DIGBY WELLS
ENVIRONMENTAL

Environmental Impact Assessment and Environmental Management Plan for the Blyvoor Gold Mining Project near Carletonville, Gauteng

Addendum Social Impact Assessment

Project Number:

BVG4880

Prepared for:

Blyvoor Gold Capital (Pty) Ltd

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Project Name:	**Environmental Impact Assessment and Environmental Management Plan for the Blyvoor Gold Mining Project near Carletonville, Gauteng**
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Name	Responsibility	Signature	Date
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Jan Perold, Divisional Manager: Social & Heritage Services	Technical review		14 September 2018

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DECLARATION OF INDEPENDENCE

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I, Nonka Byker, as duly authorised representative of Digby Wells and Associates (South Africa) (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (South Africa) (Pty) Ltd.) and declare that neither I nor Digby Wells and Associates (South Africa) (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of Blyvoor Gold, other than fair remuneration for work performed, specifically in connection with the proposed Environmental Authorisation for the Blyvoor Gold Mine Processing Plants.

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EXECUTIVE SUMMARY

The Blyvooruitzicht mine located some 6 km west of Carletonville along the R501, was once one of the world's largest and most profitable gold mines, yielding around 1.8 million kg of gold and other commodities over its 70-year Life of Mine. After a series of events and operational changes, the mine filed for insolvency in August 2013 and almost overnight ceased all operations, resulting in widespread job losses and environmental degradation.

In 2016, Blyvoor Gold Capital (Pty) Ltd and Blyvoor Gold Operations (Pty) Ltd group of companies (Blyvoor Gold) acquired eight tailings storage facilities (TSFs) and the No. 5 Shaft underground mining operation situated at the former Blyvooruitzicht operation. The mining right relevant to the former Blyvooruitzicht operation (now called the Blyvoor Gold Mine) was subsequently acquired by Blyvoor Gold in 2017 through transfer and cession in terms of Section 11 of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

Digby Wells Environmental (hereafter Digby Wells) was appointed in 2017 by Blyvoor Gold to manage the Environmental Legal application processes pertaining to the Blyvoor Gold Mining Project and the Section 93 Directive handed down from the Department of Mineral Resources (DMR) regarding the review of the Environmental Management Plan (EMP) and other documents submitted with the Section 11 Mining Right transfer and cession application in terms of the Mineral Resources and Petroleum Development Act, 2002 (Act No. 28 of 2002).

Based on the literature review for this study (media reports, a Lawyers for Human Rights study that highlighted the human rights infringements taking place at the Blyvooruitzicht residential villages at the time of their report, etc.), the derailed state of the mine village, and the presence of illegal miners at that time at the mine (with a resultant high crime rate), it is evident that Blyvoor Gold is inheriting a **negative socio-economic legacy** that they would need to address if they want to obtain and maintain a social license to operate. For this reason, coupled with the fact that more updated baseline information has become available through the Community Survey 2016 and other studies in the area, a decision was taken to update the original Social Impact Assessment Report (SIA) that was compiled by Golder and Associates, dated September 2016. This SIA Addendum Report should therefore be read in conjunction with the original SIA (Report Number 1656096-307576-4). This report follows the outline of the 2016 report and, where relevant, copied from the original report and presented in *italics* with additions where new data was available is presented in **bold**.

Because Blyvoor Gold intends to mostly only refurbish existing infrastructure at the mine, the original SIA (Golder, 2016) and this addendum SIA report made no distinction between construction and operational impacts. The table below provides a summary of all the post-mitigation impact ratings of all assessed impacts.

Impact	Post-Mitigation				
	Duration	Extent	Intensity	Probability	Significance
Employment opportunities	Project life	Municipal area	Average	Probable	Minor (Positive)
Population influx	Short-term	Very limited	Minor	Unlikely	Negligible (Negative)
Economic benefits	Beyond project life	Region	Wide-spread	Probable	Minor (Positive)
Community development	Beyond project life	Region	Great	Almost certain	Major (Positive)
Quality of life	Project life	Limited	Minor	Unlikely	Negligible (Negative)
Environmental	Project life	Limited	Discernible	Probable	Minor (Negative)
Social disintegration and conflict	Project life	Limited	Minor	Unlikely	Negligible (Negative)

None of the impacts identified in this, or the previous, study can be considered fatal flaws. On the contrary, it is believed that the recommissioning of Blyvoor Gold mine can assist the partial reversal of ongoing negative socio-economic impacts currently experienced by residents in the mine village after the sudden closure of the mining operations in 2013. The three main benefits are:

- Alleviating the high unemployment rate to some extent. Up to 75% of the local community is reportedly unemployed;
- Providing economic benefits through the payment of royalties and taxes to the various levels of government, but specifically implementing sustainable local economic development (LED) projects as part of its Social and Labour Plan (SLP) commitments and considering additional voluntary investments in community development projects to reduce local communities' dependence on the mining sector; and
- Reducing environmental impacts currently experienced by local communities after the previous operator ceased all environmental control measures, by reinstating such mitigation measures, e.g. dust suppression at the TSFs, waste water treatment, etc.

However, to ensure that Blyvoor Gold obtain and maintain a social licence to operate, the following recommendations were made as part of the social management plan and emphasised here:

- Develop and implement a stakeholder engagement plan (SEP) for the Project, inclusive of a communications plan for liaising with residents of the mine village specifically. Open, transparent and continuous two-way engagement with stakeholders are of utmost importance in establishing a relationship with the mine's impacted communities. In this regard, Blyvoor Gold could use their existing community relations team to implement and report on the SEP.
- Establish a transparent labour recruitment process by publicising the mine's employment needs, number of jobs available, timing of labour needs, and skills levels required. Consider establishing a local labour desk that is manned by an independent party (i.e. someone who is not from the community. Although not true in all cases, experience has shown that ward councillors or community members sometimes tend to favour their family and friends for job opportunities). The labour desk can also serve as a registration point for a local labour database, which is expected to largely consist of previous Blyvooruitzicht mine employees.
- It is not sufficient to reverse the negative socio-economic impacts currently experienced by the mine village residents as it builds dependency on the mining sector. Instead, the underlying issues should also be addressed where possible. This could be done through a voluntary social investment strategy that focuses on sustainable development projects aimed at uplifting socio-economic conditions through non-mining related activities. These projects should be identified and developed in consultation with the local community, but, as an example, could include assisting the community in establishing food gardens. Also, Blyvoor Gold is one of many operators in the area and as such, can liaise with other mining operators in establishing a 'basket fund' for sustainable community development projects.
- The mine's focus should not be on short-term philanthropy LED projects (e.g. building a community hall). Often these infrastructure projects turn into 'white elephants' that are not used by the local community, yet the mine should continue the upkeep and maintenance. However, initial assistance in the mine village (e.g. refuse removal and repairing the sewerage network as outlined in the SLP) will assist in building initial trust with the community.

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1 Introduction

Digby Wells Environmental (hereinafter Digby Wells) was appointed in 2017 by Blyvoor Gold Capital (Pty) Ltd (hereinafter Blyvoor Gold) to manage the Environmental Legal application processes pertaining to the Blyvoor Gold Mining Project and the Section 93 Directive handed down from the Department of Mineral Resources (DMR) regarding the review of the Environmental Management Plan (EMP) and other documents submitted with the Section 11 Mining Right transfer application in terms of the Mineral Resources and Petroleum Development Act, 2002 (Act No. 28 of 2002).

Digby Wells initially proposed to undertake an amendment process to update the 2017 EMP submitted with the Section 11 transfer, as well as address comments made by Interested and Affected Parties (I&APs) during that process. To initiate the Project, Blyvoor Gold provided the historical EMPs related to the mining operations which are dated 2000, 2002, 2007, 2012, and 2017. A review of information provided by Blyvoor Gold determined that, inter alia, the application needed to follow a Scoping and Environmental Impact Assessment (EIA) process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the EIA Regulations, dated 2014 (as amended in 2017) thereunder, and not the initially proposed amendment process as the metallurgical plants require an Air Emissions Licence. Also noted was the fact that very few Specialist investigations have ever been undertaken for the Blyvooruitzicht operation.

Digby Wells met with the DMR on 23 May 2018 to discuss the implications of the dated EMP on the current application process, where it was confirmed that the current process can continue without having to redo the Scoping Phase. The validity of the baseline and impact assessment information contained in the 2000 EMP was also discussed and it was determined that a number of specialist studies will be required to meet the legal requirements and complete the EIA Process, and facilitate thorough responses to the I&AP comments.

Based on the literature review for this study (media reports, a Lawyers for Human Rights study that highlighted the human rights infringements currently taking place at the Blyvooruitzicht residential villages, etc.), the derailed state of the mine village, and the presence of illegal miners currently at the mine (with a resultant high crime rate), it is evident that Blyvoor Gold is inheriting a **negative socio-economic legacy** that they should address to obtain and maintain a social license to operate (SLTO). For this reason, coupled with the fact that more updated baseline information has become available through Community Survey 2016 and other studies in the area, a decision was taken to update the original Social Impact Assessment Report (SIA) compiled by Golder and Associates, dated September 2016. This SIA Addendum Report should therefore be read in conjunction with the original SIA (Report Number 1656096-307576-4), but for ease of reference, relevant sections of the Golder SIA have been included in this report.

1.1 Project Background

In 2016, Blyvoor Gold Capital (Pty) Ltd and Blyvoor Gold Operations (Pty) Ltd group of companies (Blyvoor Gold) acquired eight tailings storage facilities (TSFs) and the No. 5 Shaft underground mining operation situated at the former Blyvooruitzicht operation. The mining right relevant to the former Blyvooruitzicht operation (now called the Blyvoor Gold Mine) was subsequently acquired by Blyvoor Gold in 2017 through transfer in terms of Section 11 of the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).

The purpose of this application is to approve the existing operations at the Blyvoor Gold Mine and to align the existing documentation pertaining to the operations to the NEMA and the Environmental Impact Assessment (EIA) Regulations, dated 2014 (as amended in 2017). Furthermore, two metallurgical processing plants are required to be authorised as part of this application, as well as the reclamation of eight Tailings Storage Facilities (TSFs).

1.2 Description of the Activities to be Undertaken

The estimated LOM for the Blyvoor Gold Mine underground operations currently exceeds 30 years and Blyvoor Gold has an operational strategy for the first 15 years. Blyvoor Gold intends to recover gold through a metallurgical plant constructed on existing foundation at The No. 5 Shaft Complex. Additionally, Blyvoor Gold intends to re-treat the Blyvoor TSF No.7, TSF No 6, and TSF No 4 & 5 and deposit them on Blyvoor TSF No.6, or on alternative sources. The remaining TSFs will be kept in care-and-maintenance for the LOM.

Much of the Project will be characterised by refurbishment and repair work to return the mine back to operation. Wherever possible, the required infrastructure will be installed or constructed within the existing footprints.

1.2.1 Underground operations

The underground Project will require the recommissioning of the existing hoists, shaft facilities, ventilation fans, compressors and offices at No. 5 Shaft and the surface complex. No. 5 Shaft provides access to the existing underground network of tunnels and stopes. Ore will be excavated in the stoped areas, beginning in the shallower reaches of the deposit above 29-Level. The current water level occurs at 30-Level. The production levels above 30-Level are accessible and will allow for an estimated nine years of mining. Blyvoor Gold plans to implement a dewatering programme for 30-Level and below from the ninth year of mining.

The waste rock will be deposited at the existing WRD and the gold ore will be transported to the surface to be crushed and screened at the No. 5 Shaft metallurgical treatment plant. The ore will be hoisted up the existing No. 5 Shaft infrastructure, discharged into the existing ore bins in the shaft headgear and then loaded onto the existing Conveyor 1. This conveyor will deposit the ore into Coarse ore Silo. Ore is drawn out of the Silo by an apron feeder and fed into a jaw crusher via a static grizzley. The fines and crushed ore report to a conveyor that delivers it to a screen. Screen oversize reports to a recirculation conveyor that delivers the

ore to the cone crusher for secondary crushing. The secondary crushed ore also reports to the screen feed conveyor allowing secondary closed circuit crushing.

Screen undersize reports to the crushed ore silo feed conveyor and is delivered to the shuttle conveyor above the crushed ore silos. The shuttle conveyor is used to deposit ore into one of two silos. Ore is drawn out each crushed ore silo by a light-duty Apron feeders and discharged onto the mill feed conveyor that delivers it to the mill. Each mill is therefore fed by its own independent silo, feeder and conveyor system.

The milling circuit includes a 100% mill discharge feed to a Falcon gravity concentrator. Concentrate from the concentrator passes over a magnetic separator to remove magnetics before it is leached into a concentrate leach reactor. The tails from the leach reactor reports back to the milling circuit.

Cyclone overflow from the milling circuit flows over a trash screen before it is thickened and delivered to a leach and Carbon in Pulp (CIP) pump cell circuit. The loaded carbon from the pump cells is acid washed, eluted using a Zadra process and eletrowinning, and regenerated before being returned for CIP adsorption. The gold plated onto the electrowinning cathodes is washed off, caked in a filter press, then dried and calcined in a calcine oven before smelting into bullion bars for delivery to a refinery.

The plant tailings will pass through an INCO process detox circuit prior to pumping to the tailings dam. Water recovered from the tailings penstock will be gravity and pump fed to the plant process water dam for reuse in the circuit.

Reagents utilised for the process will be stored and mixed on site. Cyanide will be stored and utilised within strict cyanide control requirements including a separate fenced and locked mixing and storage area within the plant boundary fence. Lime will be bulk-delivered to a free standing silo from where it is delivered at a controlled rate for mixing and slaking with water prior to circulation around the plant for pH control. Caustic and hydrochloric acid will be delivered in concentrated liquid form and stored in separate fenced areas within the plant prior to being diluted with water in storage tanks from which it is pumped for plant use.

Existing infrastructure includes the foundations and the coarse ore silo. The foundations will be modified to suit the designed plant layout. The crushed ore silo will be modified and reused. New plant fencing and a new laboratory, administration and security building will be erected for the plant.

1.2.2 Surface operations

Blyvoor Gold intends to reclaim the Blyvoor No. 7 and Doornfontein 1 and 2 TSFs first and the other TSFs will remain in care and maintenance until they are reclaimed later in the LOM. The approved method of reclamation is hydraulic mining and processing at the No. 5 Shaft metallurgical treatment plant.

The reclaimed tailings will be pumped to a reception tank via a trash screen on top of the reception tank. The clean slurry is pumped to a cyclone which diverts coarse ore to the milling circuit and size ore to the thickener feed trash screen. The thickened slurry is pumped

to a peroxidation tank in which ore id oxidised by oxygen injection into a leach reactor. The oxidised ore reports to a Carbon in Leach (CIL) circuit that leaches and adsorbs the gold in a preg robbing environment. The gold will then be recovered through the existing plant elution and smelting circuit. The residue from the CIL will be pumped and disposed of onto TSF 6.

The plant and associated water pipeline servitude (which runs from the plant to Blyvoor No. 6 and No. 7 TSFs) are approved. Should this option be chosen, this will constitute a separate EA process and is not considered in this assessment.

Blyvoor Gold will continue to deposit material on the Blyvoor No. 6 TSF, as this TSF still has sufficient capacity for the LOM. Should more deposition capacity be required, materials will be deposited onto the area of Blyvoor No. 7 TSF after those tailings have been reclaimed. Alternatively, Blyvoor Gold may consider a new site on Blyvoor No. 4 and Blyvoor No. 5 TSF.

1.2.3 Employment

The Social and Labour Plan (SLP) dated 31 July 2017, proposes targets of employment from surrounding areas and further afield. The SLP proposed a target of 70% of the workforce on the mine be from Merafong Local Municipality, and the remaining 30% be employed from within the Gauteng Province. The projected employment requirements for the first five years of operation are estimated between 729 and 732 employees as defined in the SLP for this period. After the first five years, the 2017 EMP projects employment of approximately 842 workers.

1.3 Terms of Reference

As mentioned previously, this study serves to update the SIA undertaken as part of the 2016/17 process and assist in addressing interested and affected parties' comments previously excluded.

1.3.1 Desktop Study

The desktop study included review of relevant literature, specifically the original SIA report compiled in support of previous EMPs with regard to the primary study area. Other literature reviewed included census and publicly available socio-economic data, reports on the Blyvooruitzicht community, studies on the socio-economic impact of mining, other specialist reports forming part of this authorisation process, and available aerial imagery. The study area was defined as follows:

- Primary: the Project area, including proposed development footprints; and
- Secondary: areas bounded by political demarcations (e.g. local municipalities).

These study areas informed the socio-economic baseline which constituted an update of the baseline presented in the original SIA report for the Project area which was supplemented with data collected through the desktop study.

1.3.2 Impact Assessment Report

The SIA Report includes the assessment and ratings of the socio-economic impacts that are likely to arise from the proposed Project. The report also includes mitigation measures aimed at reducing the severity of the predicted adverse effects and measures to enhance the potential benefits in a social management plan, which defines practical steps for implementing the recommended mitigation measures.

2 Details of the Specialist

This report was compiled by **Ms Nonka Byker** and reviewed by **Dr Jan Perold**.

Nonka is a social specialist with 20 years' experience across a wide range of social impact management fields, including the development and implementation of social investment strategies and community investment plans, undertaking social impact assessments, resettlement planning, social and labour plans, stakeholder engagement plans and managing public participation processes. She has worked on a large number of projects across a wide range of sectors, including renewable energy, mining, energy generation and distribution, oil and gas, and road and mixed land use developments. Her countries of work experience include: South Africa, Botswana, Zimbabwe, Namibia, USA, Mozambique and Tanzania. Nonka is registered with the Health Professions Council of SA and is a member of the International Association of Impact Assessors, SA Branch.

