The theft of precious metals from South African mines and refineries

Ben Coetzee and Riana Horn

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Edited version of a confidential report by the Institute of Security Studies for the Chamber of Mines of South Africa, published in August 2006

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First Edition
ISBN 1-920114-02-5
August 2006

Revised Electronic Edition
November 2006

First published by the
Institute for Security Studies

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Typesetting by Marketing Support Services +27 12 346 2168

Printed by Business Print Centre

Contents

Acknowledgments

This study would not have been possible without the extensive cooperation and support of the:

- Chamber of Mines of South Africa;
- South African Police Service (SAPS);
- Rand Refinery Limited; and
- mining companies in the gold and platinum group metals mining sectors.

In particular, we would like to thank the heads of security of each participating mining house. They went to great lengths to facilitate the study during each phase. Their honest opinions and unreserved sharing of sensitive information regarding their specific operations required them to place considerable trust in the Institute for Security Studies.

The Chamber of Mines requested that the data published in the report should not identify any specific mine or mining house. This request was honoured as far as possible, while keeping the ultimate aim of the study in mind.

The SAPS merits special mention for its staffs' prompt participation in the study. They provided strategic information from each branch and gave full support from head office. The Forensic Science Laboratory also compiled a detailed report on samples received for analysis.

It should be kept in mind that a study of this nature is rare, based as it is on sensitive information in a highly competitive industry. Its success depended on the full participation of each role-player, and all participants should be commended for their efforts in facilitating the data-gathering and interview processes.

We are indebted to Dr Carina Coetzer for her time and participation during this project. She accompanied us on site visits and shared her expertise regarding the Crime Prevention Through Environmental Design (CPTED) principles.

The Chamber of Mines of South Africa funded the project.

Preface

The Chamber of Mines of South Africa approached the Institute for Security Studies (ISS) in the latter part of 2003 to conduct a follow-up project on the *Theft from South African mines and refineries* study published by Peter Gastrow in April 2001. This report is thus a further endeavour to present a comprehensive study on the theft of precious metals in South Africa.

Many of the imperfections encountered in the previous study regarding crime information management have been addressed by the mining industry. Databases have been established and information is now shared at a national level. Members of the Chamber of Mines of South Africa facilitated access to these databases for evaluation and analysis purposes.

The ISS is an independent research institute and does not take an institutional position towards any research done by its researchers. Researchers are free to express their own opinions and views without binding the ISS to them. The authors of this report therefore take full responsibility for the content of the report.

Ben Coetzee and Riana Horn
Institute for Security Studies
Pretoria
19 May 2006

Executive summary

INTRODUCTION

South Africa has the world's largest known gold and platinum group metal reserves. The mining industry is one of the largest employers in South Africa, second only to the agricultural sector. The mining sector as an industry, and the precious metals mining industry in particular, is therefore of strategic importance for the development and sustained growth of South Africa.

The mines, however, face a number of challenges, including the strength of the rand, rising mining costs and crime. Many people are dependent on the continued success of the precious metals mining industry for their own and their families' livelihoods. The theft of precious metals and mining equipment can, however, erode the profitability of marginal mines to such an extent that they would have to stop production and lay off some of their workforce. An important component of a study of this nature is the participation of mineworkers' unions; however, these unions declined to participate in this project. The participation of the unions would nevertheless present valuable insight into the mining industry and their participation should be sought in the future.

Due to the importance of the precious metals mining industry and the continuous criminal threat to the industry, the Chamber of Mines of South Africa approached the Institute for Security Studies (ISS) to investigate the occurrence of theft and various related issues. The statistical information this project is based on was provided by the mining sector and is for the period January 2000–December 2004.

Some of the mining houses have implemented orientation workshops to explain what type of employee conduct constitutes a crime and the importance of reporting crime. It was therefore important to test the perceptions of employees in the industry to ensure that these workshops are effective.

Despite advancements in crime detection and prevention technology, transgressions are nonetheless common at most mines and processing plants. The precious metals mining industry is still not capable of determining exactly how much product is lost during processing phases, leaving a window of opportunity for theft and corruption.

Reliable crime reporting is critical to determining the extent of the criminal threat facing the precious metals mining industry. Although most mines have developed processes to record and manage crime-related information, the methods used by the police and the mining industry are not standardised for efficient analysis purposes.

It became evident during interviews conducted for the study that there is a general perception in the mining industry that most stolen product sold on the black market ends up in some organised illegal business or syndicate. It is presumed that most stolen product is eventually disposed of by top-level syndicate members who supply organised criminal dealers. Statistics recorded on identified syndicates may therefore reflect the most reliable magnitude of losses suffered when it comes to approximating the extent of precious metals theft in South Africa. For the purpose of this document, 'recoveries' refer to stolen product that was detected and repossessed.

POSSIBLE EXTENT OF PRECIOUS METALS THEFT IN SOUTH AFRICA

Gold bearing material

A report by Peter Gastrow published in April 2001 claims that for the period 1994–98, gold to the value of R157,197,185 – or an average of R31,439,437 a year – was recovered in South Africa by the mines and the police.

Four gold mining houses and one gold refinery participated in the 2004 study: all statistics in this section reflect the information received from these participants.

The participating mining houses reported 69,053.205 kg to the value of R6,842,966.83 recovered gold bearing material (GBM) material to the police and that they recovered 3,112,352.365 kg to the value of R16,028,536.50 of GBM material internally during the period January 2000–December 2004. The police and participating mines recovered a total of R22,871,503 – or an average of R4,574,300 a year – during the period 2000–04.

Platinum group metals

According to the Gastrow study, the total value of detected stolen platinum group metals (PGM) material recovered by the police, Amplats, Implats and Lonmin from 1995–98 was approximately R60 million – or an average of R15 million a year.

Two platinum mining houses participated in the study undertaken in 2004: all statistics in this section reflect the information received from these participants.

The mining houses reported 271,148.697 kg to the value of R79,953,990.34 recovered PGM material to the police; in

addition, the PGM mines recovered 29,449,559.923 kg to the value of R34,384,668.81 of PGM material internally during the period January 1999–December 2004.

The average recovery for PGM material is approximately R17.5 million a year. There was a substantial increase in the value of recoveries made during 2000 (more than 135%). The participating mining houses' protection services confirmed that extensive operations were conducted during 2000, resulting in large recoveries.

CASE STUDIES

The Joint Investigation Group (JIG) classified precious metal smuggling syndicates into five levels. Level five being at the top of the hierarchy and Level one at the bottom. Level 5 syndicates are based outside South Africa and Level 4 through 1 are operates within South Africa.

The JIG identified three Level 5 gold smuggling syndicates supplied by 17 Level 4 syndicates operating within South Africa. To quantify the possible extent of GBM theft of the identified Level 4 syndicates in South Africa, an estimation based on the case study of one Level 4 syndicate identified in 2004 is illustrated. The identified Level 4 syndicate supplied the Level 5 syndicates with an average of R18 million worth of GBM a month. If it is assumed that each of the 17 Level 4 syndicates deal in 50% of the estimated average of R18 million a month, the Level 4 syndicates could be selling unwrought gold in excess of R1,836 billion a year. In comparison, Peter Gastrow estimated that approximately R1.8 billion was lost to the country a year during the period 1994–98. The illustrated 50% business success of the Level 4 syndicates could therefore be considered to be a very moderate estimation.

