
MEMORANDUM

To: Caitlin Pringle, SLR Environmental Engineers
From: Gerrie Muller, Strategy4Good Partners
Date: 05 September 2012
Re: Alternative Land-use economic impact assessment

For ease of reference we outline this memorandum as follows:

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1 Background and objectives

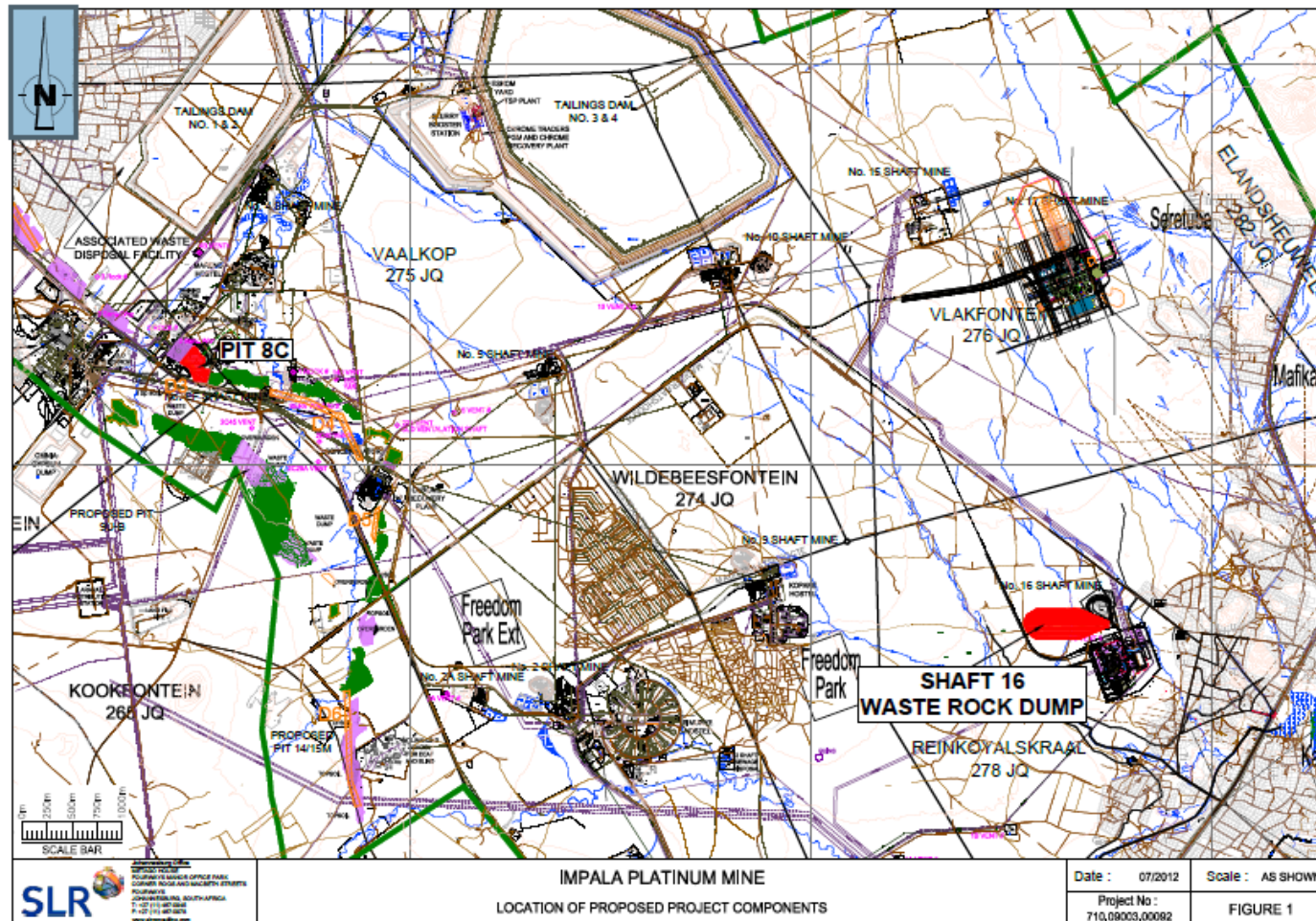


Figure 1: Location of mining expansions

Impala Platinum Limited (Impala) is proposing two mining developments and these are the subjects of analysis of this report. The two initiatives are described below.

Proposed Pit8C project

Impala is proposing to undertake opencast activities on the farms Beerfontein 263 JQ and Vaalkop 275 JQ and will target the Merensky reef. The proposed Pit8C project will consist of a new gravel access road, temporary topsoil stockpile area, a temporary waste rock stockpile area and will cover an area of approximately 5 hectares. The proposed Pit8C project will be mined using conventional opencast mining techniques. In this regard a boxcut will be developed when mining commences.

Topsoil will be removed and stockpiled; overburden will be drilled, blasted and removed; and ore will be removed and sent for crushing at the existing crusher plant. The opencast pit will then be closed by backfilling and replacing the stored topsoil on top of the overburden and then vegetation will be re-established.

Shaft 16 WRD expansion

The existing WRD located on the farm Reinkoyalskraal 278 JQ (at Shaft 16) was constructed in accordance with the relevant approved EIA/EMP amendment report for Shaft 16. Routine Impala groundwater monitoring detected pollution associated with the existing WRD. Impala is now proposing to expand the WRD to prevent additional pollution dispersion through design and construction improvements on the expanded section.

Although, the existing WRD was designed and constructed in accordance with the EMP commitments, it is believed that the prepared clay liner under the existing WRD was not adequately protected prior to waste rock dumping which allowed for exposure to the elements, drying of the clay and desiccation. The associated cracks in the clay liner may have provided preferential emission paths for pollution to seep out of the WRD.