Jan has 16 years' experience ranging over several aspects of social research, including social impact assessment, resettlement planning, social and labour plans, social surveys and statistics, tertiary education and science communication. He has been involved in a variety of projects in the following countries: Angola, Botswana, Burundi, Central African Republic, Cote d'Ivoire, Ghana, Lesotho, Liberia, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Sierra Leone, South Africa, Southern Sudan, Swaziland, Tanzania and Zambia. Jan is registered at the Health Professions Council of South Africa as a research psychologist. His doctoral thesis focused on the application of systems theory to analyse the psychosocial dynamics of public participation. He also has a strong natural science background, having attained an Honours Degree in Physics. Jan was a contributor to the book New Directions in Social Impact Assessment: Conceptual and Methodological Advances (Ed. Frank Vanclay and Ana Maria Esteves, Edward Elgar: 2012). He also currently acts as guest lecturer and research co-supervisor for the MA (Research Psychology) course at the University of Pretoria, South Africa. In addition, he was previously involved in lecturing on statistics and research methodology at various universities in South Africa.

3 Aims and Objectives

As per the Terms of Reference (TOR), the primary objective of the SIA is to identify, assess and mitigate the social impacts associated with Blyvoor Gold's proposed reclamation activities (see Section 1.2). Secondary objectives in support of the primary objective includes the following:

- Review and update the socio-economic baseline profile to include more recent data and data on ward-level;
- Verify and update the socio-economic impacts that were assessed as part of the original SIA (Golder, 2016);
- Identify and assess any additional socio-economic impacts considering the updated baseline profile and additional information that has since become available;
- Develop mitigation measures to minimise adverse socio-economic impacts and sustainable development opportunities that could enhance any positive impacts; and
- Make recommendations based on the aforementioned updates.

4 Methodology

4.1 Literature Review and Desktop Assessment

The approach taken to data collection – and to the SIA in general – was to capitalise as much as possible on collaboration with other members of the Digby Wells team involved in the EIA and supporting specialist studies. Instances of such collaboration included the following:

- Information obtained by the Digby Wells stakeholder engagement team (e.g. during meetings with local government officials and other local and regional stakeholders) was used to inform the social baseline and impact assessment; and
- The findings of other specialist studies were reviewed to identify cross-disciplinary linkages, i.e. impacts assessed by one specialist discipline that could give rise to indirect or induced impacts relevant to another discipline. As an example, project-induced changes in groundwater quality and quantity could cause social impacts by altering the availability and/or quality of water for domestic consumption.

Available public documents were reviewed to obtain relevant information on current and planned Project activities, on baseline socio-economic conditions and on anticipated impacts of the Project. Secondary data sources reviewed included the following:

- The Social Impact Assessment report prepared by Golder and Associates (2016) for the proposed Blyvoor Gold Operations (report number 1656096-307576-4);
- The comments and response register (CRR) developed by Digby Wells during the Scoping Phase;
- Merafong City Local Municipality's IDP (2018/19);
- West Rand District Municipality's IDP (2016/17 – 2021/22);
- Census 2011 and Community Survey 2016 data (StatsSA);
- Various newspaper articles on the existing socio-economic impact in Blyvooruitzicht after the sudden mine closure in 2013;

- A report by the Lawyers for Human Rights entitled “Blyvooruitzicht Mine Village: the human toll of state and corporate abdication” (2017);
- An article on the implications of illegal mining in Gauteng Province (2017) by A Phala, D Mistry and RLG Matlala of the Gauteng Department of Community Safety;
- A case study of the impact of illegal mining on the socio-economic development of a community in Ghana; and
- A submission by the Chamber of Mines (2017) on illegal mining in South Africa.

4.2 Fieldwork and Seasonal Influence

A site visit was undertaken on 09 September 2018 to Blyvoor TSF 1, 6 and 7, the surrounding communities of The Village and Southdene, No. 5 Shaft, and the community of Doornfontein.

5 Assumptions and Limitations

Although all reasonable efforts were made to provide an updated and representative picture of socio-economic impacts relevant to the study areas, this report is subject to the following assumptions and limitations:

- This report is based on available information obtained from the client, secondary data sources, and other specialists. The study was conducted within available timeframes and budget. The sources consulted are in no way exhaustive, although deemed sufficient to meet the ToR for the current study. No information has been deliberately excluded from this report, and it is assumed that no party withheld relevant information from the specialists.
- In an effort to curb further speculations and expectations around job opportunities and the reinstatement of mine workers that were retrenched in 2013 when the Blyvooruitzicht mine was liquidated, the SIA team did not conduct any interviews or focus group meetings with neighbouring residents – instead information related to the socio-economic impacts on these communities were derived from observational studies and the Lawyers for Human Rights’ report who surveyed 600 households as part of their research.
- It was assumed that the specialist who originally compiled the Golder SIA had sufficient knowledge and experience to undertake the study and that the findings of that report were based on solid research.
- It is assumed that Blyvoor Gold intend to implement international best practice in mitigating their socio-economic impact and therefore this study has included recommendations for further (voluntary) social management plans to help them achieve this goal, and in the process maintain their SLTO.
- Socio-economic impacts associated with the eventual decommissioning of the mine at the end of its life have been omitted from this study. This omission is motivated by

the fact that predictions concerning the characteristics of the receiving socio-economic environment at the time of decommissioning (more than 30 years into the future) are subject to a large margin of error, thus significantly reducing the accuracy of the impact assessment.

6 Baseline Environment

The socio-economic baseline profile presented here includes the primary and secondary study areas. As reflected in Figure 6-1, the baseline profile starts with a high-level overview of the secondary study area (province, district and local municipality), followed by a detailed profile of the primary study area as the area expected to experience direct socio-economic impacts.

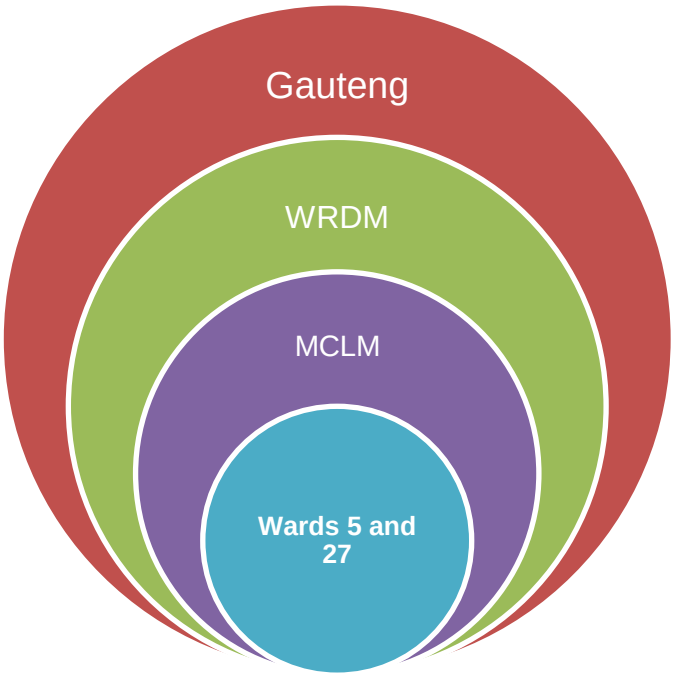

Figure 6-1: Primary and secondary study areas

Data for this baseline was sourced primarily from Wazimap. This data was used because it realigns the 2011 Census data with the updated municipal boundaries used in the 2016 Municipal Elections (Open Up, 2017). The data below includes the updated 2011 Census data. While data from the 2016 Community Survey is available for the province and the local and district municipalities, these data are not available at ward level. The 2011 Survey data has therefore been used for ease of comparison, unless specifically stated otherwise.

6.1 Baseline Profile of the Secondary Study Area

6.1.1 Overview of the Gauteng Province

Gauteng is both the smallest province, in terms of land area, and the largest province, in terms of population, in South Africa. The province covers a geographical area of 18,182.5

km^2 and in 2016, was home to almost 13.5 million people at a population density rate of 737 people per km^2 – indicative of the high urbanisation rate of the province. The population in Gauteng is growing at a rate of approximately 250,000 people per annum, given the fact that Gauteng had a population size of just under 12.3 million in 2011 (Statistics South Africa, 2011; Wazimap, 2017; Yes! Media, 2018).

Gauteng is considered the 'economic hub' of South Africa and contributes to the financial, manufacturing, transport, technology and telecommunications sectors. The province is responsible for a third of the country's gross domestic product (GDP) in addition to generating about 10% of the total GDP of sub-Saharan Africa and about 7% of the total African GDP.

The province is divided into three metropolitan municipalities; the City of Ekurhuleni, the City of Johannesburg and the City of Tshwane, and two district municipalities; Sedibeng District Municipality and West Ran District Municipality (WRDM) (Yes! Media, 2018).

6.1.2 Overview of the West Rand District Municipality

The WRDM covers a geographical area of 4,095 km^2 and constitutes three local municipalities: Mogale City Local Municipality, Merafong City Local Municipality (MCLM) and the Rand West Local Municipality (WRDM, 2018; Yes! Media, 2018). In 2016, the total population of the WRDM was 840 913 people (WRDM, 2018), which represents a marginal increase from 2011 when the population was estimated to be around 820,991 people. The distribution of the population across the three local municipalities is shown in Figure 6-2.

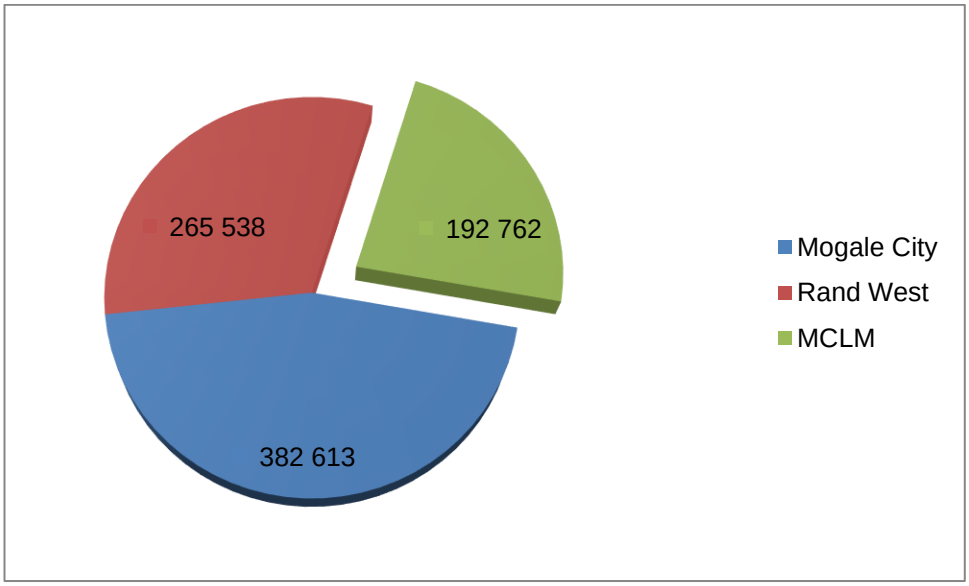

Figure 6-2: Population distribution across the local municipalities of WRDM

The mining, manufacturing and government sectors are the most important economic sectors within the WRDM in terms of share of the regional total (WRDM, 2018). Collectively, the primary sector provides 30% of the regional total. Wholesale and retail trade, finance and

business services and community services provide the most employment. The electricity, gas and water industry provide the least employment.

Despite experiencing a decline since 2005, mining is still the leading sector in the district (WRDM, 2018). The WRDM does acknowledge, however, that mining will not continue to be sustainable, specifically in Westonaria and MCLM. The WRDM has noted the need for diversification of the economy in these areas. Agriculture is also an important industry in the WRDM, despite its relatively small share of the regional total, as it forms part of the 'Maize Triangle' and has been targeted as part of the Gauteng Provincial Government's Agricultural Hubs programme.

Within the WRDM, tourism is also important (WRDM, 2018). A notable attraction is the 'Fossil Hominid Sites of South Africa," a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site, known locally as the Cradle of Humankind (UNESCO, 2018; WRDM, 2018).

During the State of the District Address (SODA) presented by the WRDM Executive Mayor Alderman B.M. Maneli in March 2018, potable water, sanitation, roads, storm water and electricity were highlighted as challenges within service delivery improvement (WRDM, 2018).

6.1.3 Overview of the Merafong City Local Municipality

Golder (2016) included a detailed overview of the MCLM. This report follows the outline of the 2016 report (copied from the original report and presented in *italics*) with additions where newer data was available (presented in **bold**). It only details those socio-economic issues for which newer data was readily available and as a result would influence the significance of identified impacts. For a detailed overview of all the baseline socio-economic variables, the reader is referred to the original SIA report (Golder, 2016).

6.1.3.1 Overview

The Merafong City Local Municipality is primarily rural in nature with significant tracts of mining and agricultural land. It covers a total land area of 163,157 hectares with 108,661 hectares of natural bush- or woodland and unimproved grassland. Dryland agricultural cultivation covers some 41,404 hectares, with another 1,596 hectares under irrigated cultivation. The built up urban areas of the municipality comprises some 2,367 hectares of residential development and an additional 476 hectares of land under smallholdings (Merafong Local Municipality: Municipal Profile, HDA).

Scattered un-proclaimed settlements dot the central mining belt and proclaimed townships are located close to the belt on the northern and southern side. The scattered settlement pattern is a result of under-regulated mining surface rights, where mining companies established mining dormitory villages without any regard for post-mining use. In addition, municipalities governing these spaces did not apply proper spatial logic. However, through restructuring based on development corridors, nodes, infill development and growth boundaries, greater integration is obtainable and is already showing results. Urban efficiency

is greatly dependent on the structure morphology and land use patterns of an urban area (Merafong City LM IDP, 2016-2021). Development nodes within the local study area include the northern, central/mining belt and southern urban areas.

Merafong is situated in the south-western part of (the) Gauteng Province and forms part of the West Rand District Municipality.

In addition to the N12 and N14 access routes, the R501 provides an east to west link connecting Carlentonville with Potchefstroom and Westonaria. Refer to Figure 1 and Figure 2 for maps of the local study area. **(Maps omitted from this report as the study areas have been redefined – see Sections 1.3.1 and 4.1).**

One of the development goals of the (MCLM) is to consolidate the currently scattered settlements into three district urban areas. Areas earmarked for urban restructuring include:

- *Welverdiend, Khutsong, Khutsong South and Carletonville to the north;*
- *Blyvooruitzicht, West Wits, Driefontein, Elandsrand, Wedela and Deelkraal in the central regions; and*
- *Fochville, Kokosi, Greenspark and Losberg Industrial to the south.*

As of the beginning of 2017, Blyvooruitzicht has not been proclaimed a township and was therefore not yet incorporated into the Municipality (Lawyers for Human Rights, 2017). The Gauteng Department of Human Settlement embarked on a tender process in August 2018 to find suitable service providers to undertake censuses and surveys of all hostels in the area in an effort to profile the occupants and transform these hostels into some form of Reconstruction and Development Programme (RDP) housing.

The (MCLM) is characterised by the presence of many different cultures and languages as illustrated by the differing language choices. The variety of languages can, amongst other things, be attributed to migrant labourers, especially isiXhosa speakers from the Eastern Cape. The other three prominent languages, namely Setswana, Sesotho and Afrikaans are more characteristic of this region.

According to Community Survey 2016 results, the most prominent languages spoken in the MCLM are still Setswana (24.9%), isiXhosa (23.3%), Sesotho (18.8%) and Afrikaans (14.3%). Since the Blyvooruitzicht mine closure in 2013, the area was subject to a noticeable influx of illegal miners (so-called 'zama-zamas') who are, according to a Chamber of Mines' study (2017), largely undocumented immigrants from neighbouring countries (Lesotho, Malawi, Mozambique and Zimbabwe).

Despite the areas' contribution to the national economy, Merafong itself shows varying levels of prosperity. There has been general improvement in socio-economic conditions; however, progress is generally slow, and some prosperity indicators have deteriorated (Merafong City LM IDP, 2016-2021).

6.1.3.2 Population Demographics

Developments can affect the receiving social environment in various ways, including housing, health and social services. The diverse and specific needs of existing residents in an area are dependent on a wide range of variables, including demographic characteristics. Depending on the adequacy of services, the resilience of the existing population and the type of development proposed, there may be a significant impact on the community's ability to accommodate new residents and adapt to changes in the social environment. Assessing the magnitude and rate of population change has important implications for community infrastructure and service requirements and can play a major role in determining social impacts associated with the proposed development.

Population demographics recorded in 2001 and 2011 have shown a downward trend with the total population declining from 210 481 to 197 519 in 2011. Of this population, by far the majority, lives in towns and settlements within the municipal area.

Formerly a cross-border municipality, the entire municipality was transferred to the North West Province following the abolition of cross-border municipalities by an amendment to the South African Constitution in 2005. The municipality was part of the North West Province from 2005 to 2009, when it was reincorporated into the Gauteng Province by another amendment to the Constitution, following often violent protests in the township of Khutsong. As MCLM did not exist in 2001, the population figures for this report were adapted to reflect 2011 and 2016 data. It does show a somewhat declining population – from 197,521 people in 2011 down to 188,843 people in 2016 (see Figure 6-3**). The largest out-migration was amongst the Black African population group with around 13,500 people leaving the area. This might be attributable to the Blyvooruitzicht mine closure in 2013 but there is no evidence supporting this inference. On the contrary, it is known that large groups of people stayed on in their houses in the mine's residential area, collectively known as "The Village", as they had no other prospects.**

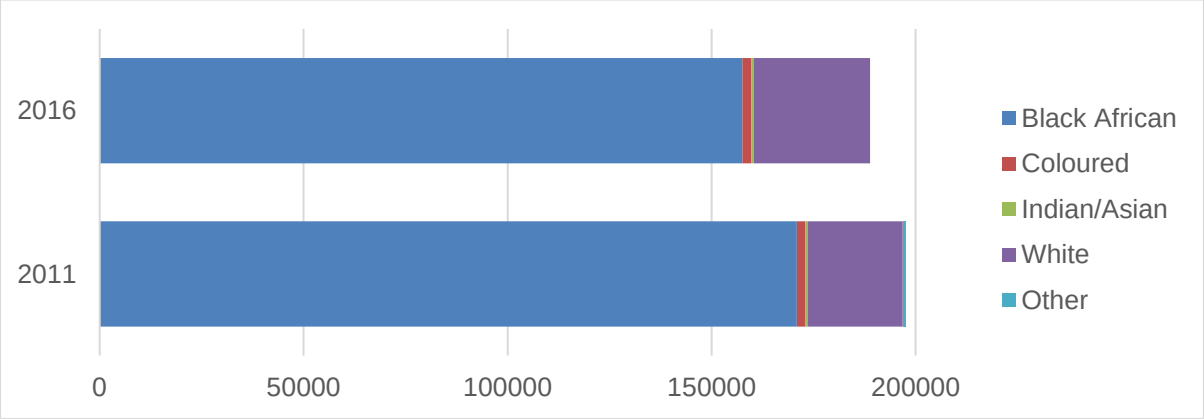

Figure 6-3: Overview of MCLM's population between 2011 and 2016

Although the bulk of the Merafong population resides in built-up urban and small holding areas, the Municipality has a significant number of informal settlements across the municipal

area of jurisdiction. This includes an informal settlement which as emerged at the old Blyvoor mine hostels which were vacant.