The JIG identified five Level 5 platinum smuggling syndicates active in South Africa. One shipment of 13 containers with an estimated value of R51 million was confiscated in 2004. The following illustrates the possible extent of PGM theft of the identified Level 5 syndicates in South Africa. If it is assumed that the Level 5 syndicates each receive one shipment worth an average of R51 million a year, they could be exporting more than R255 million worth of PGM per year. The question, however, is: How many shipments do they export?

Although the estimated figures provided by the JIG are not based on scientific calculations or exact reporting figures of the mines, they do reflect product stolen from mines and sold illegally by the criminal businesses identified thus far. It may not be possible to break down the information to the exact time and place of theft, but it does provide a better indication of the possible extent of theft of precious metals in South Africa.

LACK OF STANDARDISED REPORTING METHODS

Gold bearing material

According to the JIG intelligence operations, one Level 4 gold smuggling syndicate in 2004 sold approximately 250 kg of GBM with an estimated purity of 80%, a month. At an average of R90,000/kg, the value involved was R18 million (R22,500,000 x 80%) a month. In contrast, in 2004 the participating gold mining houses reported to the police 226 cases, involving 6,365 kg of GBM to the value of approximately R463,471. The statistics received on the estimations of one syndicate in correlation to the statistics received on all the recoveries reported to the police are therefore not comparable.

Furthermore, the participating gold mining houses reported 4,003 kg recovered GBM material to the police for the period January–December 2000, and 23,669 kg for the period January–December 2001. The police reported 25,561 kg recovered GBM material for the period January–December 2000, and 43,128 kg for the period January–December 2001.

Platinum group metals

According to the JIG intelligence operations, one syndicate in 2004 exported approximately 232,000 kg of PGM in one shipment. In contrast, the platinum mining houses participating in the study reported 271,149 kg recovered PGM material to the police for the period January 1999– December 2004. The statistics received on one shipment recovered from an organised syndicate was almost equivalent to all 1,836 cases reported by the mining houses to the police over a period of six years.

Furthermore, the participating platinum mining houses reported 69,668 kg recovered PGM material to the police for the period January–December 2000, and 4,374 kg for the period January–December 2001. In contrast, the police reported 931 kg recovered PGM material for the period January–December 2000, and 617,680 kg for the period January– December 2001.

Conclusion

The outlined discrepancies indicate a lack of standardised reporting methods within the mining industry as well as in correlation with the police. In order to facilitate reliable statistical reporting for the mining industry, all relevant role-players should agree on a standard in order to facilitate a comprehensive method of calculating comparative data for analytical purposes.

In addition, there should be consistency within the industry regarding the interpretation of the definitions of crimes, as well as what is recorded as an actual recovery in relation to what is considered a potential loss.

CONTENT ANALYSIS

The participating gold mining houses and refinery completed content analysis questionnaires for 194 cases of precious metals and property theft. These cases were recorded for the period January–June 2003. The two participating platinum mining houses completed content analysis questionnaires for 81 cases of precious metals theft that occurred during the period January–June 2003. All the cases from the participating platinum mines involved theft of PGM. No cases involving theft

of mine property or equipment were received for analysis. The questionnaire was designed to include anonymous information for basic crime analysis. The following findings were made:

- In the dataset, 67% of the PGM recoveries and 76% of the recoveries on gold mines were made inside the secure area of the mines or at the mines' security perimeters. Although a recovery at a control point inside the secure area or at a security perimeter indicates a successful security measure, it simultaneously indicates unsuccessful security measures up to that controlled point. Recording the exact location of every crime or recovery can be very helpful in determining both the weaknesses and effectiveness of security measures, especially with regard to the type of searches, position of surveillance cameras, physical barriers, etc.
- The profile of offenders was as follows: at gold mines, 56% of the offenders were unemployed and 41% were mine employees; and at platinum mines, 73% of the offenders were mine employees or contractors and 18% were unemployed. It was alarming to find that such a high percentage of offenders were trespassing on the secure mining areas while committing theft. It could be reasoned that trespassers found on mining areas could be thieves caught before the act. Trespassing is categorised as a 'petty crime', but if the high incidence of trespassing in correlation to theft is considered, a strong argument could be made that trespassing within a secure mining area should be considered more seriously.
- Thirty-eight per cent of the cases at gold mines resulted in guilty findings, while in 35% of the cases no suspects were apprehended and the cases remained undetected. Most (89%) of the guilty findings involved the loss of GBM, while most (72%) of the undetected cases involved loss of property. Of the platinum mine cases analysed, 24% were still pending at the time of the analysis. A further 42% of the cases were dealt with internally.
- No pattern was detected in the analysis of 71 gold mine convictions regarding the criteria for sentencing used in court. Sentences not only varied extensively, regardless of the type of crime, but it was also evident that the value of the crime held no consistent measure. Furthermore, the personal profiles of the offenders varied significantly for offenders receiving the same sentences. In order to regulate sentencing on cases, minimum sentencing could therefore be considered for specific categories of theft of precious metals.

PERCEPTION SURVEY

This survey was approached with the assumption that the main threat facing the mining industry did not come from external sources, and that theft could not occur from official mining operations without the involvement of some mining personnel. Survey questionnaires were therefore completed by 194 mineworkers and 106 security personnel. The perception survey was designed to test the understanding of crime and perceptions regarding the reporting of crime. The following findings were made:

- Half the respondents in the 'gold mineworkers' category did not answer the questions relating to the understanding of theft and illegal possession of precious metals correctly.
- A significantly high percentage (87%) of mineworker respondents thought they play an important role in the prevention and investigation of theft of GBM, PGM and equipment from the mine premises; however, only 54% of the mineworker respondents indicated that the reporting of theft is important. Training and orientation should therefore include the concepts of theft and unauthorised possession to ensure that employees clearly understand what conduct constitutes a crime. The importance of reporting crime should also be explained.
- Some 80% of the mineworkers believed that unions could play a part in the reduction of crime. However, all attempts to solicit the participation of the unions in the study failed. This does not preclude the possibility of their participation in further studies or the active participation of unions to fight crime in the workplace.

ORGANISED CRIME THREAT

The mining industry has recognised the importance of using a collaborative approach to address the organised crime threat facing the industry. Consequently, a joint initiative between the mining industry and the police, namely the JIG, was established in February 2002. The function and role of the JIG is to investigate and analyse the activities of high-ranking syndicates involved in the theft of precious metals.

During the period February 2002–May 2004, the JIG reported:

- 26 criminal cases of gold theft, with 42 arrests and recoveries to the value of R1,359,188; and
- 17 criminal cases of platinum theft, with 25 arrests and recoveries to the value of R11,855,777.

Further successes include R455,940 cash seized during arrests, while four cases involving asset forfeiture to the value of R2.4 million have been finalised. Another four cases involving R52.5 million are pending.

The approach to consolidate individual efforts into one focused crime management strategy seems successful. It could also be beneficial to evaluate the successes achieved by each mine and to identify best practice guidelines as an industry standard in order to avoid the movement of crime syndicates from high-security mines to less secure mines.

The scope of the study

INTRODUCTION

This study is a further endeavour to expand on the knowledge and understanding of the criminal threat that faces the precious metals mining industry in South Africa. Several findings and recommendations were made during a previous study conducted by Peter Gastrow and his team in 2001. These recommendations were acted upon by the precious metals mining industry, and the systems subsequently developed were used to compile the latest report. In return, new suggestions and recommendations are made herein to further enhance the capability of the precious metals mining industry to manage the crimes perpetrated against it.