The proposed expansion will cover an area of approximately 19 hectares. Prior to commencement of dumping on the expanded section of the WRD, the topsoil will be stripped off the area of the footprint and stockpiled for subsequent re-use in rehabilitating the dump. The underlying black turf will then be moisture conditioned and compacted to provide a liner under the WRD. Immediately after compaction, a protective layer of suitable material will be placed over the prepared layer to maintain moisture content and prevent desiccation. Waste rock will then be dumped over this protective cover. As an added measure, the lining system will be linked to a system of seepage and runoff collection trenches.

2 Regulation 50

Regulation 50¹ has two distinct components, the first being a straight analysis of the economic value of land between a mining project and the predominant alternative land-use, and the second being an opinion on the sustainable development quality of the project relative to the alternative land-use. The latter requires the integration of all the social, environmental and economic impacts on a cost-benefit basis. The wording of this requirement is ambiguous and we interpret this as an assessment of the better land-use alternative for this generation without compromising the needs of the next generation.²

Based on Regulation 50, the first task required in terms of this analysis is to report on the property values that would potentially be lost and gained in the continuation of the mining project. The second task with respect to the alternative land use valuation is the calculation of the Net Present

¹ Guideline For The Compilation Of An Environmental Impact Assessment And An Environmental Management Programme To Be Submitted With Applications For A Mining Right In Terms Of The Mineral And Petroleum Resources Development Act, 2002, (Act No. 28 Of 2002) (The Act)". Regulation 50.

² The most common definition of Sustainable Development is: 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

Value of future income streams to determine which alternative land-use yields the most positive economic results for this generation.

Although not stated in Regulation 50 as a requirement to analyse, we deem the net employment gained and lost as an important factor and have considered this analysis as well.

3 Assumptions and limitation

- a) At the time of writing this report, a fully-fledged mine works programs was not in existence and the reason for this was explained as - i) the Pit Waste Rock Dump is not an income generation initiative and ii) the Open Pit is merely an extension of existing mining activities.
- b) We assume that the agricultural land in hectares that could potentially be lost to this industry is correct (the hectares), as provided by SLR
- c) This study is limited in its scope as we worked mainly with “inferred economic data”, thus we limited ourselves to desktop research, telephonic interviews and relied on independent information from SLR.

4 Key Findings

4.1 Key Results

The key finding is that the economic impact on 24 hectares of agricultural land is immaterial in the context of the proposed developments. As can be seen from the table below, very few jobs will be created. For the WRD expansion, 20 people will be employed for one year from the community. The pit expansion will last one year and will employ thirty people (essentially redeployment from other parts of the mine.) These jobs are then further dramatically reduced based on the fact that 1 job could potentially last 40 years in the agriculture industry, and the mining jobs are created for 1 year only.

When looking at the table below, then firstly the jobs created and potentially lost is insignificant and immaterial to the regional economy. Following from this, using a GDP per employee quantum per industry, the mining income is slightly more than the potential agriculture lost and again these amounts are so small that in itself it is immaterial to an economic land-use analysis.

In addition to this, the potential land value loss of R240 000, (being R10 000 per hectare for agricultural land), is equally immaterial.

Table 1: Economic Landuse Trade Off analysis

Item	Construction		Steady State		Total
	Shaft 16	Pit 8c	Shaft 16	Pit 8c	
Life of mine	1	1	30	0	
Economic Life of Agriculture	40	40	40	40	
Equivalent Mining Employee Economic Life	0.025	0.025	0.75	0	
Direct Employees on site (steady state)	20	0	0	30	
Total comparable mining job creation	0.5	0	0	0	0.5
Hectares lost for Agriculture	19	5			24
Average Job per hectare	0.1	0.1	0.1	0.1	
Potential Agricultural jobs lost	1.9	0.5			2.4
Construction: Investment (Rm)	#N/A	#N/A	#N/A	#N/A	#N/A
Mine closure costs in current Rand	#N/A	#N/A	#N/A	#N/A	#N/A
Mining GDP Added (Rand '000 pa)	200	0	0	0	200
Agriculturea GDP Lost (Rand '000 pa)	-285	-75	0	0	-360
GGP Net Benefit / (Loss) (Rand '000 pa)	-85	-75	0	0	-160
Employment Net Benefit (Loss)	-1.4	-0.5	0	0	-1.9
Potential Agricultural Rand Value Lost (Rand '000 pa)	-190	-50	0	0	-240

A further finding is that the land is zoned as mining land is too small for viable commercial farming; thus there is no economic impediment to mining the land as opposed to using the land for agricultural purposes. The SLR scoping report also noted that:

- “Aside from the ad-hoc grazing and sunflower cultivation, no land developments have been identified which may be affected by the proposed development.” In the light of the insignificant benefits/losses, as calculated in the above table, the alternative land-uses are in fact not material.
- “the consequence of not proceeding with Pit8C is that the life of the opencast operations at Impala will be reduced which will have negative economic consequences both for the employment of opencast operations workers as well as for optimising resource extraction. The knock-on consequence will be a reduction in the stimulation of the local, regional and national economy. The consequence of not proceeding with the WRD expansion is that the current WRD will have to be used for waste rock disposal and this may perpetuate the associated pollution concerns as discussed in Section **Error! Reference source not found.** of the report.”

Below are photographs of the mining land in question.



Figure 2: Land on which Shaft 16 WRD expansion will be developed



Figure 3: Land on which Pit8C will be developed

5 **Conclusion**

We conclude that there is no reason to keep back an environmental license based on the fact that the land could potentially be better used for agriculture.