These buildings were observed to have formed housing for individuals who are said to be involved in illegal mining activities (zama-zamas) as well as to scavenge scrap metal, copper and other waste materials from the disused areas of the mine for resale. This settlement fluctuates in size based on the migration of the illegal miners but in the last year there have been shacks erected around the hostel infrastructure which denotes a more permanent community.

Inhabitants of the informal settlement might have taken up residence in the hostel itself between 2013 and 2018 when the hostel was (partially) vacated, as no evidence was found on the site visit or on satellite imagery (dated July 2018) of any informal settlements in "The Village".

Only 38% of the municipality is developed and, therefore, has a low population density of 3.1 persons per hectare (HDA Merafong Local Municipality Profile, 2013). **The per km² population density in 2011 stood at 120.9 people per km². With a declining population, this decreased slightly to 115.6 people per km² in 2016.** *The total number of households in the (MCLM) is recorded as being 66,625 in 2011 which is an 18.3% increase on the 2001 total of 56,336 (Merafong City LM IDP, 2016-2021).* **The number of households in the MCLM area increased to an estimated 79,833 in 2016, of which almost a fifth are informal dwellings (Community Survey 2016). The average occupancy rate of a household is 2.4 persons per household, which represents a slight reduction from 2011's 3 persons per household.**

In consideration of the population demographics, the following trends emerge:

- *The male population is a fraction higher at 107,159 (54.3%) than the female population which totals 90,360 (45.7%) as indicated in the StatsSA 2011 census.* **This remained largely unchanged in 2016, with a slight decrease in the male population (from 54.3% to 53.6%), which could be indicative of migrant labour workers leaving the area.**
- *Of the population, some 86.5% are black, 11.8% are white, then dropping sharply to 1.1% coloured, with the rest (0.6%) made up by Indian and other population groups.* **The 2016 data shows a decline in the Black African population group (from 86.5% down to 83.4%) with an increase in the White population group (from 11.8% up to 15.1%). Other population groups in the MCLM remain largely unchanged.**
- *Some 72.5% of the population is of working age (15-64 years) (Merafong City LM IDP, 2016-2021).* **This has remained mostly unchanged for 2016, when the working age population accounted for 72.2% of the total population.**

This is somewhat higher than the national average and it is assumed that this population distribution can, to some extent, be attributed to the mining and related activities in the area and the perceived opportunities that this may provide for employment.

6.1.3.3 Levels of Education

Understanding the education status of the specific geographic area gives an indication of the availability of skills for projects as well as opportunities for capacity building and skills development. In the case of the (MCLM), the trends are somewhat worrying:

- *Some 6% of the local population has achieved a higher education qualification, in comparison to 17% and 9% for Gauteng and the (WRDM) respectively.*
- *Only 27% of the local population has completed secondary school. In comparison, 35% of Gauteng and 31% of the (WRDM) population has completed secondary school.*
- *Some 41% of the local population has only partially completed secondary school.*
- *Some 6% of the population only completed primary school.*
- *The rest (22%) has achieved no schooling or only some primary schooling.*

The preponderance of relatively low levels of education amongst the population is assumed, at least in part, to be attributable to the fact that the mining industry has made extensive use of unskilled labour in the past. This practice would encourage the inflow of less qualified individuals seeking employment opportunities on the mines.

The education profile of the MCLM saw an upward trend in the years between 2011 and 2016. Close on a third (31.3%) of the adult population (those aged 20 years and older) have obtained Matric, which is now more on par with the WRDM's 36.8%, although still behind Gauteng's 41.3%. Those who have had no schooling or only some primary schooling, have decreased from 22% to 14.9%. This might in part be attributable to the surrounding mines offering Adult Basic Education Training to their employees as part of their respective SLP commitments.

6.1.3.4 Levels of Employment

The regional and local employment rates provide an indication of the state of the economy. It also assists in understanding the economic growth of the area. The unemployed population spends limited money; therefore, their contribution to the local economy is limited. The unemployment rate measures the percentage of employable people in the country's workforce who are over the age of 16 and who have either lost their livelihoods of have unsuccessfully sought jobs previously and are still seeking employment.

The (MLCM) has an employment rate of 47%, with an unemployment rate of 17% and 33% falling within the other or inactive category. In comparison, the (WRDM) has an employment rate of 50%, 18% of the population are unemployed, and 29% are "other or inactive" which includes children, pensioners, disabled persons or population who are not actively seeking employment opportunities.

For this study, the non-economically active population has been excluded from the analysis to determine the employment rate amongst the economically active population only (i.e. individuals aged between 15-64 who are willing and able to work).

In the MCLM close on half of the total population (48.8%) are considered to be economically active. Of this population, the majority (69.1%) are employed, a quarter (25.8%) are unemployed and a further 5.1% consider themselves discouraged work seekers. The latter category was created in Census 2011 to describe economically active individuals who are not actively seeking employment because the individual has given up or has had no success in finding employment.

Despite these high levels of employment, the majority of households within the MCLM live in absolute poverty (37%) or can be classified as lower middle-income groups (41.3%). A household living in absolute poverty earn a household income of R 19,200 or less per annum (or R 1,600 per month) for a family of four, i.e. the household is unable to meet their own basic needs on a monthly basis. Lower middle-income is defined as an annual household's income of between R 19,201 and R76,800. This is indicative of the fact that most of the economically active individuals are employed in menial jobs with minimum wages.

6.1.3.5 Infrastructure and Services

6.1.3.5.1 Safety and Security

Blyvoor has been the site of on-going crime and vandalism since the operations closed down in 2013.

The media is littered with news reports of extensive illegal mining activities being undertaken in abandoned mine shafts by so-called zama-zamas, murder, rape, gang warfare, uncontrolled and extremely violent security services put in place by Aurora, theft and vandalism. The mine itself, as well as a number of informal settlements – in particular Matariana, Mphahla Village, Vuka Search (S shaft) and Mohaleshoek are said to accommodate 1,000s of illegal miners. Based on reports, the criminal elements are highly organised and ruthless, providing an overwhelming challenge for the police (M&G Centre for Investigative Journalism, 2014).

Various community representatives have also drawn attention to the extreme nature of criminal activities. The need to address crime rate and improve policing is seen as a priority amongst 78.57% of respondents within virtually all wards within Merafong (MCLM IDP, 2016-2021).

The MCLM is serviced by three police stations, namely Carletonville, Fochville and Weldela (Carletonville is closest to the Project site and is discussed in more detail in Section 6.2.4.4). The total number of crimes reported per crime category between the years 2015 and 2018 at these three police stations are summarised in Figure 6-4. From this graph it is evident that the general crime rate of the area appears to be on the rise with the largest numbers of crime reported in the contact-crimes (i.e. crimes against the person that includes murder, assault, grievous bodily harm, etc.), property-related crimes (burglary and theft) and other serious crimes (theft and commercial crime). A total number of 7,115 cases were reported in the 2017/18 financial year across the

three police stations, representing an increase in almost 1,000 cases over 2015/16 and 2016/17.

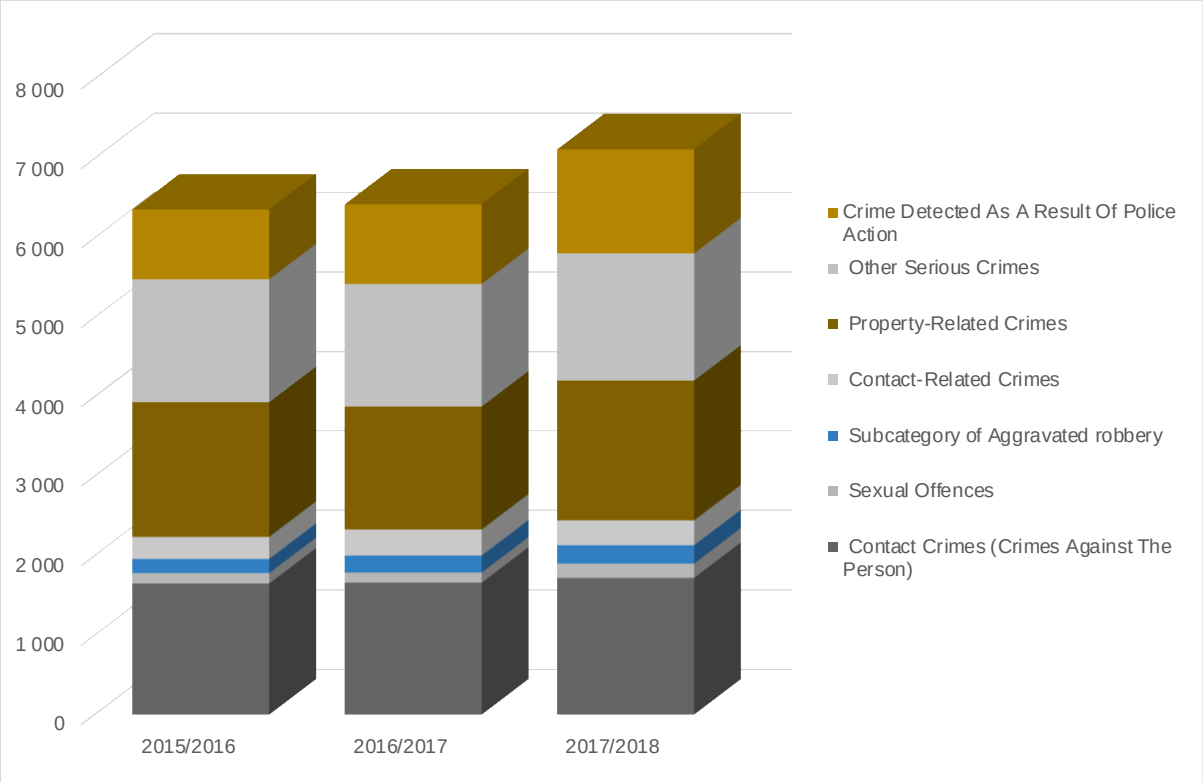

Figure 6-4: Overview of MCLM Crime Profile between 2015 and 2018

6.1.3.5.2 Water and Sanitation

The majority (93%) of the local population receive water from the regional and local water scheme operated by the municipality or other water service providers. Some 81% of the local population has access to flushing toilets which are connected to a sewerage system.

Residents of the rural areas rely on piped water (often communal) to some extent, but also make use of boreholes and water tanks. Tanked water is supplied to informal settlements (MCLM IDP, 2016-2021).

By 2016 there was a slight improvement in the water supply to households in the MCLM, with a total of 96.6% of households having access to piped water. Of these, just under a third (65.5%) had piped water inside their dwelling, close on a quarter (22.4%) had piped water in their yard but not dwelling, and 8.7% only had access to piped water at a communal stand or public tap.

Most households (92.4%) had access to sanitation services on par with RDP requirements (i.e. either a flush toilet connected to a public sewerage system or a pit latrine with ventilation).

6.1.3.5.3 Refuse Removal

In the (MCLM), 75% of the population have their refuse removed by the local authority or a private company at least once a week. Some 9% of the population use their own refuse dump and 4% make use of communal refuse dumps.

These refuse removal statistics compare favourably with the (WRDM) where 77% of the population have their refuse removed by local authority or private companies at least once a week.

In 2016, although most households (75.6%) still had their refuse collected at least once a week, there was a noticeable increase in households who had to make use of their own disposal methods, including a fairly large proportion (slightly more than one in every 10 households, or 12%) who had no access to refuse disposal and therefore dumped their waste in open areas.

6.2 Baseline Profile of the Primary Study Area

The Primary study area is defined as the area that houses any Project infrastructure and includes the communities who still live on the Blyvooruitzicht mine's residential village areas (North Dene, South Dene, East Dene, The Village, The Hillside and Doornfontein) as the closest areas of human settlement to the Project and therefore likely to experience direct socio-economic impacts. All the aforementioned are located in Wards 5 and Ward 27 of the MCLM and therefore these two wards have been taken as the Primary study area. The original SIA included a brief overview of the Blyvoor Gold communities but did not include any great level of detail and therefore this section will not refer to a previous baseline profile.

Blyvoor TSF No. 6, Blyvoor TSF No. 7 and South Dene are located in Ward 27. Blyvoor TSF No. 1, No. 4 and No. 5, and No. 5 Shaft along with all the other residential village areas are located in Ward 5. Collectively these areas are referred to as the 'mine village' in this report.

Community Survey 2016 did not include any ward-level data and therefore the baseline presented here is based on Census 2011 data but within the new 2016 ward boundaries, unless otherwise specified. The primary study area is shown in Figure 6-5.

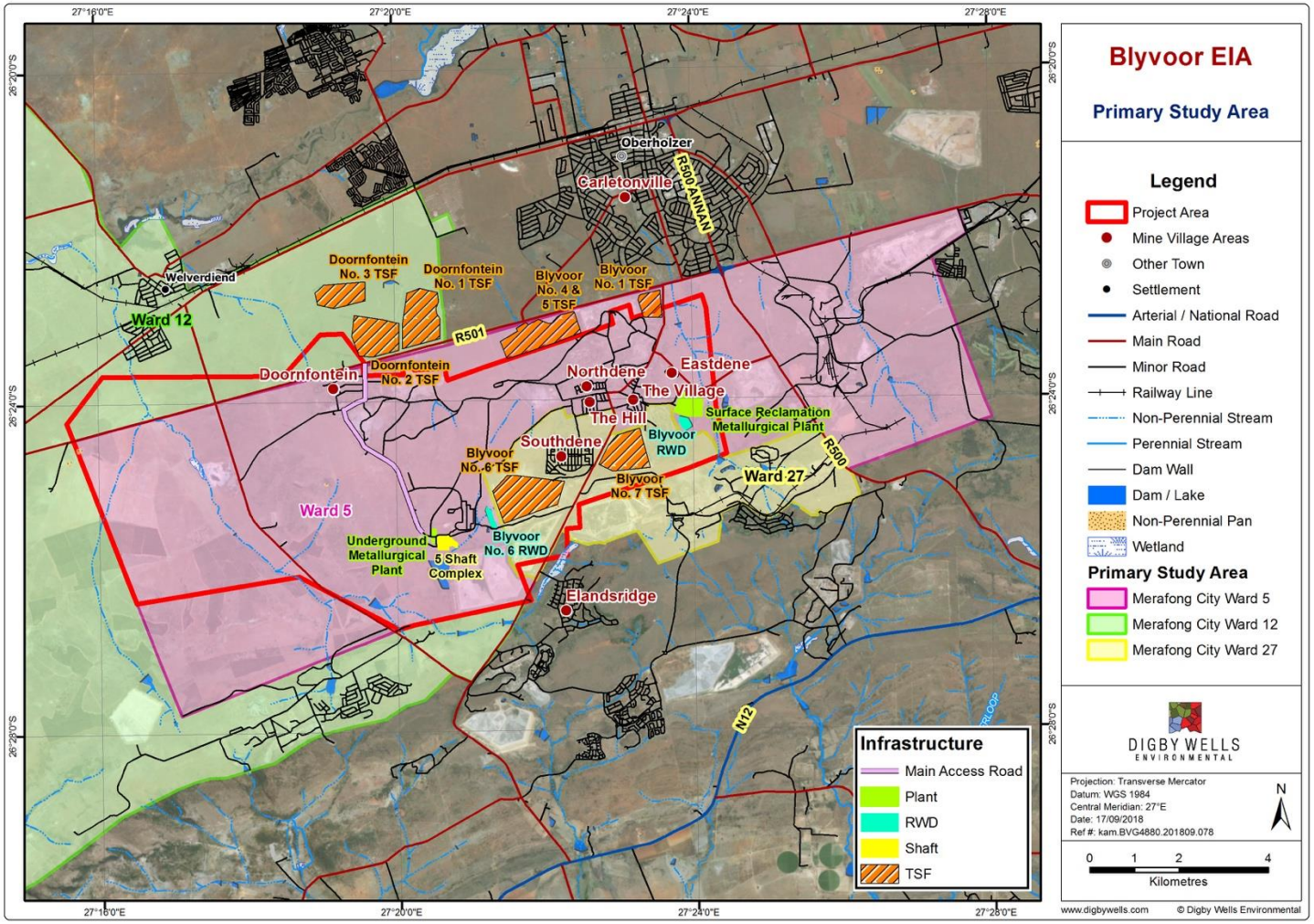

Figure 6-5: Primary Study Area

6.2.1 History of the Mine Village

The following brief overview of the history of the mine village was adapted from the Lawyers for Human Rights (LHR) report (January 2017) on the human rights infringements at the village after mine closure in 2013.

The Blyvooruitzicht Gold Mining Company Ltd (BGMC) owned and operated the mine between 1937 and 1997, after which DRD Gold Limited (DRD) acquired the share capital of BGMC and took over the management of the mine. BGMC housed most of their employees in a racially divided housing system consisting of company-owned houses and hostels within the mine village. The system gave way in the 1990s, allowing black employees and their families to move into the mine village, which was traditionally reserved for white employees. Within the mine village, BGMC built and maintained recreational facilities, including community halls, sports fields, and a golf course. BGMC also provided all basic services including running water, sanitation, electricity, and refuse removal – i.e. all the services usually provided by local government. These were all taken over by DRD when they took over the operation of the mine in 1997.