THE PROJECT

The Institute for Security Studies (ISS) agreed to undertake a project to conduct further research into trends and implications of precious metals theft in South Africa.

The scope of the project included:

- analysing trends in the theft of gold and platinum in South Africa from 1999–2004, using data provided by the mining houses, the Chamber of Mines and the South African Police Service (SAPS);
- analysing perceptions of the industry role-players;
- examining the relationship between the mining industry and the SAPS;
- examining the possible role played by syndicates in the continuing theft of precious metals; and
- identifying potential risks and environmental factors.

METHODOLOGY

The research was conducted utilising qualitative and quantitative approaches commonly used in social science research and reflected in the scientific method. The analysis contextualises the implications of precious metals theft for the mining industry based on the trends identified in the following:

- Available data on the recovery of stolen gold and platinum over the past five years recorded by the mining houses and the SAPS (most mines only had reliable data from 2000).
- Interview surveys, informal interviews and meetings with the various role-players in the industry and through observation of risk and environmental factors undertaken by Crime Prevention Through Environmental Design (CPTED) specialists.

The methodology used during the course of the study encountered the following challenges:

- The participants from the mining houses made every effort to provide access to information but had to be careful not to disclose information that could possibly influence the interests of their shareholders. All the required information was not readily available due to the different reporting and data-capturing systems used by the various mining houses. Some information had to be transcribed on to new forms, influencing the correctness and completeness of the requested data.
- The nature of the mining business posed unique challenges. The industry functions on estimations of production, and return on investment is calculated on fluctuating product prices. Mining factors had to be taken into account during the research process as product losses can be caused by several different procedures during the precious metal extraction process. Sampling of ore during the extraction process is used to obtain more accurate estimations as to the value of the final product.
- The lack of resources and the difficulty experienced in obtaining statistical data resulted in the data-collection phase being extended.
- The data provided by the participants posed further constraints. In order to conduct comprehensive comparative statistical analysis on the theft of gold and platinum, it is acknowledged by the industry that variable factors such as employment figures, variances in production and the changing face of the mining industry could play a role in the trends and implications of theft. The mining sector does not, however, keep statistical data of crime in correlation with these factors, making it almost impossible using the information provided to draw scientific conclusions regarding the nature of the problem facing the mining industry.

CHAPTER 1

Introduction

ROLE OF THE MINING INDUSTRY IN SOUTH AFRICA

"South Africa is blessed with a special geological heritage. As such, the mining industry has been the bedrock of the South African economy for more than a century."

President Nelson Mandela, 104th Annual General Meeting of the Chamber of Mines of South Africa, 8 November 1994

The achievements of the mining industry and its contribution to the South African economy are truly remarkable. It is a crucial foreign exchange earner and a substantial contributor to economic production. The mining industry remains a leading employer and a leader in the field of scientific technological research, to the benefit of all South Africans.

The development of urban areas, including the massive concentration of economic activity in the central part of the country, would not exist if not for South Africa's geological heritage and the accomplishments of the mining industry.

The South African mining industry has the opportunity to deal with its new challenges, drawing on the skills, imagination and determination of all South Africans. By virtue of the place it occupies in the economy, the mining industry can make a special contribution to the transformation of society, and in the process improve the quality of life of South African citizens.

POSITIVE IMPACT OF THE MINING INDUSTRY ON SOUTH AFRICA

The mining industry has faced many challenges over the past decade. The most difficult of these was the strengthening of the rand exchange rate, which lowered revenue, followed by the rising cost of production in the sector. In the face of these challenges, the mining industry remains the foundation for economic growth and development, not only for South Africa but also for the rest of the African continent.

The platinum mining industry, for instance, is known to follow a social investment model, uplifting communities in the areas that are actively mined. The industry participants believe that the level of education in a community would improve if educational centres were developed. This in turn would create a bigger pool of future staff that would be better skilled. These mines follow a comprehensive approach to social development in their communities. They are involved in building and sustaining schools, health-care facilities, skills development, agricultural projects and the development and maintenance of infrastructure in the community. Platinum mines are by no means the only members of the mining industry to follow this method of social upliftment; most mining houses develop infrastructure where they are located.

The Southern African mining industry can be credited with making a number of contributions to economic activity in South Africa.[1] It:

- made up 6.3% of gross domestic product (GDP) in 2004, slightly down from the 6.7% recorded in 2003 as a result of the strengthening in the rand exchange rate. Adding in the indirect multiplier effects of the industry takes the overall contribution of mining to GDP closer to 15%;
- directly accounted for 9.9% of total fixed investment in the economy – a higher contribution than its direct contribution to GDP. Mining fixed investment grew by 3.7% to R22.3 billion in 2004, as the impact of multi-year capital projects became evident. Unfortunately, the impact of the strong rand and rising input cost pressures undermined the viability of both existing mines and new projects, thus dampening investment growth in the sector. The industry has approved capital projects to the value of about R90 billion for the period 2004–08;
- continues to act as a magnet for investment and dominated the Johannesburg Securities Exchange, accounting for 35.3% (or some R534 billion) of the market capitalisation of the JSE for 2004;
- contributed R89.4 billion to South African exports, representing 29.8% of South Africa's total merchandise exports in 2004. If beneficiated minerals are added to primary exports (such as ferro-alloys, steel, chemicals from coal, etc.), the minerals cluster accounts for more than half of total merchandise exports;
- moved 98.9 million tonnes of bulk commodity ores for export purposes in 2003 and was thus the dominant user of South Africa's railways and ports. The 98.9 million tonnes of bulk commodity exports represents 53% of Transnet's entire volume of transport for 2003;
- directly employed an average of 457,371 workers in 2004 versus 434,750 employees in 2003. On an indirect basis it is estimated that another 150,000 workers are employed in associated industries that either supply products to, or use products from, the mining industry. It is estimated that

some six million people are directly dependent for their daily subsistence on mine employees;
- accounted for 7% of people employed in the non-agricultural formal sector;
- paid R34.3 billion in wages and benefits to employees, which accounted for about 7% of the total compensation paid to private sector employees in 2004. This contributed substantially to domestic demand in the South African economy;
- paid R6.9 billion in direct taxes and R4.1 billion in other taxes during 2003. Direct taxes paid by the mining sector accounted for 10.4% of total corporate taxes received by government. The direct and indirect taxation contribution of mining to total government revenues was 3.6% in 2003;
- supports vitally important supply and demand relationships with South Africa's banking and financial, construction, engineering, manufacturing, transport and processing sectors;
- is the world's largest producer of PGM, gold, chromium, ferrochrome, vanadium, manganese and vermiculite. The industry was also a significant supplier of aluminium (world rank 8), antimony (3), coal (6), ferromanganese (3), fluorspar (3), iron ore (9), nickel (11), silicon (7), titanium minerals (2), uranium (9), zirconium (2) and alumino-silicates (2);
- mines some 60 minerals, the vast majority of which were exported to over 100 countries worldwide;
- accounted for a significant amount of the supply and demand for energy in South Africa. The industry consumed 32,620,848 megawatt hours, or 17.6%, of total electricity consumption in 2002. Through its coal mining sector the industry provided some 110 million tonnes of coal towards electricity generation, which accounted for about 90% of the electricity generated in the country in 2004. Some 41.1 million tonnes were consumed in the manufacture of synthetic fuels and accounted for 35% of liquid fuel production in South Africa;
- is responsible for significant infrastructure development. Some 3,000 km of railway line is, for example, attributable to the mining industry, along with three ports and a significant amount of bulk handling infrastructure at other ports; and
- provides social infrastructure for surrounding communities, including clinics, schools and social facilities in various parts of South Africa. The industry is often the sole provider of these facilities.

