trigger change to the environment. These can be positive or negative effects.

5.4.1 Positive impacts

Positive social impacts that will emanante from the project include: -

- Both bridges pose safety concerns hence by rehabilitating the bridges, such safety concerns as listed
 in Box 1 will be mitigated.
- There are health concerns such as water pollution emananting from sewage effluents and general
 waste being disposed into the watercourse. Once the bidges are repaired these health concerns will
 be addressed.
- There are informal settlements along the floodplain, thus a change in river flowing patterns result in flooding and this will affect those in the informal the most due to the fact their stuctures might not withstand flooding. Hence, rehabilitating the bridges will reduce such risks.
- The project will contribute to creation of jobs even though this will be only temporal jobs
- The project might, during the costruction phase, even contribute to an increase in the demand of goods and services thus promoting growth of the available businesses and economic growth in the area.

6. Specialists Studies

The following studies were already undertaken:

- Wetland and biodiversity study are underway.
- Water Quality Study
- Detail design studies
- 7. Public Participation Process

IAPs are invited to participate in the public participation process for with the first input stage commences from 11 March 2019 to 18 March 2019. Your comments will be incorporated into the BAR. You will then be notified of the availability of the BAR for you to provide your comments and this is expected to be from 23 April 2019 to 27 May 2019.

For the second public review period, a notice and an advert will be issued in terms of Section 41 (2) (a) (b) (c) (d) (e) under Sections 24 (5) and 44 of NEMA. The advert will be published on a local newspaper, such as Witbank News. You are welcome to make suggestions on which papers you believe would reach the IAPs better.

The notification is part of the public participation process to ensure that the views and concerns of IAPs are captured as part of an application for environmental authorisation to the competent authority, the Mpumalanga Department of Agriculture Rural Development, Land and Environment Affairs (DARDLEA).

The process is to ensure that you are registered as an IAP or to lodge any concern, or seek clarity on the proposed project related documentation. All issues and concerns may be lodged formally (in writing) by either email or fax using the contact details outlined below. All comments and/or issues should be submitted by18 April 2019 to the EAP who will ensure that all responses are incorporated into the Comments and Response Report, which will form part of the BAR. As indicated in the paragraph above, the BAR will be released for public review as well for a period of 30 days.

8. The Environmental Assessment Practitioner

Babalwa Fatyi, the Environmental Assessment Practitioner (EAP), is a Registered Professional Natural Scientist (400123/01). She is also registered with Institute of Environmental Management and Assessment, Lincoln, UK (0025153).

She has academic qualifications to back-up her experience, having obtained Master of Science (cum laude) Babalwa has undertaken several Environmental Management and Public Consultation Projects in terms of National Environmental Management Act (No. 107 of 1998), as well environmental authorisations, in terms of Mineral and Petroleum Resources Development Act (No. 28 of 2002).

IAP Comments and Responses Registration Form

REGISTRATION FORM FOR PARTICIPATION IN THE BASIC ASSESSMENT REPORT AND GENERAL AUTHORISATION PROCESS FOR THE PROPOSED MAINTENANCE, AS WELL AS DESILTING ACTIVITIES, UPSTREAM AND DOWNSTREAM OF THE VULINDLELA BRIDGE, WHICH IS SITUATED AT PHOLA TOWNSHIP, OGIES, WITHIN THE EMALAHLENI LOCAL MUNICIPALITY, MPUMALANGA.

Public Review Period: 28 March 2019 to 18 April 2019

MDT Environmental (Pty) Ltd

Contact Person: Lehlogonolo Mashego

Fax: 086 543 1698 **Tel:** 012 998 7642 **Cel:** 076 837 5240

Email: lehlogonolo@myezo.co.za

Name	Surname	Organisation and address (include postal and street address)					
Telephone	Fax	Email	Cell				
Pecord your concern comm	ent or sugg	 estion about the Basic Assessment Process, G	eneral Authorication and				
		ne to add as many lines as you wish according					
Submission).							
		ct business, financial, personal or other interest	which they have in the				
approval or refusal of the ap	plication).						
Details of another person wh	Details of another person who you think should be consulted						
Name and Surname							
Address							
Telephone and Fax							