At the start of 2009, DRD began to experience financial difficulty due to a declining gold price and initiated business rescue proceedings which was terminated when the gold price recovered. However, in early 2012, DRD sold their entire shareholding in BGMC (then 74%) to Village Main Reef Ltd (VMR), who took over the operation of the mine in June 2012. By July 2013, neither DRD nor VMR acknowledged any responsibility for the mine – during this time both entities publicly announced that they will not provide any further funding to the mine. The mine was placed under provisional liquidation in August 2013 which resulted in widespread socio-economic impacts on the surrounding village. The majority of the mine's employees were retrenched with immediate effect.

The MCLM refused to declare the village a township and formally incorporate it into the MCLM. Access to basic services are repeatedly threatened and in some areas of the village, refuse is piling up in open fields and sewerage systems are broken down. Environmental mitigation measures, such as dust suppression at the TSFs, are not being done, reportedly leading to health impacts on the surrounding residents. Illegal miners moved into the area to access the remaining gold in the mine's unsecured premises, which reportedly led to an increase in crime and conflict with local residents. Figure 6-6 illustrates a house in Doornfontein, an asset associated with BGMC, vandalised and stripped to be sold for scrap metal.

Figure 6-6: Abandoned Mine House

6.2.2 Demographic Indicators

The primary study area has a total population of 11,631 people, of which 6,277 reside in Ward 27 and 5,354 in Ward 5. The area saw a significant decline in its population size between 2001 and 2011, with almost half of the population departing the area (see Figure 6-7). However, it should be noted that the data presented in this graph is based on the old ward boundaries (StatsSA) and was used to determine the likelihood of in-migration based on historic trends. With the sudden closure of the Blyvooruitzicht mine in 2013, it is likely that a certain level of out-migration occurred as some retrenched workers moved out of their houses and on to other jobs. Vacant houses and empty hostel rooms could have been re-occupied by illegal miners but because these miners are often undocumented immigrants, they are not likely to come forward to be counted in an official census or survey and therefore their numbers remain unknown.

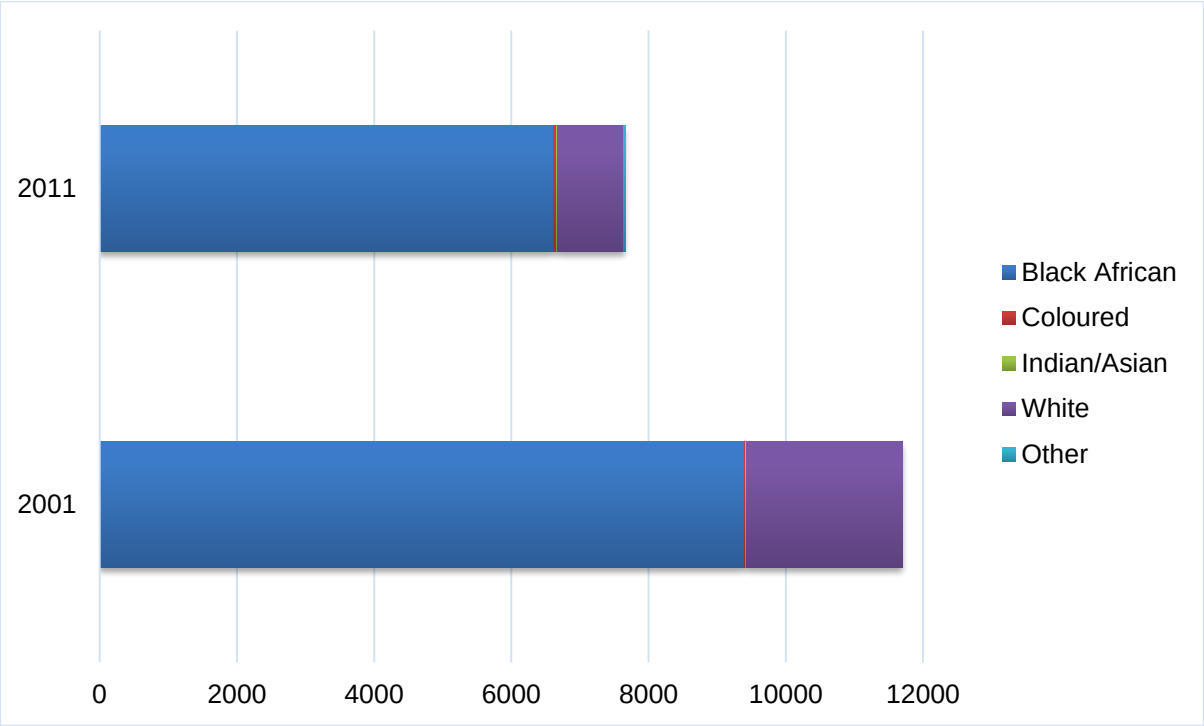

Figure 6-7: Population growth rate between 2001 and 2011

The overwhelming majority of residents are part of the Black African population group (91.6% in Ward 5 and 95%) in Ward 27. Although newer data does not exist on ward-level, it can be assumed that the population in the village has declined further – notably after the mine closed in 2013. The LHR report estimate the current population to be around 6,000 people.

Around 85% of the population in the mine village are in the economically active age group. A large proportion of the population in both wards are male (73% on average), which is typical of a migrant population that historically largely consisted of young black males. The balance could have been restored somewhat in recent years after mine closure, but it is expected that the majority of the population would still be male given the arrival of zama-zammas who, due to the risk associated with their activities, are likely all male.

Similar to the municipal profile, the predominant languages spoken are isiXhosa (around 30%) and Sesotho (around 22%). It is, however, not typical for the region where the predominant languages are Setswana and Afrikaans – again this is indicative of a migrant workforce who are from the North and the Eastern Cape.

6.2.3 Economic Indicators

The education levels in the mine village are extremely low – less than 1% of the adult population (those aged 20 years and older) have completed secondary education (i.e. obtained Matric). One in every 10 individuals have had no schooling. The majority of adults 62.4% in Ward 5 and 59% in Ward 27) only completed some secondary schooling.

Despite these low education levels, the employment rate seems to be very high – 82.3% in Ward 5 and 91.6% in Ward 27. Based on the annual household income profile of the mine village, it would seem that employment is largely limited to unskilled and semi-skilled work – by far the majority of households (82.1% in Ward 5 and 84.9% in Ward 27 fall within the lower middle income bracket or live in absolute poverty (20.6% in Ward 5 compared to 12.7% in Ward 27).

However, it should be borne in mind that the situation described above is based on 2011 census data. The situation changed drastically after mine closure in 2013. The LHR study (2017) surveyed 600 households and found that the majority of those interviewed worked at the Blyvooruitzicht mine – some of them for over 20 years. This is supported by the 2011 census data discussed above. Half of the respondents in the LHR survey stated that they now earned less than R 2,000 per month and that their income was reliant on informal piece work and handouts. The majority of those surveyed (75%) indicated that they are currently unemployed and most of these have also described themselves as discouraged work seekers. Of the retrenched workers, 90% said they did not have access to training opportunities to mitigate the impact of mine closure.

6.2.4 Infrastructure and Services

6.2.4.1 Housing

The 2011 Census recorded informal settlement of around 11% in the study area, which means that the majority of residents live in formal structures. Most of the people in Ward 27 indicated that they rented their house (90%), which is likely a reflection of the nominal fee that the mine deducted from employees' wages to pay for services. The situation was more or less the same in Ward 5, with the exception that 45% of households rented their homes while 37% occupied it rent free. In this case the latter is not an indication of informal settlement but rather heavily subsidised housing.

Current day residents do not have security of tenure and many fear that they will be evicted by whomever takes over the mine (LHR report, 2017)[1]. Shortly after the mine closure in 2013, there was a bid by a private company to take over the mine village, but this fell through after the municipality refused to declare the mine village a township and incorporate it into the municipality. Both these incidents add to residents' collective anxiety brought on by the uncertainty of future housing – without jobs people simply cannot afford to pay rent.

6.2.4.2 Basic Services

Prior to mine closure, the majority of houses (around 94%) had access to piped water. Likewise, most houses were connected to electricity. Most (ranging between 85% and 90%) had their refuse removed by a service provider. Almost all the households (between 84%

[1] It should be noted that Blyvoor Gold does not intend taking over the 'mine village' and as such do not intend evicting any current residents.

and 92%) had access to a flush toilet connected to a waterborne sewerage system. All of these services were provided by the mine at a nominal fee that was deducted from employees' monthly wages.

At mine closure, these services were threatened. The municipality could not take over the services due to lack of funding and capacity and furthermore stated that the mine village was on "private property" and therefore not within the municipality's jurisdiction. In 2015, the water supply to the mine village was interrupted due to a collapse in the water infrastructure brought on by a lack of water pressure. It was only as recent as October 2016 that the community managed to secure a court order requiring the municipality to develop a plan to ensure continued access to water and sanitation (LHR report, 2017). However, 84% of those surveyed during the LHR study indicated that sewerage was still a concern – evidence of free-flowing sewage was also evident during the specialist's site visit in September 2018.

Electricity to the mine village was interrupted in the immediate aftermath of mine closure, causing a significant increase in violent crime and infrastructure theft. Electricity was subsequently reconnect but in 2015, Eskom again threatened to disconnect the supply due to non-payment. This was not due to residents being unwilling to pay but because no usage monitoring system was installed at the houses when the mine paid for services. In 2016 the community reached an agreement with Eskom that stipulated that residents would pay for bulk electricity supply to the mine village while Eskom installed electricity meters to homes. However, it remains a challenge for the residents to pay for electricity in the absence of the ability to monitor individual household usage (LHR Report, 2017).

Figure 6-8 illustrates how in the absence of formal removal services, refuse is dumped in an open field in The Village, and untreated sewage flowing down a road in Southdene is illustrated in Figure 6-9.

Figure 6-8: Illegal dumping of refuse

Figure 6-9: Free-flowing, untreated sewage

6.2.4.3 Social Infrastructure

Two functional schools were observed during the site visit, namely Laerskool Blyvooruitsig in the village and Rockland Primary in The Hill. These schools are located approximately 500m apart. The Gauteng Department of Health runs a primary health care clinic (the Blyvoor Clinic) in Northdene. The mine village hospital that was run by the mine was closed in 2013, and

Figure 6-10 shows this hospital in its current state of disrepair.

Figure 6-10: Current condition Blyvooruitzicht Hospital

All other recreational facilities have fallen in disuse and have been heavily vandalised, as shown in Figure 6-11.

Figure 6-11: Vandalised Blyvooruitzicht Recreation Centre

6.2.4.4 Safety and Security

Respondents in the LHR study reported crime as a major issue with as much as 92% of the residents who were of the opinion that crime has increased markedly since mine closure in 2013. The residents' opinion is supported by the latest crime statistics released by the SA Police Service: The past 10 years saw a steady increase in crime – most notable between 2012/13 when the mine was still in operation (around 3,800 cases for the year) and the first year after liquidation (2013/14) when it increased to around 4,300 cases. Figure 6-12 presents an overview of the number of crime incidents reported at the Carletonville police

station (as the closest station to the mine village)[2]. Crime levels decreased somewhat in 2015/16 and again in 2016/17 but in 2017/18, rose to an all-time high.

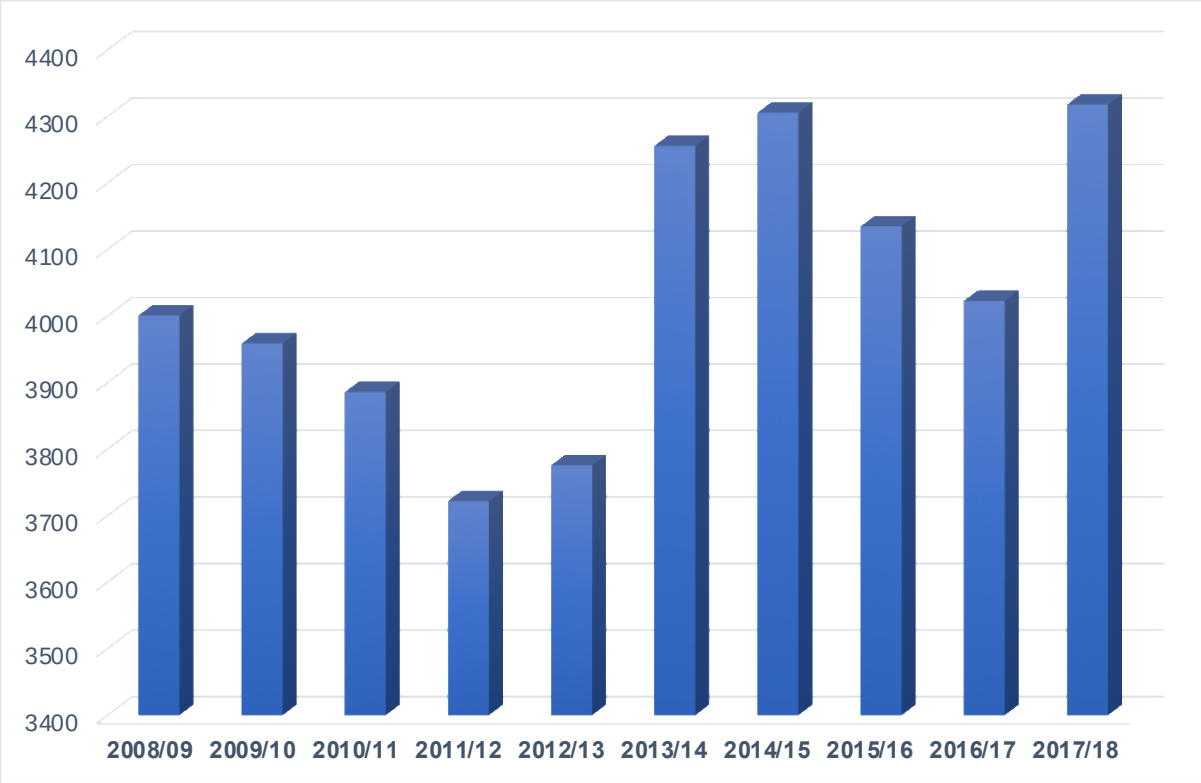

Figure 6-12: Number of crime cases reported from 2008 to 2018

Prior to mine closure in 2013, safety and security was managed by the mine's security with little intervention from SAPS. A number of the companies who took over infrastructure at the mine also brought along their own security to guard these assets. Some of these security companies implemented safeguard measures by force and violent crime increased between 2014 and 2017.

A spokesperson for the local SAPS confirmed in an interview with the LHR researchers (LHR report, 2017) that crime was a problem in the mine village because "the mine was not closed properly", allowing and influx of zama-zamas who not only entered unguarded mine shafts, but also vandalised mine property. It is believed that these zama-zamas form part of crime syndicates, which lead to violent clashes between them and the police and private security companies.

Figure 6-13 provides an overview of the specific crimes reported between 2008 and 2018. The specific crimes reported on include:

[2] The crime statistics at Carletonville police station also includes the town of Carletonville and is not restricted to the mine village. The data presented is therefore meant to create an overall impression of the crime rate in the study area.

- **Contact crimes** (crimes against the person), refers to a crime where a person or persons are injured, harmed or threatened with injury, and includes murder, attempted murder, sexual offences, aggravated bodily harm, etc.;
- **Property-related crimes** occurs in the absence of a victim or where the victim is unaware of the crime at the time, for example residential or commercial theft, theft of or from a motor vehicle, etc.;
- **Other serious crimes** includes commercial and financial crimes such as fraud, corruption and shoplifting; and
- **Crime detected by police action** are crimes that are not reported by the public but detected through direct police action such as roadblocks. This includes the illegal possession of firearms, driving under the influence, possession or trade of illegal drugs, etc. An increase in this crime rate can be attributed to intensified police activity rather than an indication of increased drug trade, for example.

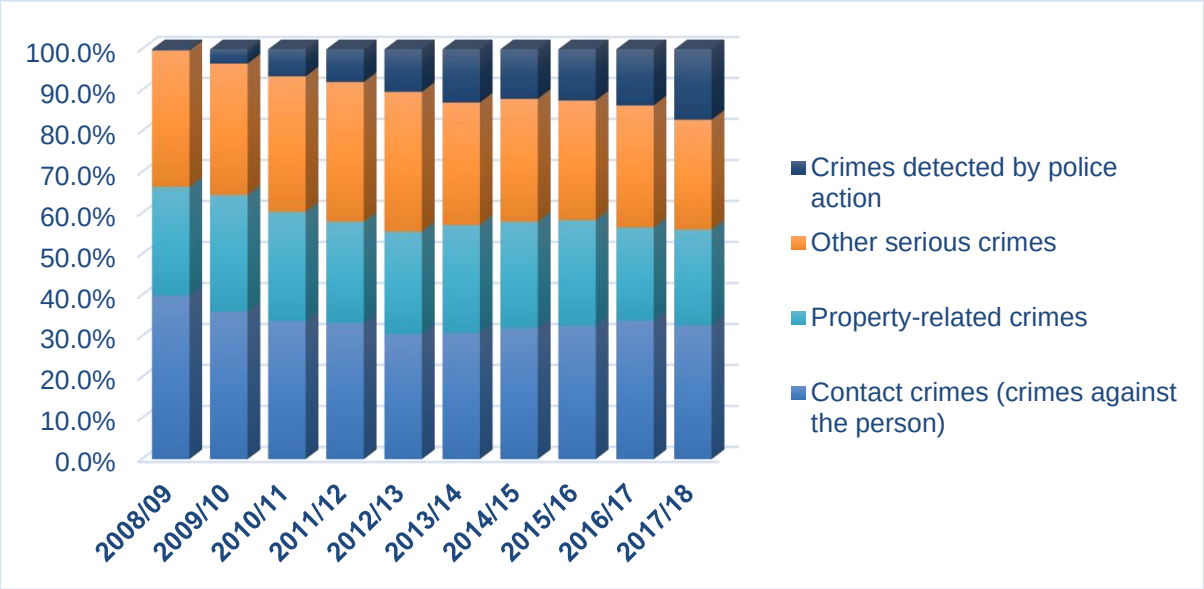

Figure 6-13: Overview of specific crimes during 2008 to 2018

Apart from their safety, participants in the LHR study also indicated that they are concerned about sinkholes caused by groundwater seepage. The area is known for its sinkholes – DRD regularly reported on their efforts to manage this risk. Residents' fear of sinkholes has been compounded by deteriorating water and sewerage infrastructure.