NEGATIVE IMPACT OF THE MINING INDUSTRY ON SOUTH AFRICA

While the positive impact of the mining industry is very important, the negative impact should also be noted. It was not the purpose of this study either to validate or criticise the mining processes and their impact on the environment in general, but some factors are the unfortunate by-products of the mining industry. Most of these factors have been acknowledged and are being addressed by the mining sector.

Mining activities are labour intensive and attract people from all over South Africa and neighbouring countries. Many thousands of labourers are migrant workers and they become 'strangers to their families'[2] due to long absences from home. This may lead to the breakdown of family cohesion and to detrimental changes in the social fabric of their originating communities.

Damage to the environment is another negative impact of the mining sector to South Africa. The environmental dangers inherent to mining cannot be ignored and include water, air and noise pollution. A report,[3] of the Chief Inspector of Mines refers to specific guidelines for the management of potential sources of pollution from mines. The Chief Inspector notes that "[r]esidual material from mining and associated beneficiation operations" are deposited on the surface or pumped into abandoned underground excavations. These are potential sources of pollution, as contaminants can migrate through the action of both wind and water.

In addition to the environmental and social risks, mineworkers are at risk from various other sources while underground. Some of these are physical dangers from rockfalls, rockbursts and flooding. Miners may also be exposed to contracting silicosis because "crystalline silica (quartz) is a component of nearly every mineral deposit in the country and is present as a component in almost every rock type".[4] Silicosis is a debilitating illness that may lead to disability and death if not diagnosed and treated in the early stages of exposure.

COMPLICATING FACTORS

There are fundamentally complex aspects to consider when precious metals theft is assessed. It is not possible to determine exactly how much ore is mined at each mine due to the nature and location of the sought after mineral. The yield of each mine is based on samples that are analysed by scientists in laboratories. Production targets are based on the estimations of surveyors, and metal accounting is done at each processing stage to determine the estimated value of the product based on the sample taken at that moment during processing.

The departments tasked with securing the mining industry against product theft are faced with a unique challenge: they have to provide security and protection for an item that is of undeterminable value and may take on several different forms, depending on the stage of processing. Furthermore, it is not possible to determine accurately how much of the product was stolen and how much was lost during the normal production process. However, one of the basic requirements of effective protection is knowledge of the item one is protecting, especially how much one must protect in order to determine if, or how much, has been lost. Protection services in the mining industry normally have to rely on recoveries to assist with estimations on how much could possibly have been lost.

Corruption within the mining industry should also not be disregarded. There are instances where employees and contractors have tampered with ore samples or deliberately falsified the reporting of measurements during mining.[5] This

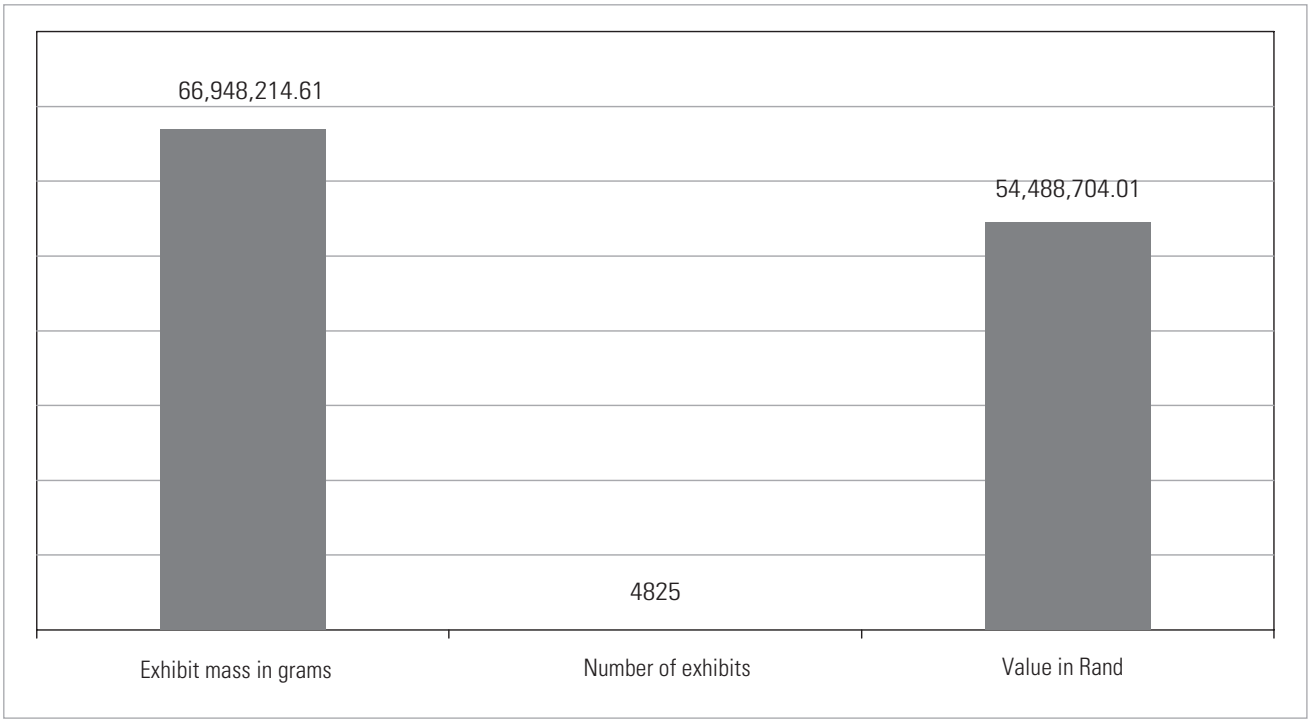


Figure 1.1: Number of exhibits in relation to weight and value

fraudulent activity does not relate directly to theft of precious metals but may have a substantial negative influence on the quantity and quality of the final product. These factors should be taken into account whenever possible losses are calculated.

Significant risk is added to the already dangerous task of mining by illegal (criminal) underground mining activities. Criminals entering the mines either by posing as mine employees or by using abandoned mine shafts are responsible for this dangerous practice. The uncontrolled and unplanned mining activities of these criminal miners can cause rock falls and cave-ins in passages used by mine employees if planned support structures that were intentionally left in the passages are removed or damaged.

ASSISTANCE TO THE MINING INDUSTRY BY THE FSL

The SAPS' Forensic Science Laboratory (FSL) has been an important component of the fight against the theft of precious metals in South Africa. Close cooperation exists between the

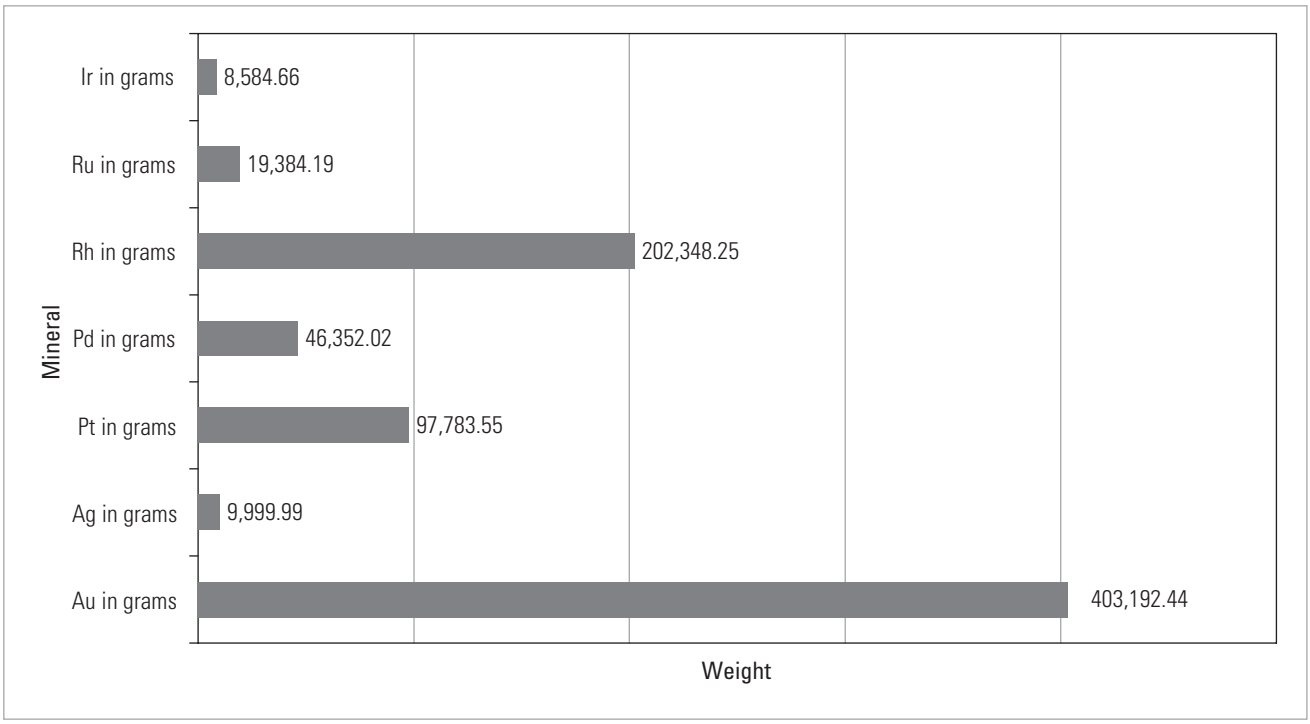


Figure 1.2: Exhibits examined by the FSL

FSL, police detectives investigating theft of precious metals cases and the individual mining houses' security departments. Precious metals product evidence is sent to the FSL for analysis in cases where arrests are made and the suspects are in custody. The FSL is able to provide detectives with a detailed report regarding the content and value of the package. This evidence can be used in court to obtain a conviction where the content of the package is disputed.

Figures 1.1 and 1.2 refer to the mass (in grams) and the value (in rand) of exhibits examined by the FSL for the period January 2000–May 2005. It is evident from these figures that the weight and value of the product examined by the FSL is high in relation to the number of cases. This can be explained by the practice of not sending all recovered product to the FSL but only the cases where substantial recoveries were made and where it would be difficult to obtain a guilty verdict from the court.

The 4,825 exhibits received by the FSL from January 2000–May 2005 contained valuable precious metals ranging from 4E PGM (platinum + palladium + rhodium + gold) to iridium, ruthenium and silver in various concentrations.

PRESSURES ON THE ECONOMIC HEALTH OF THE MINING SECTOR

The Impact of the Strong Rand and Rising Input Costs

Rand revenues to the Mining Sector have fallen sharply

- Despite the rise in US dollar commodity prices over the past three years, the rapid appreciation in the exchange rate has more than offset the US dollar price increases, with the result that rand commodity prices have fallen quite significantly.
- In 2003, despite slightly higher production volumes, the value of South African mineral sales fell a significant 15% or by R20 billion to a total of R117 billion. There was a modest recovery in mineral sales in 2004 to R125 billion – but this is way off the 2002 peak.
- Nearly all major commodities have experienced a decline in rand prices in 2003, 2004 and in 2005. Between 2002 and 2004 the rand appreciated 39% against the US dollar and continued to strengthen in 2005.
- The rand price of gold fell 22% from R104,400/kg in 2002 to R82,000/kg in 2005. This was despite the US dollar gold price rising by 38% from US$310/ounce to US$428/ounce in the same period.
- The production weighted basket price for 4E platinum group metals fell from R5,185/4E ounce in 2002 to R4,770/4E ounce as a result of the strong rand and the fall in palladium and rhodium prices.
- In the case of ferrous metals, despite significantly higher US dollar prices, between 2002 and 2004 the rand price of iron ore decreased by 18.1% to R123/tonne and the manganese price fell by 12.8% to R410/tonne. Bulk commodities such as these also lost further international market share due to logistical constraints.
- The actual export coal prices fell from R275/tonne to R215/tonne FOB in the same period. Figure 1.3 shows the percentage change in rand prices per unit between 2002 and 2004.

Costs have also risen strongly

Complicating the whole issue has been the significant cost pressures that the industry has faced over the past three years:

- Water prices have risen by 18% a year in each of the past three years.

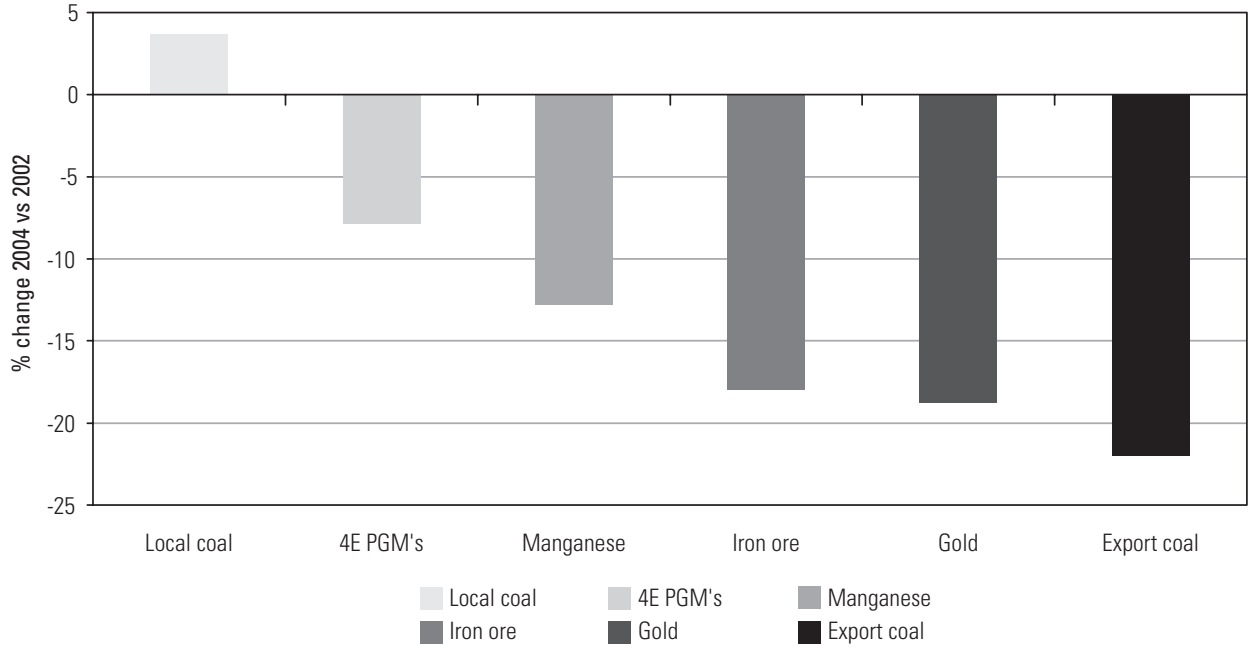


Figure 1.3: % change in Rand prices per unit for 4E PGM price, gold, local coal and export coal, 2004 versus 2002