6.2.5 Community Health Indicators

A separate community health impact assessment is being undertaken for the Project. For the purpose of this study, it is noted that – in the absence of the implementation of care and maintenance activities post mine closure – Blyvoor Gold have not been able to reinstate dust suppression at the TSFs due to the unavailability of water, which resulted in health risks to

the mine village residents and damage to their environment. Uncollected refuse and raw sewage also add to these health risks.

7 Sensitivity Analysis and No-Go Areas

Areas of human settlement are generally regarded as sensitive. Given the dust problem in the area resulting from the unmitigated TSFs, areas in close proximity to TSF 6 and 7 are of particular concern, i.e. Southdene (located between the two TSFs), and The Hill, Northdene, The Village and Eastdene to the north of the two TSFs. The location of these in relation to Project infrastructure is shown in Figure 7-1**Error! Reference source not found.**.

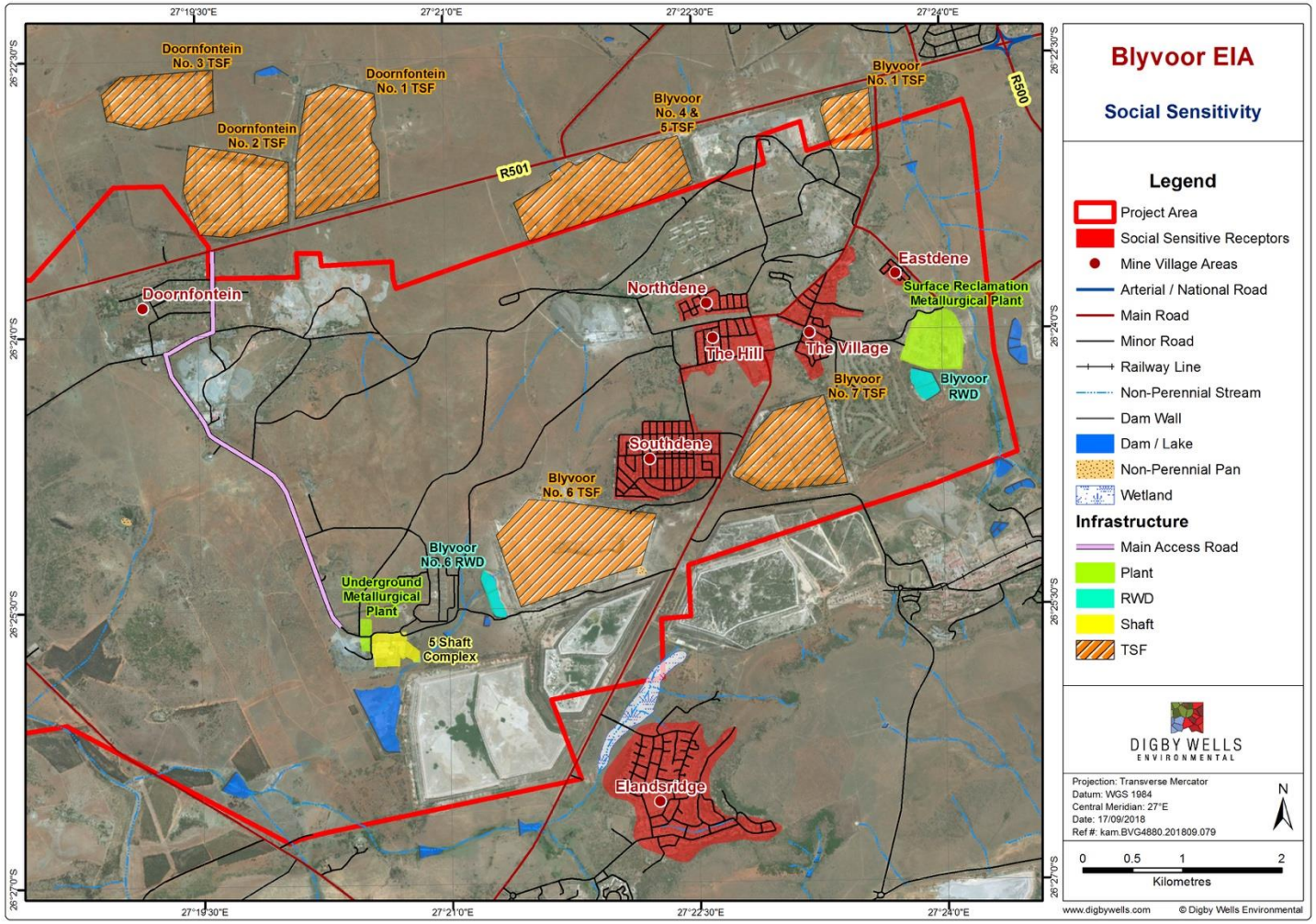

Figure 7-1: Areas of Social Sensitivity

8 Impact Assessment

The impacts are assessed based on the impact's magnitude as well as the receiver's sensitivity, culminating in an impact significance which identifies the most important impacts that require management.

Based on international guidelines and South African legislation, the following criteria are taken into account when examining potentially significant impacts:

- Nature of impacts (direct/indirect, positive/ negative);
- Duration (short/medium/long-term, permanent(irreversible) / temporary (reversible), frequent/seldom);
- Extent (geographical area, size of affected population/habitat/species);
- Intensity (minimal, severe, replaceable/irreplaceable);
- Probability (high/medium/low probability); and
- Possibility to mitigate, avoid or offset significant adverse impacts.

8.1 Methodology used in Determining and Ranking the Nature, Significance, Consequence, Extent, Duration and Probability of Potential Environmental Impacts and Risks

Details of the impact assessment methodology used to determine the significance of physical, bio-physical and socio-economic impacts are provided below.

The significance rating process follows the established impact/risk assessment formula:

Significance = Consequence x Probability x Nature

Where

Consequence = Intensity + Extent + Duration

And

Probability = Likelihood of an impact occurring

And

Nature = Positive (+1) or negative (-1) impact

Note: In the formula for calculating consequence, the type of impact is multiplied by +1 for positive impacts and -1 for negative impacts

The matrix calculates the rating out of 147, whereby Intensity, Extent, Duration and Probability are each rated out of seven as indicated in Table 8-3. The weight assigned to the various parameters is then multiplied by +1 for positive and -1 for negative impacts.

Impacts are rated prior to mitigation and again after consideration of the mitigation measure proposed in this EIA/EMP Report. The significance of an impact is then determined and categorised into one of eight categories, as indicated in Table 8-2, which is extracted from Table 8-1. The description of the significance ratings is discussed in Table 8-3.

It is important to note that the pre-mitigation rating takes into consideration the activity as proposed, i.e. there may already be certain types of mitigation measures included in the design (for example due to legal requirements). If the potential impact is still considered too high, additional mitigation measures are proposed.

Table 8-1: Impact Assessment Parameter Ratings

Rating	Intensity/Replacability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
7	Irreplaceable loss or damage to biological or physical resources or highly sensitive environments. Irreplaceable damage to highly sensitive cultural/social resources.	Noticeable, on-going natural and / or social benefits which have improved the overall conditions of the baseline.	International The effect will occur across international borders.	Permanent: The impact is irreversible, even with management, and will remain after the life of the project.	Definite: There are sound scientific reasons to expect that the impact will definitely occur. >80% probability.
6	Irreplaceable loss or damage to biological or physical resources or moderate to highly sensitive environments. Irreplaceable damage to cultural/social resources of moderate to highly sensitivity.	Great improvement to the overall conditions of a large percentage of the baseline.	National Will affect the entire country.	Beyond project life: The impact will remain for some time after the life of the project and is potentially irreversible even with management.	Almost certain / Highly probable: It is most likely that the impact will occur. <80% probability.

Rating	Intensity/Replacability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
5	Serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function. Very serious widespread social impacts. Irreparable damage to highly valued items.	On-going and widespread benefits to local communities and natural features of the landscape.	Province/ Region Will affect the entire province or region.	Project Life (>15 years): The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Likely: The impact may occur. <65% probability.
4	Serious loss and/or damage to physical or biological resources or moderately sensitive environments, limiting ecosystem function. On-going serious social issues. Significant damage to structures / items of cultural significance.	Average to intense natural and / or social benefits to some elements of the baseline.	Municipal Area Will affect the whole municipal area.	Long term: 6-15 years and impact can be reversed with management.	Probable: Has occurred here or elsewhere and could therefore occur. <50% probability.

Rating	Intensity/Replacability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
3	Moderate loss and/or damage to biological or physical resources of low to moderately sensitive environments and, limiting ecosystem function. On-going social issues. Damage to items of cultural significance.	Average, on-going positive benefits, not widespread but felt by some elements of the baseline.	Local Local extending only as far as the development site area.	Medium term: 1-5 years and impact can be reversed with minimal management.	Unlikely: Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur. <25% probability.
2	Minor loss and/or effects to biological or physical resources or low sensitive environments, not affecting ecosystem functioning. Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected.	Low positive impacts experience by a small percentage of the baseline.	Limited Limited to the site and its immediate surroundings.	Short term: Less than 1 year and is reversible.	Rare / improbable: Conceivable, but only in extreme circumstances. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures. <10% probability.

Rating	Intensity/Replacability		Extent	Duration/Reversibility	Probability
	Negative Impacts (Nature = -1)	**Positive Impacts (Nature = +1)**			
1	Minimal to no loss and/or effect to biological or physical resources, not affecting ecosystem functioning. Minimal social impacts, low-level repairable damage to commonplace structures.	Some low-level natural and / or social benefits felt by a very small percentage of the baseline.	Very limited/Isolated Limited to specific isolated parts of the site.	Immediate: Less than 1 month and is completely reversible without management.	Highly unlikely / None: Expected never to happen. <1% probability.

Table 8-2: Probability/Consequence Matrix

Probability	Significance																																					
7	-147	-140	-133	-126	-119	-112	-105	-98	-91	-84	-77	-70	-63	-56	-49	-42	-35	-28	-21	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140	147
6	-126	-120	-114	-108	-102	-96	-90	-84	-78	-72	-66	-60	-54	-48	-42	-36	-30	-24	-18	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
5	-105	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105
4	-84	-80	-76	-72	-68	-64	-60	-56	-52	-48	-44	-40	-36	-32	-28	-24	-20	-16	-12	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
3	-63	-60	-57	-54	-51	-48	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63
2	-42	-40	-38	-36	-34	-32	-30	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
1	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Consequence	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Table 8-3: Significance Rating Description[3]

Score	Description	Rating
109 to 147	A very beneficial impact that may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change	Major (positive) (+)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and / or social) environment	Moderate (positive) (+)
36 to 72	A positive impact. These impacts will usually result in positive medium to long-term effect on the natural and / or social environment	Minor (positive) (+)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the natural and / or social environment	Negligible (positive) (+)
-3 to -35	An acceptable negative impact for which mitigation is desirable. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural and / or social environment	Negligible (negative) (-)
-36 to -72	A minor negative impact requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the natural and / or social environment	Minor (negative) (-)
-73 to -108	A moderate negative impact may prevent the implementation of the project. These impacts would be considered as constituting a major and usually a long-term change to the (natural and / or social) environment and result in severe changes.	Moderate (negative) (-)
-109 to -147	A major negative impact may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects. The impacts are likely to be irreversible and/or irreplaceable.	Major (negative) (-)

[3] It is generally sufficient to only monitor impacts that are rated as negligible or minor

8.2 Impact Assessment

The impacts identified and assessed in the original SIA (Golder, 2016) were re-evaluated to determine whether the impacts were firstly, still valid and secondly, qualified for the same significant rating, based on the updated data contained in this addendum report.

The Golder SIA made no distinction between construction and operational impacts as the construction phase would only consist of relatively unobtrusive activities aimed at the refurbishment of a limited components existing mine infrastructure. This has remained unchanged and therefore this SIA maintains this stance. Table 8-4 provides the impacts identified and assessed as part of the Golder SIA and the impacts identified as part of the addendum:

Table 8-4: Golder Impacts and Addendum Impacts

Impacts Assessed by Golder in 2016	Impacts Included in this Addendum
▪ Employment opportunities; ▪ Population influx; ▪ Economic benefits; ▪ Community development; ▪ Safety and security; ▪ Quality of Life impacts; and ▪ Environmental impacts	Risk for social disintegration and conflict.

In the subsections that follow, a summary of the Golder SIA is first presented, followed by an update (if any) based on new information in the baseline profile.

8.2.1 Employment Opportunities

8.2.1.1 Impact Description – Golder (2016)

Approximately 30-50 positions would be created during the refurbishment phase, which will gradually increase as mining operations ramp up. It is expected that the mine will employee 421 people within the second year of operations, 674 in the third year and in the order of 842 people from year 5 onwards. The significance of the impact was deemed high without mitigation and moderate with mitigation, but the report does not make a distinction between positive and negative impacts.

8.2.1.2 Impact Description – Updated Information

Based on the LHR Report, the primary study area (the 'mine village') consists of approximately 6,000 people. Of these, 72.2% are in the economically active age range, which amounts to roughly 4,332 people. Most (though likely not all) were retrenched by the mine in 2013, meaning they have mining-related experience. Of the 4,332 people, roughly

75% (or 3,249) are still unemployed. Blyvoor Gold committed in its SLP that 70% of its labour force will be recruited from the local area, which means that roughly 590 employment opportunities will be created for the local area at the mine itself.

Several media reports and in the LHR report (2017) mention that retrenched workers remained in the area not only due to no other options and the hope of the mine restarting and rehiring them. This is now a reality, but job opportunities are very limited – only about 18% of the local workforce would be able to secure employment at the recommissioned mine, assuming they have the right skills and experience. The impact is regarded as positive, but the limited number of opportunities does mean that Blyvoor Gold will not be able to rely on job creation alone but would have to consider additional measures that could benefit the wider community as well in an attempt to reduce the risk for social disintegration and conflict (see Section 8.2.8).

Blyvoor Gold also intends to hire local labour for use in their LED projects as part of their SLP commitments. This will create a further 60 temporary positions and 16 longer term positions. Although temporary work creates immediate economic benefits to the worker and his/her family, the impact is not sustainable due to the transiency of employment. The 16 more permanent positions are grouped with the operational staff, bringing the total number of positions created at the mine to 606.

8.2.1.3 Management Objectives

Enhance the job opportunities created by the recommissioning of the mine as much as possible to the benefit of the local community.

8.2.1.4 Management Actions and Targets

As much of the 70% local employment as possible should be awarded to residents in the ‘mine village’. This will have to be preceded by extensive stakeholder engagement with village residents and could include a high-level skills survey to determine the available skills in the village and obtaining a database from the liquidator of past employees as a baseline for skills available in the area. Consider establishing a local labour desk run by an independent party (which can be a representative of Blyvoor Gold) to reduce the risk of nepotistic or otherwise fraudulent local recruitment. A labour desk does not require full-time presence, it can be set up to run once every fortnight for 6 months or until Blyvoor Gold are satisfied that they have enough candidates registered. It is, however, important that the labour desk is accessible to the community (i.e. it should not be located beyond a point that requires security clearance).

8.2.1.5 Impact Rating

Table 8-5 provides an assessment of the new information and data collected for the SIA addendum.

Table 8-5: Potential Impacts of Job Creation

Dimension	Rating	Motivation	Significance
Jobs and income generation			
Impact Description: Employment and income generation that could assist in uplifting an estimated 606 households in the local village.			
Prior to Mitigation/Management			
Duration	Project life (5)	It is expected that jobs will be sustained for the operational lifespan of the mine	+40 Minor (positive)
Extent	Municipal area (4)	The SLP states that 70% of job opportunities will be offered to the local municipal area	
Intensity	Low-level impacts (1)	Jobs offered to people who are not from the area detracts opportunities from the local community	
Probability	Probable (4)	Blyvoor Gold has committed in their SLP to the DMR to source 70% local labour but in the absence of a skills database, it is not known if required skills are available.	
Nature	Positive (+1)		
Mitigation/Management Actions			
▪ Develop and implement a Stakeholder Engagement Plan (SEP), inclusive of a communications plan for the 'mine village'. ▪ Undertake a skills survey in the local community, allowing local residents to register their interest and particular skills for upcoming job opportunities. ▪ Reduce the 30% employment target for Gauteng (as per the SLP) based on the outcome of the skills survey, i.e. if required skills are found in the mine village, rather increase the 70% local employment target to ensure maximum uptake of local residents. ▪ Obtain database of previous employees from liquidator. ▪ Establish a local labour desk where interested work seekers can register and provide proof of qualifications and experience. The desk should be operated by an independent party (which can be from Blyvoor Gold but not the community) to prevent nepotistic requirement and increase local confidence that the mine is following a fair and transparent process. ▪ Explore the possibility of expanding job opportunities beyond mining-related work to also include hiring contract workers to assist with LED projects. ▪ Comply with minimum wage requirements for unskilled labour and all other requirements of the Employment Equity Act to ensure maximum benefits accrue to workers.			
Post-Mitigation			

Dimension	Rating	Motivation	Significance
Duration	Project life (5)	It is expected that jobs will be sustained for the operational lifespan of the mine	+52 Minor (positive)
Extent	Municipal area (4)	The SLP states that 70% of job opportunities will be offered to the local municipal area	
Intensity	Average (4)	Average social benefits to some elements of the baseline.	
Probability	Probable (4)	Minimum of 70% local labour committed to in SLP, assuming required skills are available.	
Nature	Positive (+1)		

8.2.2 Population Influx

8.2.2.1 Impact Description – Golder (2016)

Golder (2016) described an expected influx of job seekers but did not consider other factors contributing to population influx (e.g. refurbishment and operational staff). Golder based the possibility of this impact materialising on the fact that a number of informal settlements around the local municipality have expanded, in part believed to have been because of perceived employment opportunities within the mining sector. The SIA also mentioned the possibility of migrant workers returning home post mine closure, but also the arrival of new migrants who are suspected of engaging in illegal mining activities.