- Spoornet's general freight business rail tariffs rose by 22% in 2002, 35% in 2003 and 16.5% in 2004, before a more sensible 3% increase in 2005.
- Steel prices have risen by double-digit rates in each year and remain at some 30% to 40% higher than comparable country steel prices.
- Labour costs have increased by more than the inflation rate in each of the past three years.

Unfortunately, substantial portions of the input cost structures of the industry are from monopoly service providers, which are generally inflexible and do not recognise the difficult position of the mining industry. Secondly, the legislative environment has made it more difficult for mining companies to be innovative and flexible (e.g. the prohibition on Sunday blasting).

Using the gold sector as a proxy for cost pressures affecting large-scale metalliferous mines, the average increase in total production costs (excl. Capital expenditure) was 13.4% year-on-year in 2004 versus only 1.4% for headline inflation and 4.3 % for CPIX inflation. The crucial issue here is that many of these costs are outside of the control of the mining companies, with the result that costs are increasing at a rate faster than normal inflation.

The pressure on revenues and rising costs have affected the viability of SA mining

With these cost pressures and the fall in revenues, many mining operations are now experiencing viability problems.

- In the gold sector about 50% of the industry (employing 90,000 people) is marginal at the current price. SA's gold production fell by 8.8% to 342.7 tonnes in 2004, the lowest level of gold production since 1931. This precipitous fall in production was caused by the dual impact of the fall in the rand gold price and the continued upward rise in costs, which accelerated the demise of older shafts.
- In the PGM sector, a number of new development projects are no longer viable and a number of established mines are facing viability problems. This will considerably reduce the future employment and economic development potential of the PGM mining industry.
- In the diamond sector, the same pressure has meant that over half of the established mines are marginal and nearly all of the alluvial diamond mines are loss making entities.
- In the ferrous metals mining sector, higher diesel costs (an import parity pricing issue), higher rail costs and other cost pressures have undermined the sector's competitiveness.

All stakeholders have a role to play in reducing cost pressures in the mining industry

While the industry grapples with these cost and viability issues, it is vitally important that all stakeholders, especially those that impact on the costs of the mining sector, contribute to lowering the cost pressures on the industry. Given the precarious position of many marginal shafts, failure to reduce the cost pressures will be detrimental to their own interests and may result in a smaller market in the future.

Source: Chamber of Mines of South Africa, Briefing note on the impact of the strong rand and the rising input cost pressures on the economic health of the mining sector, April 2005. (RAB BN rand/costs 21/04/05).

CHAPTER 2

Product theft: Gold

INTRODUCTION

The nature of the gold mining industry makes it vulnerable to theft: the product is easy to identify and to mine, it is relatively easy to sell and it can be mixed with legitimately acquired gold to be used in legal businesses. The theft of gold poses a substantial threat to the South African economy.

The economic impact of the mining industry is widespread, ranging from the energy sector to local municipal level. South African mines provide employment not only for South African citizens but also for migrant workers from several neighbouring countries.

The grade of gold produced is very low and has been declining steadily for the past decade, with the average grade decreasing from 5.37 grams/tonne in 1992 to 4.5 grams/tonne in 2002. Other factors affecting the profitability of the South African gold mining industry have been the strengthening of the South African rand and the rise in production costs relating to annual inflation. Loss in revenue due to crime is therefore very serious.

In order to assess crime in the gold mining industry, statistical information regarding recoveries, criminal cases reported and investigated, arrests made, as well as the mass and value of recovered gold-bearing material (GBM) was requested. The SAPS and the Chamber of Mines of South Africa made every effort to provide statistical information where available.

Furthermore, content analysis relating to some of the general variables used to detect patterns and trends in crime information was requested from the five participating gold mining houses and refinery. As the different mining houses and refinery did not have compatible crime databases, a standardised questionnaire was completed for each case of GBM theft or property theft that occurred at the participating mining houses and refinery during the period January–June 2003. These questionnaires were captured in a central database for multivariate analysis.

CRIME STATISTICS

It is explained in Peter Gastrow's April 2001 report[6] that the police handed in all recovered GBM (whether refined or unrefined) for processing at the mines. The value determined by the mines for the recovered product was then divided by an average gold price of R50 to determine the weight in grams of precious metal recovered. The recovered tonnage therefore reflected refined gold.

This method has changed since the Gastrow study. The police now send the recovered product to the mines or police FSL to determine the value, based on the retail price of the day. The recovered tonnage is now recorded in total mass of GBM recovered and the value is based on mine or police laboratory estimations.

The methods used to compute statistics for the police as well as for the mining industry are not standardised and therefore inhibit efficient comparative analysis. In particular, statistics to determine the mass of detected gold and platinum group metals (PGM) stolen from mines and refineries is an aspect requiring further consideration by both the police and the Chamber of Mines.

The follow-up study was initially intended for the period January 1999–December 2004 to follow directly on the Gastrow study. Since the Gastrow study, some of the mining houses changed their statistical systems, resulting in information relating to 1999 not being readily available. As comprehensive data was only available from January 2000–December 2004 at all the participating mining houses, the follow-up study relates

Table 2.1: Police statistics of GBM recovered from January 2000–June 2003

Year	Mass in kg	Cases	Arrests
2000	25,560.9	2,164	1,549
2001	43,127.9	1,441	1,497
2002	544,987.3	1,806	1,332
2003	19,578.5	1,201	867
Total	**633,254.6**	**6,612**	**5,245**

Table 2.2: Cases of GBM theft investigated by police from January 2000–June 2003

Branch	2000	2001	2002	2003	Total
Klerksdorp	240	232	198	321	991
Barberton	999	441	759	347	2,546
Polokwane	79	75	35	53	242
West Rand	186	228	220	210	844
East Rand	224	109	107	58	498
Rustenburg	6	9	11	1	27
Lichtenburg	2	0	99	0	101
Johannesburg	63	33	90	76	262
Welkom	365	314	287	135	1,101
Total	**2,164**	**1,441**	**1,806**	**1,201**	**6,612**

to this five-year period. The police supplied information for the period January 2000–June 2003.

POLICE STATISTICS

The Diamond and Precious Metal branches that are still operational, investigate all cases concerning diamond and precious metals theft in South Africa. A complete set of statistics could therefore be obtained from the police.

At the time the interviews were conducted, the police had 13 functioning Diamond and Precious Metal branches, but they were in the process of being incorporated within other SAPS investigative units. Four of these branches, located in areas where diamond thefts are most prevalent, stated that no precious metals theft cases were reported or investigated for the period January 2000–June 2003.