8.2.2.2 Impact Description – Updated information:

The current study found no evidence of large-scale in-migration to the area; on the contrary, the population has decreased (refer to Section 6.1.3.2). Based on the limited number of job opportunities created by the recommissioning of parts of the mine, it is unlikely that the operation would draw large numbers of job seekers to the area. However, through news coverage it is possible that people who worked at the mine previously might assume that the entire mine has become operational again and decide to return the area in the hope of being reappointed at the new operations. Again, it is expected to be a few individuals rather than large groups.

It should be noted that the actual presence of newcomers (or returnees) is not an impact in itself, but a process that could lead to conflict over limited resources both in terms of the number of job opportunities, and the availability and reliability of infrastructure and services. The effect of newcomers has already partially materialised with the arrival of the suspected zama-zamas that lead to conflict and violent clashes with the local community and SAPS.

8.2.2.3 Management Objectives

Prevent opportunistic project-induced in-migration as far as possible.

8.2.2.4 Management Actions and Targets

Develop and implement a communication plan that details the extent of job creation and where labour will be sourced from. Communicate the mine's employment policy in simple terms to also discourage local community members from (mis)informing relatives and friends of job opportunities.

8.2.2.5 Impact Rating

Table 8-6 represents the impact rating for potential in-migration of job seekers and illegal miners.

Table 8-6: Project-induced in-migration

Dimension	Rating	Motivation	Significance
Influx of people to the area			
Impact Description: Project-induced in-migration can have ripple impacts on social cohesion and place additional strain on limited resources (e.g. housing and basic services)			
Prior to Mitigation/Management			
Duration	Medium (3)	In-migration can last the first 5 years as people hope to secure employment.	-30 Negligible (negative)
Extent	Municipal (4)	Unemployment job seekers likely to settle in informal settlements in the wider municipal area.	
Intensity	Discernible (3)	On-going social issues can be expected.	
Probability	Unlikely (3)	No historic evidence of large-scale in-migration to the area, bar migrants who engage in illegal mining – these tend to be small groups.	
Nature	Negative (-1)		
Mitigation/Management Actions			

Dimension	Rating	Motivation	Significance
▪ Enforce Blyvoor Gold's policy of no hiring at the gate. ▪ Maximise the use of local labour to the fullest extent possible, even if this implies increasing the 70% local hire commitment made in the SLP by reducing the 30% provincial hire. ▪ Develop and implement a communication plan for the local community (the 'mine village') as part of a wider SEP for the Project, which should include, inter alia, progress on the recommissioning process, employment opportunities available linked to skills required, and when positions will be available. Factual information might not always be received favourably but will assist in managing unrealistic expectations - one of which is currently that the mine will go back to operating on its previous scale and re-hire all retrenched workers.			
Post-Mitigation			
Duration	Short-term (2)	Migrants are less likely to travel to site if they know there is now work available.	-15 Negligible (negative)
Extent	Very limited (1)	Some returnees might be expected within the 'mine village'.	
Intensity	Minor (2)	Very little change expected to the baseline.	
Probability	Unlikely (3)	Individuals might still travel to site despite knowing beforehand that job opportunities are not available.	
Nature	Negative (-1)		

8.2.3 Economic Benefits

8.2.3.1 Impact Description – Golder (2016)

Based on the MPRDA guideline for mining royalties, it was estimated that the Project would generate approximately R 31m over the next 10 years in royalties payable to the local and district municipalities as well as the provincial government. Blyvoor Gold would also be paying taxes as applicable to the various levels of government. In addition, they will also be contributing approximately R 1.7m over 10 years to the National Skills Fund. Part of the mine's SLP is to participate in LED projects, with spend in the order of R 56m over a 10-year period.

8.2.3.2 Impact Description – Updated Information

The impact as described in the Golder SIA remains unchanged. This report does, however, include a significance impact table based on the Golder variables to ensure uniformity with other impacts assessed.

8.2.3.3 Management Objectives

Ensure that economic benefits derived from the mining operations flow on to directly impacted communities in the form of employment and local economic development.

8.2.3.4 Management Actions and Targets

Support local economic development of directly affected communities (the 'mine village') through SLP committed LED projects. Augment legislated fiscal contribution through wider social development initiatives.

8.2.3.5 Impact Rating

Table 8-7 provides an updated impact rating of the project's economic benefits.

Table 8-7: Economic Benefits

Dimension	Rating	Motivation	Significance
Economic benefits to the local area			
Impact Description: The Project will generate income in the form of wages, taxes and royalties that all add to economic benefits to the local area.			
Prior to Mitigation/Management			
Duration	Project life (5)	The mine will cease investing in LED projects post LoM.	+44 Minor (positive)
Extent	Local (3)	LED projects are mainly focused on the local 'mine village' area.	
Intensity	Average (3)	LED projects will provide average social benefits to some of the local communities (i.e. those in the 'mine village')	
Probability	Probable (4)	Blyvoor Gold has to invest in LED projects as per the commitments made to the DMR in their SLP	
Nature	Positive (+1)		
Mitigation/Management Actions			

Dimension	Rating	Motivation	Significance
(From the Golder SIA): ▪ Promote the employment of locals that was affected by the provisional liquidation from Blyvoor Gold first and thereafter from the MCLM wherever possible: the creation of employment opportunities within the WRDM as per the requirements of the mining charter. ▪ Promote local procurement of goods and services wherever possible: besides providing employment, expenditure in a local economy is one of the other important ways an operation such as the proposed facility can contribute to a positive economic impact (including direct, indirect and induced impacts). The more money spent locally, the better the local economy. ▪ Support the diversification of the local economy: given that the MCLM local economy is heavily dependent on the mining sector, focus should be on supporting community projects that can assist in diversifying the local economy of the area beyond the LoM and an appropriate portable skills training. ▪ Support LED projects that are feasible, sustainable and promotes job creation **(also see Section 8.2.4)**: investing in projects that are feasible, sustainable and promotes job creation will mean that once decommissioning of operations is imminent, the supported project can continue without continued support from the plant. ▪ Ensure that a process of on-going communication and dialogue should be implemented to ensure that unrealistic expectations are addressed as a matter of course and that the Blyvoor Gold operations allow a mutually beneficial process to be put in place.			
Post-Mitigation			
Duration	Beyond project life (6)	Investing in sustainable community projects beyond LED commitments can extend projects beyond LoM without further intervention from the mine.	+64 Minor (positive)
Extent	Region (5)	Voluntary community development projects can extend to the region.	
Intensity	Widespread (5)	On-going social benefits to local communities within the region.	
Probability	Probable (4)	Community development projects in addition to LED projects are voluntary	
Nature	Positive (+1)		

8.2.4 Community Development

8.2.4.1 Impact Description – Golder (2016)

The MCLM experiences a number of development challenges, which include aspects such as unemployment, low levels of education, high levels of crime and vandalism, expanding informal settlements, environmental damage and challenges around municipal functioning. Community development initiatives as part of the mine's SLP could promote development

and provide a foundation of positive change in the municipal area – particularly to those communities in close proximity to the mine.

8.2.4.2 *Impact Description – Updated Information*

The mine could aid the upliftment of the 'mine village' by contributing to the repair of services, particularly refuse removal and the sewerage network. The preliminary SLP (2017) has already identified and described a number of LED projects, including:

- The refurbishment of the Ekuphakameni waste water treatment works;
- Cleaning storm water channels to support the drainage network and prevent the formation of sinkholes;
- Removing dumped waste from the mine village; and
- Rendering financial support to the Harmony orphanage with identified projects such as building upgrades, etc.

Blyvoor Gold is entering an area with a negative legacy left by its predecessors, and although the company's willingness to support noteworthy causes is encouraged, it is also important that the company considers investing in **voluntary** sustainable longer-term community development projects in an effort to build and sustain a so-called SLTO, especially in view of the fact that Blyvoor Gold would not be able to re-employ all workers from the previous operation. Community development projects also aid in curbing the 'honey-pot' effect by investing wider than just the immediate area, preventing people from focusing all their attention solely on the mining operation itself, which in turn curbs project-induced in-migration. However, it is important that the local community is fully engaged to determine their needs. It will be counterproductive to a SLTO process to approach community development from a top-down approach. Although this SIA would therefore recommend that the mine develop and implement a voluntary Social Investment Strategy, the actual content of such a strategy cannot be determined within the current scope of work.

8.2.4.3 *Management Objectives*

Extend positive benefits that the mining operation returns to the area to as many affected people as possible.

8.2.4.4 *Management Actions and Targets*

Appoint a consultant to determine community needs through a consultative process and based on these, develop a Social Investment Strategy for Blyvoor Gold that can extend economic benefits to the wider community and assist the mine in proactively managing the negative legacy inherited from their predecessors.

8.2.4.5 *Impact Rating*

Table 8-8 assess the impact of extending the Blyvoor Gold's current LED, should the company proceed with this recommendation.

Table 8-8: Community Development

Dimension	Rating	Motivation	Significance
Formalise community development initiatives			
Impact Description: The mine can extend their LED commitments to the wider community by voluntary investing in philanthropy and more sustainable community and regional development projects.			
Prior to Mitigation/Management			
Duration	Project life (5)	Pure LED investment will cease after LoM.	+72 Minor (positive)
Extent	Municipal (4)	LED investment limited to local municipal area.	
Intensity	Average (3)	Although positive benefits, it is only felt by some of the baseline.	
Probability	Almost certain (6)	The mine is required by commitments in the SLP to invest in LED projects.	
Nature	Positive (+1)		
Mitigation/Management Actions			
▪ Develop a Social Investment Strategy. This is additional voluntary investment that the mine makes in the sustainable development of the local communities and can include supporting development projects on a regional (district or province) level (often this can be done by financing a certain project through a local NGO). ▪ Avoid investing in philanthropy projects only (i.e. building or repairing infrastructure, providing food parcels, etc.) – although these projects are 'quick wins' necessary for the mine to win the trust of the local community, it creates the expectation that the mine will continue to, for example, maintain the infrastructure they built, which ceases when the mine suspends operations (as is currently experienced in the mine village). ▪ Local developmental NGOs who have the experience to implement sustainable development projects are key stakeholders in determining community development projects that are not mine dependent and can continue past the LoM. ▪ Be slow in making promises to the community to first ensure that commitments are well researched and feasible.			
Post-Mitigation			
Duration	Beyond project life (6)	Sustainable community development projects eventually create their own sources of funding and can therefore continue past LoM.	+102 Major (positive)
Extent	Region (5)	Certain projects can benefit the wider region (district and province)	

Dimension	Rating	Motivation	Significance
Intensity	Great (6)	Great improvements to the overall condition of a large percentage of the baseline.	
Probability	Almost certain (6)	LED projects have to be implemented. These can be augmented with wider SI projects.	
Nature	Positive (+1)		

8.2.5 Safety and Security

8.2.5.1 Impact Description – Golder (2016)

The Golder SIA identified a number of safety and security impact areas, which included:

- Secure access to the mine in general and the working sites specifically to ensure that the mine is cleared of illegal miners and prevent further trespassing;
- Control of illegal mining activity, specifically at sites and components that will not be reinstated; and
- Control of vandalism and scavenging – even though Blyvoor Gold does not intend to take over the housing in the mine village, it could take a stance of zero tolerance to curb vandalism and have a positive knock-on effect.

8.2.5.2 Impact Description – Updated Information

The identified safety and security issues currently experienced at the mine are considered an element of the existing baseline conditions and as such not an impact likely to be caused by Blyvoor Gold's operations. However, the issue still holds an element of risk for the continued success of the mine – see Section 11.

8.2.6 Quality of Life Impacts

8.2.6.1 Impact Description – Golder (2016)

Golder (2016) defined quality of life (QOL) as the general wellbeing of a person or society, which in turn is largely based on people's perceptions. Although QOL is difficult to measure quantitatively, the World Health Organisation (WHO) developed a system to measure QOL based on factors such as physical and psychological health, independence, social relationships, environment and spirituality/religion/personal beliefs. Golder used the public consultation process at the time to identify areas of concern related to the Project. These were:

- Uncertainty of future mining plans and further non-adherence to environmental regulatory requirements (e.g. dust suppression at TSFs), leading to negative environmental and health impacts;

- Fear of property damage from blasting and vibration and related noise levels;
- Traffic impacts to the existing road network, on-site vehicular traffic and hazards from hazardous materials;
- Informal shacks constructed on the mine site and tailings dumps that will need to be removed. People have expressed their concern for the health of these shack dwellers who might have been exposed to high levels of toxic substances; and
- Concerns related to the security of the operations and human rights violations, including the use of security personnel to control illegal miners.

Two common themes emerged through the consultation process that influence stakeholders' impact experiences:

- Communication: on-going and regular communication processes must be put in place between Blyvoor Gold and affected communities aimed at building a relationship between the two parties. Meaningful communication will assist in addressing negative perceptions.
- Governance, monitoring and accountability: The current situation at the mine points to lapses in governance, monitoring and accountability **(brought on by the previous operators)**. These have become legacy issues as there is a healthy dose of cynicism amongst residents on how the new owners will deal with historic issues.

8.2.6.2 Impact Description – Updated Information

The social specialist did not visit the top of the TSFs but satellite imagery dated July 2018 shows no evidence of informal settlement on any of the TSFs. Representatives of Blyvoor Gold have also inspected the TSFs and found no evidence of human settlement. Apart from this issue, the current study found no further evidence to expand on the impacts already identified, and therefore these impacts and their mitigation measures are upheld.

8.2.6.3 Management Objectives

Enhance local communities' quality of life by addressing issues and concerns raised.

8.2.6.4 Management Actions and Targets

Develop and implement a Stakeholder Engagement Plan for the Project, inclusive of a communications plan for the mine village. Endeavour to meet with the community at least once a quarter (through the existing community relations team) to address their issues and concerns. Establish a formal grievance mechanism as part of the SEP and undertake to resolve grievances within 14-21 days.

8.2.6.5 Impact Rating

Table 8-9 presents the impacts associated with quality of life for surrounding communities.

Table 8-9: Quality of Life Impacts

Dimension	Rating	Motivation	Significance
Quality of life impacts			
Impact Description: Mining activities impacts on people's sense of wellbeing, some of which is a direct cause of how their complaints are being managed.			
Prior to Mitigation/Management			
Duration	Project life (5)	Based on Golder's assessment that the duration of the impact will last 8-15 years.	-60 Minor (negative)
Extent	Local (3)	Based on Golder's assessment that the impact will be local.	
Intensity	On-going serious social issues (4)	Based on Golder's assessment that the magnitude of the impact will be high.	
Probability	Likely (5)	Based on Golder's assessment that it is highly probable that the impact will occur.	
Nature	Negative (-1)		
Mitigation/Management Actions			
(From the Golder SIA): ▪ Establish a sound communication strategy that includes newspaper articles and radio broadcasts, regular community meetings, a 24-hour hotline service that residents can call, and individual communication with residents, service providers and business owners via letter, phone or face-to-face as and when required. Of particular importance will be the need to put an effective complaints management process in place **(termed a grievance mechanism in this SIA)**. ▪ Measures identified in the Environmental Management Plan Report (EMPR) be followed accordingly to reduce the occurrence of any health and safety impacts flowing from blasting activities, vibration and mining-related noise **(these issues will typically be addressed through the grievance mechanism, which again highlights the importance of developing and implementing such a system as part of the mine's SE activities)**. ▪ Measures identified in the EMPR related to the control of traffic and vehicular movement be implemented to reduce hazards and impacts from on and off-site traffic and road networks. **Traffic rules are currently not followed because of the absence of road markings and the expectation of no to little traffic. The mine should reinstate road markings when <u>mining related traffic increases</u> through the 'mine village', especially around sensitive receptors such as the two primary schools in close proximity to the TSFs (and therefore likely to experience an increase in traffic volumes).**			
Post-Mitigation			
Duration	Project life (5)	Impact will have to be managed through mitigation for the LoM.	-27 Negligible

Dimension	Rating	Motivation	Significance
Extent	Limited (2)	Grievances that are addressed timeously can limit its influence on the site or immediate surroundings.	(negative)
Intensity	Minor (2)	Minor impacts will continue but can be addressed effectively.	
Probability	Unlikely (3)	Widespread QOL impacts are unlikely if they are addressed within a realistic timeframe as they appear. Proactive management will prevent QoL impacts occurring regularly.	
Nature	Negative (-1)		

8.2.7 Environmental Impacts

8.2.7.1 Impact Description – Golder (2016)

Golder have identified environmental impacts that could have a ripple effect on the socio-economic environment. The following impacts are described:

- Potential flooding events and tailings dam spillage: stakeholders expressed their concerns that TSF 6 will be increased through continued slimes dumping and as a result, spillage/flooding can occur during extreme weather events and/or as a result of inadequate care.
- Surface and ground water pollution: Stakeholders pointed out that run-off from the TSFs have polluted surface water streams and groundwater. Given the presence of a significant number of wetlands in the area, this was considered a serious impact.
- Reactivation of sinkholes: community members indicated that a number of sinkholes have been reactivated in recent years. As an example, it was mentioned that a local old age home in Carletonville was being evacuated due to the formation of a sinkhole. Stakeholders were therefore concerned that any hydraulic mining will have a knock-on effect and cause more sinkholes. Sinkholes were deemed a serious safety hazard.
- Noise pollution: Construction and refurbishment activities will likely give rise to temporary physical impacts, such as an increase in noise.
- Dust pollution: Inadequate dust suppression from the disused TSFs have created significant dust pollution that has led to complaints from adjacent land users.
- Water pollution: stakeholders indicated that certain underground mining shafts run above the water table. In addition, the run-off from TSFs is unacceptable and regarded as a significant health risk.

8.2.7.2 *Impact Description – New Information*

The primary health concerns amongst surveyed residents in the LHR study was the exposure to dust blowing off the unrehabilitated TSF 6 – up to 86% of the respondents listed dust inhalation as a worry.

Blyvoor Gold has commissioned a Community Health Impact Assessment (CHIA). The CHIA is currently underway, and its results are expected in October 2018.

8.2.7.3 *Management Objectives*

Minimise community health impacts by implementing sound environmental management processes.

8.2.7.4 *Management Actions and Targets*

Refer to the EMPR.