The statistics received from the police are set out in Table 2.1. These statistics were compiled by the Pretoria head office from information obtained from nine branches that reported theft of precious metals cases investigated for the period January 2000–June 2003. These branches are Klerksdorp, Barberton, Polokwane, West Rand, East Rand, Rustenburg, Lichtenburg, Johannesburg, and Welkom.

The nine Diamond and Precious Metal branches collectively investigated 6,612 cases of GBM theft (see Table 2.2) and a further 1,014 cases of PGM theft (see Table 3.3 in Chapter 3) for the period January 2000–June 2003. The total number of precious metals theft cases investigated by the police for the 42-month period is 7,626.

There was an increase in GBM recoveries made in 2002 as shown in tables 2.2 and 2.3. The police stated that these statistics correlate with undercover investigation operations conducted to buy GBM.

As shown in Table 2.3, the nine branches recovered 633,254.6 kg of GBM and a further 1,002,572.2 kg of PGM (see Table 3.2 in Chapter 3) during the period January 2000–

Table 2.3: GBM recovered (in kg) by police from January 2000–June 2003

Branch	2000	2001	2002	2003	Total
Klerksdorp	7.0	6.5	9.0	7.0	29.5
Barberton	3,423.9	420.1	471.0	179.0	4,493.9
Polokwane	31.5	3.2	1.5	11.7	47.9
West Rand	175.1	325.3	148.4	19.2	668.0
East Rand	649.0	503.0	54.5	78.8	1,285.3
Rustenburg	0	11,119.0	68,494.0	0	79,613.0
Lichtenburg	1.6	0	1.3	0	2.9
Johannesburg	638.3	4.5	14.0	15.0	671.8
Welkom	20,634.5	30,746.3	475,793.7	19,267.8	546,442.2
Total	**25,560.9**	**43,127.9**	**544,987.3**	**19,578.5**	**633,254.6**

Table 2.4: Arrests made by police for GBM theft from January 2000–June 2003

Branch	2000	2001	2002	2003	Total
Klerksdorp	240	232	198	321	991
Barberton	118	84	119	61	382
Polokwane	26	20	9	23	78
West Rand	519	595	342	131	1,587
East Rand	134	57	105	47	343
Rustenburg	0	0	0	0	0
Lichtenburg	4	0	26	0	30
Johannesburg	27	5	26	42	100
Welkom	481	504	507	242	1,734
Total	**1,549**	**1,497**	**1,332**	**867**	**5,245**

June 2003. The combined total for PGM and GBM recovered for the same period is 1,635,826.8 kg (1,636 metric tons). It should be noted that the tonnage of these recoveries reflects unrefined product.

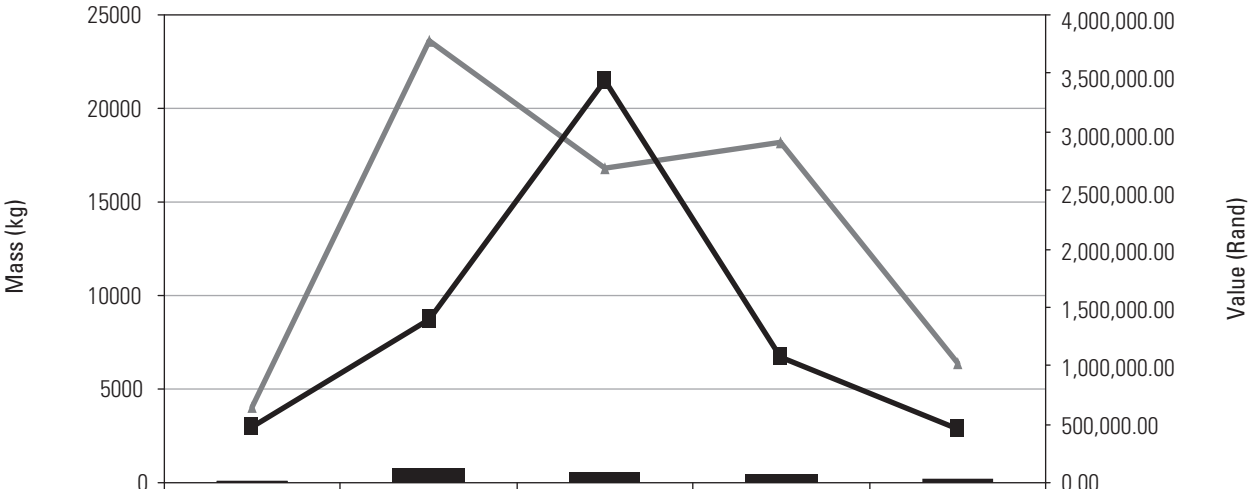
As shown in Table 2.4, during the period under study, 5,756 arrests for precious metals theft related cases were made, including 5,245 arrests for GBM cases and 511 arrests for PGM cases (see Table 3.4 in Chapter 3).

The decrease in the number of arrests by the police for theft of GBM during 2002 can be attributed to a number of undercover operations performed by the precious metals mining industry during that period. The average weight of GBM recovered per arrest increased from 28.8 kg in 2001 to 40.9 kg in 2002.

STATISTICS FROM THE SOUTH AFRICAN GOLD MINING INDUSTRY

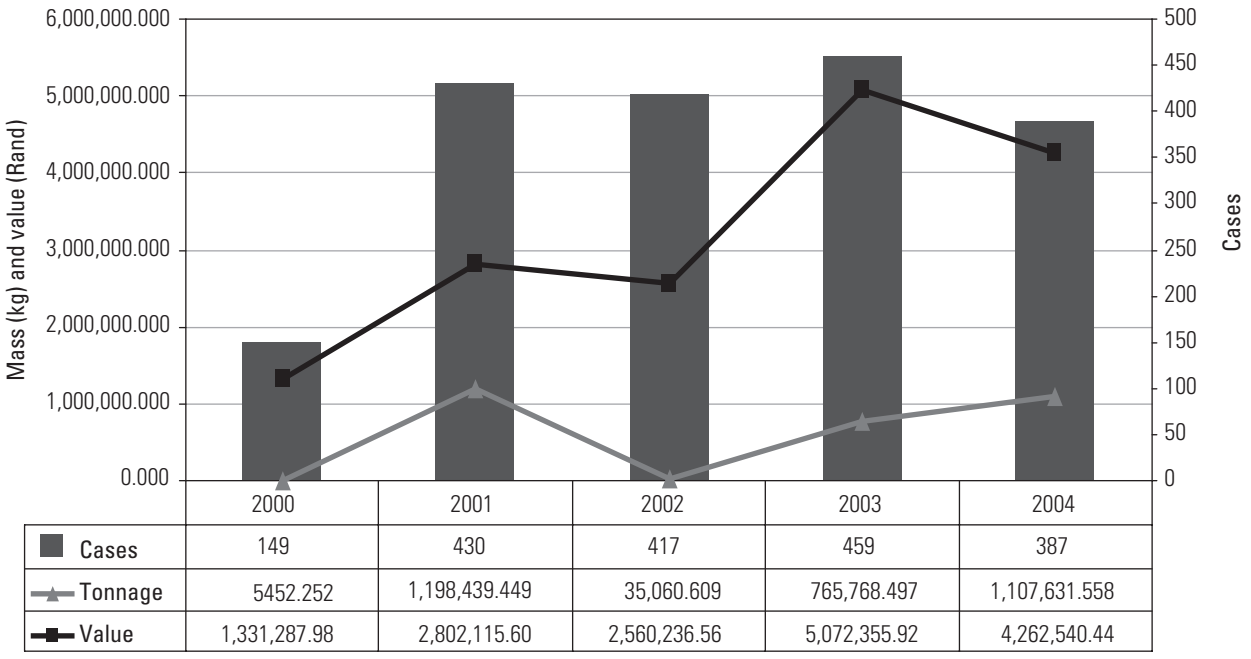
Since 1998, most mines have developed comprehensive databases to record information pertaining to product theft. The need to be more transparent with crime information was acknowledged and resulted in collaborative investigations and the sharing of information among the mining houses as well as with the police.