8.2.7.5 *Impact Rating*

Table 8-10 assesses the community's perception of the impacts associated with wind-blown dust from Blyvoor TSF No.6.

Table 8-10: Environmental Impacts

Dimension	Rating	Motivation	Significance
Quality of life impacts			
Impact Description: Lack of environmental mitigation measures has caused fear amongst local residents and impacted on their health.			
Prior to Mitigation/Management			
Duration	Project life (5)	Environmental impacts will continue for the LoM.	-91 Major (negative)
Extent	Municipal area (4)	Pollution from the mine is not currently managed and impacts are widespread.	
Intensity	On-going serious (4)	Stakeholders are complaining of on-going serious health impacts.	
Probability	Definite (7)	The impact is currently experienced by local residents.	
Nature	Negative (-1)		
Mitigation/Management Actions			

Dimension	Rating	Motivation	Significance
(From the Golder SIA): ▪ Blyvoor Gold will need to ensure that there is a thorough understanding of the factors impacting the formation of sinkholes **(i.e. that it is unlikely to be caused by underground shafts)** and put specific mechanisms in place to address this, including aiding in rectifying general water services. ▪ During the (refurbishment) phase, dust pollution should be minimised by regularly wetting dirt roads and considering the prevailing wind conditions. ▪ All measures identified in the EMPR should be followed to reduce the occurrence and impact of any environmental impacts.			
Post-Mitigation			
Duration	Project life (5)	Environmental impacts will continue for the LoM.	-40 Minor (negative)
Extent	Limited (2)	With the implementation of appropriate environmental mitigation measures (such as dust suppression), impacts will be limited to the mine and its immediate area.	
Intensity	On-going social issues (3)	Although issues will be on-going, they can be managed and are not as widespread as before.	
Probability	Probable (4)	The impact will be contained to certain segments of the area under unfavourable conditions (e.g. wind).	
Nature	Negative (-1)		

8.2.8 Social Disintegration and Conflict

This issue was not assessed in the Golder SIA.

8.2.8.1 Impact Description

Social disintegration occurs when rapid change threatens the social cohesion of a local community. Because of the hardship that the local community endured together since liquidation of the mine in 2013, it can be expected that the community has a strong sense of group (or social) cohesion. Although cohesion is a multi-faceted process, it can be broken down into the following main components:

- Attraction: According to Hogg (1992), group cohesiveness is based on social attraction, which refers to “attraction among members of a salient social group”, i.e. individuals look at others’ similarities and differences and mentally categorise themselves and others as part of a group. In the case of mine village residents, they initially shared a cohesiveness in that they all worked at the mine, likely had similar benefits and shared a similar form of housing. Post mine closure, they all endured

the same hardship in unemployment and facing the same risks (dust, contaminated water, sinkholes, etc.) The group is therefore quite homogenous in this regard, despite different cultural backgrounds.

- Group pride: Theorists believe that group cohesion result from a deep sense of "we-ness", which is evident in the residents of the mine village. Large numbers of residents have become involved in the group's efforts to get their issues heard and addressed by forming the Blyvooruitzicht Residents Committee (LHR, 2017).
- Task commitment: Group members' commitment to work together to complete a task enforces their cohesion. Mine village residents have shown a concerted effort to achieve a common goal of a safer environment in which to live.
- Similarity of group members: Lott and Lott (1965) who refer to interpersonal attraction as group cohesiveness conducted an extensive review of literature and found that individuals' similarities in background (e.g. race, ethnicity, occupation, age), attitudes, values and personality traits have generally positive association with group cohesiveness. In addition, similar backgrounds make it likely that members share similar views on various issues.

It is likely that community members will view new employees (those that fall in the 30% provincial appointment) as taking away their jobs. Most of mine village residents who have mining experience at the Blyvooruitzicht operations have borne the brunt of the previous operator's neglect. Also, despite the sense of strong group cohesion, intra-conflict in the group is also likely to occur around the limited number of job opportunities available versus the large supply of workers currently in the labour pool.

Continued conflict situations may erode social cohesion and lead to social disintegration. This can lead to social mobilisation against Blyvoor Gold, which will threaten the mine's SLTO.

8.2.8.2 Management Objectives

Preserve social cohesion in the local community by preventing conflict situations as far as possible.

8.2.8.3 Management Actions and Targets

Address grievances within a set timeframe to reduce the risk of conflict and social mobilisation.

8.2.8.4 Impact Rating

Table 8-11 assesses the impact of social disintegration and social conflict.

Table 8-11: Social Disintegration and Conflict

Dimension	Rating	Motivation	Significance
Quality of life impacts			
Impact Description: Conflict can give rise to social mobilisation that can threaten the continued operation of the mine.			
Prior to Mitigation/Management			
Duration	Project life (5)	The **risk** for conflict will continue for the LoM.	-52 Minor (negative)
Extent	Local (3)	Conflict situations can have spill over effects.	
Intensity	Very serious (5)	Social unrest can lead to destruction of property and work stoppages.	
Probability	Probable (4)	Conflicts between communities and mines are well documented.	
Nature	Negative (-1)		
Mitigation/Management Actions			
▪ Employ a competent and experienced community relations team to manage continued interaction between Blyvoor Gold and its mining impacted communities and hold them to strict performance criteria. ▪ Acknowledge and remedy past grievances and act on outstanding commitments. ▪ Establish meaningful avenues of two-way communication. ▪ Build relationships through goodwill and understanding. Be upfront and straightforward about potential issues and difficulties, including environmental risks and limited job opportunities. ▪ Be responsive and adaptive to complaints and other issues. ▪ Listen to and act on community concerns. ▪ Involve communities in shaping community development projects. ▪ Design and implement a grievance mechanism. Monitor grievances to allow for eventual proactive actions instead of reactive addressing of complaints.			
Post-Mitigation			
Duration	Project life (5)	The risk for conflict will continue for the LoM.	-27 Negligible (negative)
Extent	Limited (2)	Contain conflict and prevent it from spilling over to the larger area.	
Intensity	Minor (2)	If issues are addressed timeously, it will not cause on-going social issues.	

Dimension	Rating	Motivation	Significance
Probability	Unlikely (3)	If issues are addressed at individual or small group level, groups will not feel the need to mobilise a larger group.	
Nature	Negative (-1)		

9 Cumulative Impacts

Cumulative impacts are defined as impacts arising from the combined effects of two or more Projects or actions. The importance of identifying and assessing cumulative impacts stems from the fact that, in social as well as natural systems, the whole is often more than the sum of its parts – implying that the total effect of multiple stressors or change processes acting simultaneously on a system may be greater than the effects when acting in isolation. Cumulative impacts usually relate to large-scale and more extensive impacts rather than primary concentrated impacts that tend to increase the intensity of impacts already predicted for the Project. The following cumulative impacts were identified in the original SIA (Golder, 2016):

- Dependency on mining to sustain the local economy;
- Biophysical impacts; and
- Historic legacy impacts.

In addition, this SIA Addendum report identified the following two cumulative impacts:

- Socio-economic upliftment; and
- Illegal mining activities.

9.1 Dependency on mining to sustain the local economy

Economic activities in the broader municipal area are dominated by the mining sector, which creates a much larger number of jobs than any other sector. In general, mine workers tend to earn better salaries than those employed in other sectors and therefore it is fair to deduce that the local economy is heavily dependent on the mines. Because all mines have an infinite lifespan, it is inevitable that mining operations in the area will at some point in the future begin to scale down and close. Unless significant investment is made into economic diversification, the area is destined for a considerable economic slump once this process begins.

This SIA Addendum maintains this notion: the dependency of the local area on the mining sector is clearly illustrated, albeit on a relatively small scale, by the current condition of the mine village within the Blyvooruitzicht mining complex. Not only did the village fall into a state of degradation when the mine withdrew its financial support, but workers were left unemployed with limited or no prospects of finding other employment because their skills and experience were limited to one sector.

Although the MCLM recently took over supplying some services to the area, it was mostly unplanned and over-exerted the municipal system resulting in uncollected refuse and raw sewage in the streets.

9.2 Biophysical impacts

Golder (2016) stated that the (then) EMPR should make adequate provision for the management of potential cumulative impacts related to impacts on air quality and water quality.

With the introduction of recommissioned elements at the Blyvoor mine, it is expected that the mine would contribute to an improvement in the air and water quality of the general area, as stringent environmental management practices would be implemented as required by the mine's updated EMPR in compliance with the MPRDA. For example, it is expected that air quality would improve with the reinstatement of dust suppression practices at the TSFs.

9.3 Historic legacy impacts

Golder (2016) pointed to a significant history of mismanagement, exploitation and crime, amongst other issues, and stated that a directed process of communication and trust building would be required in an attempt to overcome resistance and allow residents to understand the significant benefits that could be derived from a mining processes that is managed responsibly and with due diligence.

This SIA Addendum agrees with the Golder SIA on the issue of this historic legacy, it is important to bear in mind that cumulative impacts consider the combined effects of two or more projects or actions in an impacted area. In this regard, it would not be Blyvoor Gold alone that must demonstrate due diligence but all the mines in the area. The issue at hand is therefore the negative legacy of the mining industry in general and not one mine specifically. This does not however absolve Blyvoor Gold of its social responsibility.

9.4 Socio-economic upliftment

The MRPDA aims to achieve socio-economic upliftment of mining impacted communities by requiring that mining right applicants submit and adhere to a SLP, which is approved and then monitored by the DMR. The SLP must describe how the mine will ensure that affected communities benefit from their operations, including post-closure. An SLP must therefore detail "specific programmes to save jobs and manage downscaling and/or closure" (aimed at mine employees) and "ameliorate the social and economic impact" of the operation in general (aimed at impacted communities). All the mining rights holders in the area are therefore required to aid the diversification of skills unrelated to mining activities to avoid creating dependency on the mining sector. In addition, mining operators must identify and support certain local economic development (LED) projects that further aid the general socio-economic upliftment of the local area.

9.5 Illegal mining activities

In the absence of formal employment, illegal mining creates an avenue for people to earn huge sums of money. A presentation prepared by the Chamber of Mines (2017) states that illegal mining activities are directly linked to lucrative illicit trade – not only in precious metals, but also wildlife, weaponry and drug trade at a global level. The illegal mining trade consists of a complex syndicate, as illustrated below:

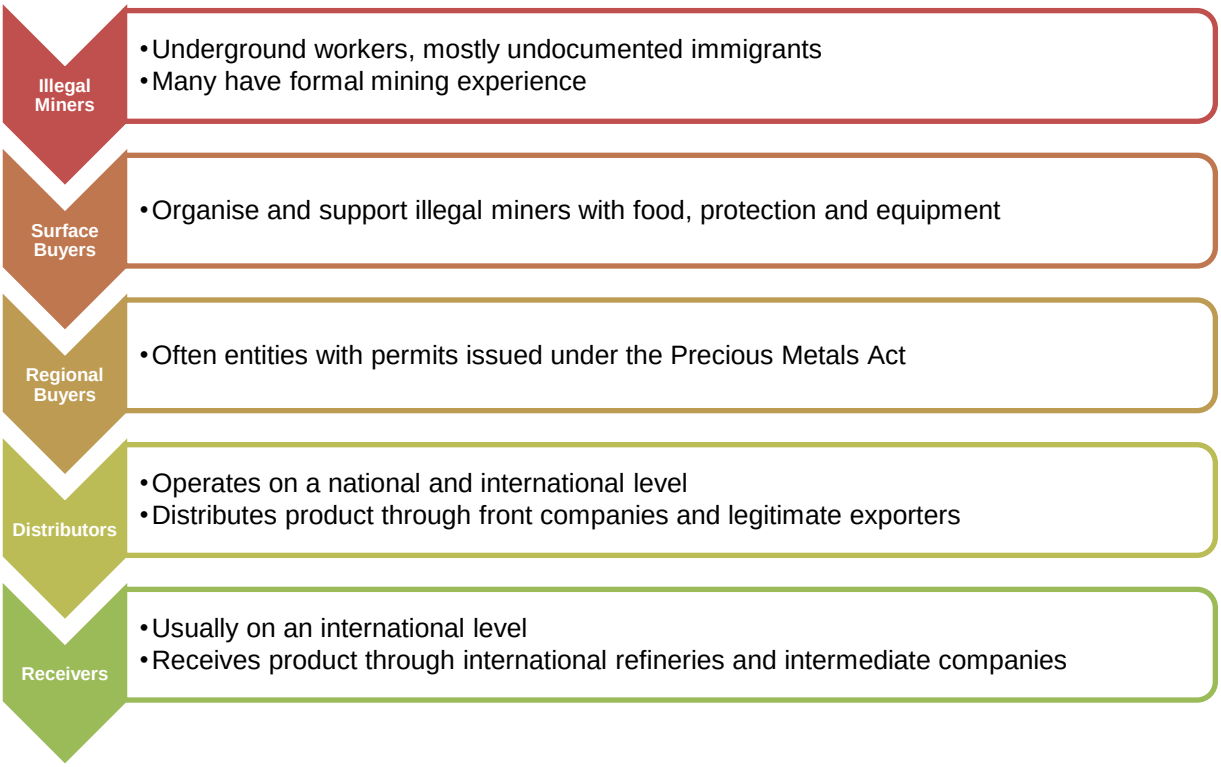

Figure 9-1: Value chain in illegal mining

The Chamber of Mines (2017) estimates that illegal mining costs the industry and fiscus more than R 20bn per year in lost sales, taxes and royalties. It is further estimated that up to 90% of illegal miners are undocumented immigrants and that the presence of illegal miners has led to an increase in crime and illegal trade such as explosives, diesel, copper cables and other equipment from the mine. It also erodes the social fabric of mining communities as fear, coercion, human rights abuses, prostitution and substance abuse become commonplace.

All the afore-mentioned are present in the mine village, which supports the Chamber of Mines' assessment of the impact of illegal mining. It can therefore be expected that as mines in the area scale down and eventually close, it would attract an influx of illegal miners to the area, which would negatively affect the safety and security of local communities.

10 Unplanned Events and Low Risks

Unplanned events and low risks refer to those socio-economic aspects that do not require upfront mitigation, but that could lead to a change in the baseline if it is not monitored. Table 10-1 provides an overview of such events and risks along with the management actions required if such events do occur.

Table 10-1: Unplanned Events, Low Risks and their Management Measures

Unplanned event	Potential impact	Mitigation/ Management/ Monitoring
Even though Blyvoor Gold will not be acquiring the 'mine village', residents of the mine village may expect Blyvoor Gold to reclaim houses in the village and reinstate and take over basic services (refuse, water, electricity and sewerage).	Social mobilisation against Blyvoor Gold, resulting in loss of SLTO	Be upfront about what the company is taking over and where they will assist - rather undertake small scale projects that are realistic and follow through on these than make vague generic promises to communities.
Large-scale influx of job seekers to the area – specifically the mine village.	Conflict between newcomers and local communities. Further increase in crime. Establishment and expansion of informal settlements. Additional pressure on limited resources such as basic services and housing.	Prevent opportunistic influx by implementing project-induced in-migration mitigation measures discussed in Table 8-6.
Local communities do not understand the Project or its associated activities (e.g. the phasing of employment)	Social mobilisation against Blyvoor Gold, resulting in loss of SLTO	Employ a competent and experienced community relations team to manage continued interaction between Blyvoor Gold and its mining impacted communities and hold this team to strict performance criteria.

11 Socio-Economic Risks

The previous sections all dealt with the Blyvoor Mine's expected impact on the local socio-economic environment. The objective of this section is to identify reverse impacts, i.e. any aspects of the receiving socio-economic environment that would represent significant risks to the Blyvoor Mine. These may constitute constraints that would have to be accommodated in project design, or issues that would require appropriate management and mitigation. Social risk is linked to a project's stakeholders and can either be a risk to a project as a result of the

impact on stakeholders or stakeholders' impact on the project. In most cases, the risks can be experienced in the following manner:

- Financial: A financial risk can result in a project being financially unfeasible due to costs;
- Delay: could result in a delay to a project at any stage; and
- Reputational: could cause damage to a company's reputation, which could result in delays or have financial implications.

The potential social risks, discussed in the proceeding sections, which the project might be exposed to include community employment expectations, social unrest and community opposition, failure to acquire SLTO, and illegal miners settling in the area.

11.1 Community employment expectations

Community expectations regarding any development are most frequently related to employment. When such hopes are not intervened or addressed with appropriate communication, it may lead to potential stakeholder opposition and public mobilisation against the project.

In a context of high unemployment, local residents will be dissatisfied if access to the finite number of jobs and the labour recruitment process can be viewed as biased and preferential. Most of the retrenched workers from the previous operation have remained in the mine village and have often expressed the expectation that they will be rehired when the mine returns to operation (i.e. there seems to be a perception amongst the retrenched workforce that mine closure was only temporary, and that re-employment is eminent). Employment of locals is a sensitive issue and social mobilisation against the project as a result of perceived unfair practices can be a real threat to Blyvoor Gold.

11.2 Social unrest and community opposition

It is possible that if expectations of the surrounding communities are not carefully managed that social discontent could reach consequential levels. It is essential that communication channels are open between the communities and Blyvoor Gold so that stakeholders can lay complaints and discuss concerns with the Project. In this regard, it is recommended that Community Liaison Officers (CLO) be appointed to allow communities readily accessible communication mechanisms. Furthermore, stakeholder engagement and public participation should be on-going to manage expectations, allow for stakeholder input into the Project, inform and educate stakeholders about the project, and allow for open discussions. This will assist in anticipating any potential social issues which may be a risk to Blyvoor Gold, and to implement measures to avoid those risks.

It is possible that regardless of Blyvoor Gold's efforts for free, prior and informed consent there will still be stakeholders who are dissatisfied with the process. This potential for local instability should be considered together with on-going strikes, particularly in the mining

sector. When combining these dynamics, it can be argued that affected communities might become resistant or hostile towards the proposed project, if not treated in a socially justifiable manner.

11.3 Failure to acquire a social licence to operate

Failure to avoid any of the identified risks might detract from the project proponent's "*social licence to operate*." A SLTO is defined as the on-going approval and acceptance from a local community and stakeholders for a mine or project to operate. A SLTO is intangible and dynamic. It is granted by the communities in which a mine operates and is rooted in stakeholder perceptions and opinions about the Project. A SLTO is earned through on-going, transparent communications and mutual trust. It is therefore earned and needs to be maintained as opinions and perceptions can change. A SLTO is gained through free, prior informed consent from local communities and stakeholders. Gaining a SLTO for a mine can therefore be a critical factor in the mine's success and an important component to human rights.

Current negative impacts on landowners can possibly deteriorate the relationship between Blyvoor Gold and the community despite Blyvoor Gold not being responsible for the initial impacts. Attention should be given to resolve existing impacts as far as possible (e.g. dust suppression) and prevent such impacts from occurring again, to improve Blyvoor Gold's standing in the local community. Without a SLTO, the Project may face reputational risk through publicity and a delay risk through community dissatisfaction and protests that can result in work stoppages.

12 Environmental and Social Management Plan

The objective of the Environmental and Social Management Plan (ESMP) is to present mitigations that manage undue or reasonably avoidable adverse impacts associated with the development of a project and enhance potential positives.

12.1 Regulatory Framework

The following national legislation and international guidelines are relevant to an SIA for a mining project:

12.1.1 The National Environmental Management Act, 1998 (Act No. 107 of 1998)

NEMA provides the legal framework for implementing the state's constitutional obligations regarding environmental management. NEMA sets forth principles for guiding decision-making on proposed activities that could affect the social, economic and biophysical environment. The following principles are relevant to a socio-economic impact assessment:

- Decisions regarding a proposed activity should not only be based on their environmental impact and economic feasibility, but should also consider their social sustainability;

- Decisions must consider the interests, needs and values of all interested and affected parties, and must recognise all forms of knowledge, including traditional and ordinary knowledge;
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such considerations and assessment; and
- Decisions must be taken in an open and transparent manner and access to information must be provided in accordance with the law.

12.1.2 The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, as far as reasonably practicable, the employers must ensure that their activities do not expose non-employees to health hazards.

12.1.3 The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)

The MPRDA requires that mining companies assess the social impacts of their activities from start to closure, and beyond, and requires that mining companies compile and implement a SLP to promote socio-economic development in their affected communities and prevent or lessen negative social impacts.

12.1.4 The Extension of Security of Tenure Act, 1997 (Act No. 62 of 1997)

This Act confers certain rights to non-landowning residents of a property; these rights are linked to the period in which people have been residents on the land.

12.1.5 The Development Facilitation Act, 1995 (Act No. 67 of 1995)

This Act sets out the principle that policy, administrative practice and laws should support effective integrated planning, the optimal use of existing resources, the promotion of sustainable development, and the requirement that land use should be judged on its merits.

12.1.6 Municipal Systems Act, 2000 (Act No. 32 of 2000)

This Act provides, inter alia, the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities and ensure universal access to essential services that are affordable to all.

12.1.7 National Spatial Development Plan

In South Africa, spatial development is guided by the National Spatial Development Plan. Municipal spatial development frameworks are informed by the NSDP's principles. The Plan

proposes that several principles should be used as a guide by government when making decisions on infrastructure investment and development spending. In short, these principles state that spatial development should (where appropriate) accommodate and promote private economic ventures, which can aid sustainable economic growth, relieve poverty, increase social investment and improve service delivery.

12.1.8 IFC Performance Standards

International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012) contain eight performance standards to facilitate sustainable business practices. These Performance Standards are often considered in the case that national legislation of a specific country does insufficient. An SIA can consider the following:

- *Performance Standard 1: Social and Environmental Assessment and Management Systems* – sets out international best-practice standards for conducting a SIA. Amongst other things, these standards require that a SIA identify individuals and groups that may be differentially or disproportionately affected by the project because of their disadvantaged or vulnerable status (where such status may be related to an individual's or group's ethnic affiliation, gender, socio-economic status, health or dependence on unique natural resources). Where groups are identified as disadvantaged or vulnerable, differentiated measures must be identified and implemented to ensure that adverse impacts do not fall disproportionately on them and that they are not disadvantaged in sharing development benefits and opportunities.
- *Performance Standard 5: Land Acquisition and Involuntary Resettlement*: National policies or legislation in southern Africa do not explicitly address involuntary resettlement. This policy vacuum is inadequately filled by complicated land tenure, environmental and planning legislation. Consequently, the existing legal frameworks for addressing involuntary resettlement are inadequate and do not aid communities, implementing agents or mining companies. Instead they often obscure rights and responsibilities, cause unnecessary delays to resettlement projects and increase the total costs involved (Sonnenberg & Münster, 2001). In summary, this Standard promotes consideration of alternative project designs, avoiding forced eviction, informed participation for affected parties, compensation for loss of assets at replacement cost, restoring or improving the livelihoods and living standards of displaced persons, and providing people with opportunities associated with a proposed development.

12.2 Project Activities with Potentially Significant Impacts

The original SIA (Golder, 2016) and this addendum SIA report made no distinction between construction and operational impacts because Blyvoor Gold intends to mostly only refurbish existing infrastructure at the mine. Table 12-1 provides a summary of all the impact ratings of

all identified impacts pre- and post-mitigation. It is evident that all the impacts can be effectively mitigated, as discussed in more detail in the following subsections.

Table 12-1: Summary of Socio-Economic Impacts

Impact	Pre-Mitigation					Post-Mitigation				
	Duration	Extent	Intensity	Probability	Significance	Duration	Extent	Intensity	Probability	Significance
Employment opportunities	Project life	Municipal area	Low-level	Probable	Minor (Positive)	Project life	Municipal area	Average	Probable	Minor (Positive)
Population influx	Medium	Municipal area	Discernible	Unlikely	Negligible (Negative)	Short-term	Very limited	Minor	Unlikely	Negligible (Negative)
Economic benefits	Project life	Municipal area	Average	Probable	Minor (Positive)	Beyond project life	Region	Wide-spread	Probable	Minor (Positive)
Community development	Project life	Municipal area	Average	Almost certain	Minor (Positive)	Beyond project life	Region	Great	Almost certain	Major (Positive)
Quality of life	Project life	Local	Serious	Likely	Minor (Negative)	Project life	Limited	Minor	Unlikely	Negligible (Negative)
Environmental	Project life	Municipal area	Serious	Definite	Major (Negative)	Project life	Limited	Discernible	Probable	Minor (Negative)
Social disintegration and conflict	Project life	Local	Very serious	Probable	Minor (Negative)	Project life	Limited	Minor	Unlikely	Negligible (Negative)

12.3 Summary of Mitigation and Management

Unlike other environmental impacts that are quantifiable, socio-economic impacts affect people's quality of life. As such, the extent to which a person or people experience an impact is to a large degree based on their perception or interpretation of an event. For example: through dust suppression measures, the Blyvoor Gold operation can reduce dust pollution by a certain percentage (quantifiable management measure), yet certain individuals within households continue to experience respiratory problems. Even if it is medically proven that their health problems are not related to mining activities, these individuals continue to believe that the mine plays a role in the origin of their sickness and therefore continue to view the mine in a negative light.

The mitigation and management options in Table 12-2 does not include measurable targets because socio-economic impacts are mostly not quantifiable. Unless otherwise specified, all socio-economic impacts should be managed on an on-going basis through continuous stakeholder engagement and other specific actions as detailed. Blyvoor Gold is responsible for implementing all mitigation/enhancement measures, either directly or by appointing specialist consultants to undertake certain aspects of the social management plan on their behalf.

Table 12-2: Summary of mitigation and management options for identified socio-economic impacts

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
Creating employment opportunities	▪ Award as much of the 70% local employment as possible to residents in the 'mine village'; ▪ Undertake extensive stakeholder engagement with village residents, including a high-level skills survey, to determine the available skills in the village; and ▪ Establish a local labour recruitment desk.	Blyvoor Gold	On-going	70% + local employment	Employment forms in SLP measured against results of skills survey to determine origin of workforce
Project-induced in-migration	▪ No hiring at the gate; ▪ Maximise the use of local labour to the fullest extent possible, even if this implies increasing the 70% local hire commitment made in the SLP by reducing the 30% provincial hire; and ▪ Develop and implement a communication plan for the local community (the 'mine village') as part of a wider SEP for the Project, which should include, inter alia, progress on the recommissioning process, employment opportunities available linked to skills required, and when positions will be available. Factual information might not always be received favourably but will assist	Blyvoor Gold through a specialist SE consultant	On-going	▪ 70% + local employment ▪ No noticeable forms of influx (e.g. formation of informal settlements)	▪ Annual SLP target reporting to DMR ▪ Periodic observational studies and key informant interviews to determine if influx is experienced in the village

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
	in managing unrealistic expectations - one of which is currently that the mine will go back to operating on its previous scale and re-hire all retrenched workers.				
Economic benefits	▪ Promote the employment of locals that was affected by the provisional liquidation from Blyvoor Gold first and thereafter from the (MCLM) wherever possible: the creation of employment opportunities within the (WRDM) as per the requirements of the mining charter; ▪ Promote local procurement of goods and services wherever possible: besides providing employment, expenditure in a local economy is one of the other important ways an operation such as the proposed facility can contribute to a positive economic impact (including direct, indirect and induced impacts). The more money spent locally, the better the local economy; ▪ Support the diversification of the local economy: given that the (MCLM) local economy is heavily dependent on the mining sector, focus should be on supporting community projects that can assist in	Blyvoor Gold	On-going	▪ 70%+ local employment ▪ Percentage of local suppliers registered with procurement and used on a regular basis ▪ Number of LED projects implemented	▪ Annual SLP target reporting to DMR ▪ Procurement database and record of transactions ▪ SLP reporting on LED spent

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
	diversifying the local economy of the area beyond the LoM and an appropriate portable skills training; ▪ Support LED projects that are feasible, sustainable and promotes job creation: investing in projects that are feasible, sustainable and promotes job creation will mean that once decommissioning of operations is imminent, the supported project can continue without continued support from the plant; and ▪ Ensure that a process of on-going communication and dialogue should be implemented to ensure that unrealistic expectations are addressed.				
Community development	▪ Develop a Social Investment Strategy (SIS). This is additional voluntary investment that the mine makes in the sustainable development of the local communities and can include supporting development projects on a regional (district or province) level (often this can be done by financing a certain project through a local NGO); ▪ Avoid investing in philanthropy projects only (e.g. building or repairing infrastructure,	▪ Blyvoor Gold through a specialist CD consultant ▪ Local NGOs	▪ Develop SIS within first year of operation ▪ Implement and maintain throughout LoM	▪ Number of sustainable CD projects supported ▪ Number of non-mining beneficiaries reached	▪ SLP reporting on LED spent ▪ NGO annual reports (if NGOs used)

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
	providing food parcels, etc.) – although these projects are 'quick wins' necessary for the mine to win the trust of the local community, it creates the expectation that the mine will continue to, for example, maintain the infrastructure they built, which ceases when the mine suspends operations (as is currently experienced in the mine village); ▪ Local developmental NGOs who have the experience to implement sustainable development projects are key stakeholders in determining community development projects that are not mine dependent and can continue past the LoM; and ▪ Be slow in making promises to the community to first ensure that commitments are well researched and feasible.				
Quality of life impacts	▪ Establish a sound communication strategy that includes newspaper articles and radio broadcasts, regular community meetings, a 24-hour hotline service that residents can call, and individual communication with residents, service providers and business owners via letter, phone or face-to-face as and when required. Of particular importance	Blyvoor Gold through CLOs	On-going	▪ Number and type of grievances received ▪ Number of mining-related traffic incidences	Number and type of grievances closed out

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
	will be the need to put an effective complaints management process in place (termed a grievance mechanism in this SIA); ▪ Measures identified in the EMPR be followed accordingly to reduce the occurrence of any health and safety impacts flowing from blasting activities, vibration and mining-related noise (these issues will typically be addressed through the grievance mechanism, which again highlights the importance of developing and implementing such a system as part of the mine's SE activities); and ▪ Measures identified in the EMPR related to the control of traffic and vehicular movement be implemented to reduce hazards and impacts from on and off-site traffic and road networks. Traffic rules are currently not followed because of the absence of road markings and the expectation of no to little traffic. The mine should reinstate road markings, e.g. stop signs when mining related traffic increases through the 'mine village', especially around sensitive receptors such as the two primary schools in close proximity to the TSFs (and therefore				

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
	likely to experience an increase in traffic volumes).				
Environmental impacts	▪ Blyvoor Gold will need to ensure that there is a thorough understanding of the factors impacting the formation of sinkholes and put specific mechanisms in place to address this, including aiding in rectifying general water services; ▪ Dust pollution should be minimised by regularly wetting dirt roads and considering the prevailing wind conditions; and ▪ All measures identified in the EMPR should be followed to reduce the occurrence and impact of any environmental impacts.	Blyvoor Gold	On-going	▪ Reduced incidences of environmental complaints ▪ Compliance with EMPR objectives and targets	EMPR compliance reporting to DMR

IMPACT AND MITIGATION				MONITORING AND VERIFICATION	
Impact	**Mitigation / Enhancement**	**Responsibility**	**Timing**	**Indicator / target**	**Verification**
Social disintegration and conflict	▪ Employ a competent and experienced community relations team to manage continued interaction between Blyvoor Gold and its mining impacted communities and hold them to strict performance criteria; ▪ Acknowledge and remedy past grievances and act on outstanding commitments; ▪ Establish meaningful avenues of two-way communication.; ▪ Build relationships through goodwill and understanding. Be upfront and straightforward about potential issues and difficulties, including environmental risks and limited job opportunities; ▪ Be responsive and adaptive to complaints and other issues. ▪ Listen to and act on community concerns; ▪ Involve communities in shaping community development projects; and ▪ Design and implement a grievance mechanism. Monitor grievances to allow for eventual proactive actions instead of reactive addressing of complaints.	Blyvoor Gold	On-going	▪ Number of stakeholder engagements per month ▪ Number and type of grievances received	▪ Minutes of meetings ▪ Number of grievances closed out

13 Consultation Undertaken

To curb further speculations and expectations around job opportunities and the reinstatement of mine workers that were retrenched in 2013, the SIA team did not conduct any interviews or focus group meetings with neighbouring residents. Instead, information related to the socio-economic impacts on these communities were derived from observational studies and the Lawyers for Human Rights' report who surveyed 600 households in 2016 as part of their research.

14 Comments and Responses

A summary of issues and comments received from stakeholders via the public participation process relevant to the socio-economic environment, are listed in Table 14-1. The table also indicates where these issues and concerns were considered in the SIA.

Table 14-1: Summary of issues and concerns related to the socio-economic environment

Stakeholder	Comment	Reference in SIA
Paulo Jorge de Gouveia	Big dust fall-out. It is toxic and affect local residents' health.	Section 8.2.7
Paulos Modibeng	The issue with the dust – what will you do?	Section 8.2.7
Mariette Liefferink	Post closure land use, with its implications for socio-economic and environmental sustainability, is possibly the most important component of planning in rural communities.	Not directly addressed but the SIA refers to community development projects that should aim to support communities in a sustainable manner post mine closure. See Section 8.2.4.
Brienne van der Walt	The noise and air pollution will negatively impact my ability to conduct my business in a commercially optimal manner. I am also concerned about water pollution.	Section 8.2.6 Section 8.2.7

15 Conclusions and Recommendations

This report fulfilled the terms of reference for the study, namely to update the SIA that was compiled by Golder in 2016 by updating the baseline profile and address stakeholder comments previously unaddressed.

Taking cognisance of the updated baseline profile, the SIA verified the significance ratings of six impacts assessed by Golder and identified one additional impact. None of the impacts identified in this study or the previous study can be considered fatal flaws. On the contrary, it is believed that the recommissioning of selected infrastructure at the Blyvoor Gold mine can assist the partial reversal of on-going negative socio-economic impacts currently experienced by residents in the mine village after the sudden closure of the mining operations in 2013. The three main benefits are:

- Alleviating the high unemployment rate to some extent (up to 75% of the local community are reportedly unemployed);
- Providing economic benefits through the payment of royalties and taxes to the various levels of government, but specifically implementing sustainable local economic development (LED) projects as part of its SLP commitments and considering additional voluntary investments in community development projects to reduce local communities' dependence on the mining sector; and
- Reducing environmental impacts currently experienced by local communities after the previous operator ceased all environmental control measures, by reinstating such mitigation measures, e.g. dust suppression at the TSFs, waste water treatment, etc.

However, to ensure that Blyvoor Gold obtain and maintain a SLTO, the following recommendations were made as part of the social management plan and emphasised here:

- Develop and implement a stakeholder engagement plan (SEP) for the Project, inclusive of a communications plan for liaising with residents of the mine village specifically. Open, transparent and continuous two-way engagement with stakeholders are of utmost importance in establishing a relationship with the mine's impacted communities. In this regard, Blyvoor Gold could use their existing community relations team to implement and report on the SEP.
- Establish a transparent labour recruitment process by publicising the mine's employment needs, number of jobs available, timing of labour needs, and skills levels required. Consider establishing a local labour desk that is manned by an independent party (i.e. someone who is not from the community. Although not true in all cases, experience has shown that ward councillors or community members sometimes tend to favour their family and friends for job opportunities). The labour desk can also serve as a registration point for a local labour database, which is expected to largely consist of previous Blyvooruitzicht mine employees.

- It is not sufficient to reverse the negative socio-economic impacts currently experienced by the mine village residents as it builds dependency on the mining sector. Instead, the underlying issues should also be addressed where possible. This could be done through a voluntary social investment strategy that focuses on sustainable development projects aimed at uplifting socio-economic conditions through non-mining related activities. These projects should be identified and developed in consultation with the local community, but, as an example, could include assisting the community in establishing food gardens. Also, Blyvoor Gold is one of many operators in the area and as such, can liaise with other mining operators in establishing a 'basket fund' for sustainable community development projects.
- The mine's focus should not only be on short-term philanthropy LED projects (e.g. building a community hall). Often these infrastructure projects turn into 'white elephants' that are not used by the local community, yet the mine should continue the upkeep and maintenance. However, initial assistance in the mine village (e.g. refuse removal and repairing the sewerage network as outlined in the SLP) will assist in building initial trust with the community.