Four gold mining houses and one gold refinery participated in this current study. As reflected in figures 2.1 and 2.2, the participating mining houses reported 69,053.205 kg to the value of R6,842,966.83 recovered GBM material to the police, and recovered 3,112,352.365 kg to the value of R16,028,536.50 of GBM material internally during the period January 2000–



	2000	2001	2002	2003	2004
Cases	123	697	525	373	226
Tonnage	4,002.768	23,669.416	16,767.693	18,238.780	6,374.548
Value	477,471.70	1,392,524.70	3,431,175.46	1,078,323.72	463,471.25

Figure 2.1: Mine statistics of GBM theft reported to police January 2000–December 2004



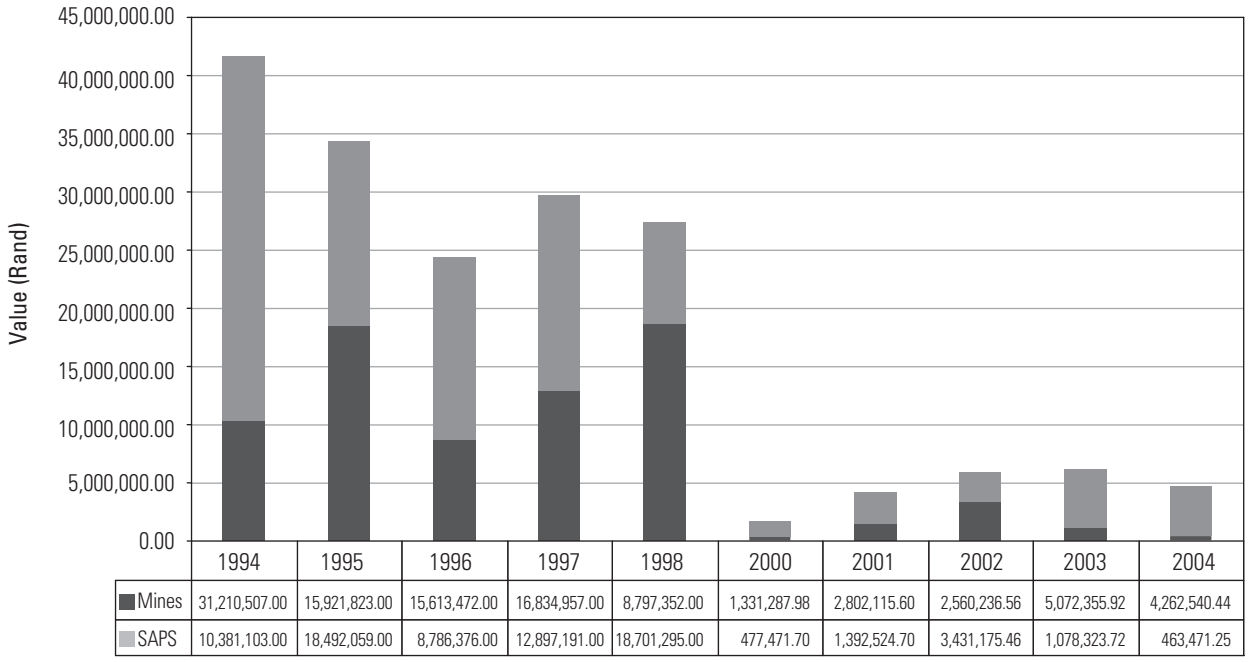
	2000	2001	2002	2003	2004
Cases	149	430	417	459	387
Tonnage	5452.252	1,198,439.449	35,060.609	765,768.497	1,107,631.558
Value	1,331,287.98	2,802,115.60	2,560,236.56	5,072,355.92	4,262,540.44

Figure 2.2: Mine statistics of GBM theft reported/dealt with internally January 2000–December 2004

December 2004. Again, the increase in GBM recoveries made in 2002 as a result of investigation projects conducted to buy GBM with undercover operations are reflected in figures 2.1 and 2.2.

The participating mining houses reported 4,002.768 kg recovered GBM material to the police for the period January–December 2000, and 23,669.416 kg for the period January–December 2001 (see Figure 2.1). The police reported 25,560.9 kg recovered GBM material for the period January–December 2000, and 43,127.9 kg for the period January–December 2001 (see Figure 2.1). It is therefore clear that the reporting methodology used by the mining industry and police are not compatible for comparative analysis purposes.

The information relating to the period 1994–98 is from the Gastrow report. During the period of the Gastrow study, the police and mining houses reported recoveries separately. In order to calculate the totals pertaining to recoveries of stolen GBM, the statistics of the mining industry and police were added together. Since the previous study was undertaken, the mining industry has started to report some of the recoveries



	1994	1995	1996	1997	1998	2000	2001	2002	2003	2004
Mines	31,210,507.00	15,921,823.00	15,613,472.00	16,834,957.00	8,797,352.00	1,331,287.98	2,802,115.60	2,560,236.56	5,072,355.92	4,262,540.44
SAPS	10,381,103.00	18,492,059.00	8,786,376.00	12,897,191.00	18,701,295.00	477,471.70	1,392,524.70	3,431,175.46	1,078,323.72	463,471.25

Figure 2.3: Value of GBM theft reported from 1994–2004

made by the mining houses to the police. The police statistics therefore reflect not only recoveries made by the police, but include a number of recoveries made by the mining houses.

Figure 2.3 shows the significant decrease in recovered gold from 1994–2004. (Statistics for 1999 were not made available by all the participating mining houses).

There was a decrease of more than 80% in the value of recovered gold from 1994–2004. The mining houses attributed the significant decrease to the considerable improvement in security and the collaborative approach to address theft in the mining industry since the previous ISS study was undertaken in 1998. It is also the perception of the mining houses that due to the improved security in high-yield areas, gold theft shifted to lower-yield areas, thereby curbing thefts with high values.

It cannot, however, be ascertained if this significant decrease was attributed to different reporting methods adopted since 1998. The recovered tonnage is now recorded in total mass of GBM recovered, and the value is based on the estimations of the mine or police laboratories, using the retail price of the day. Previously, an average gold price of R50 was used to determine the weight in grams of refined precious metals recovered.

CRIME ANALYSIS

The participating gold mining houses and refinery completed content analysis questionnaires for 194 cases of precious metals theft and property theft for the period January–June 2003. The questionnaire was designed to include anonymous information for basic crime analysis. The property theft cases included mine property such as equipment, tools, safety clothing and shoes supplied by the mines, hereinafter referred to as 'property'.

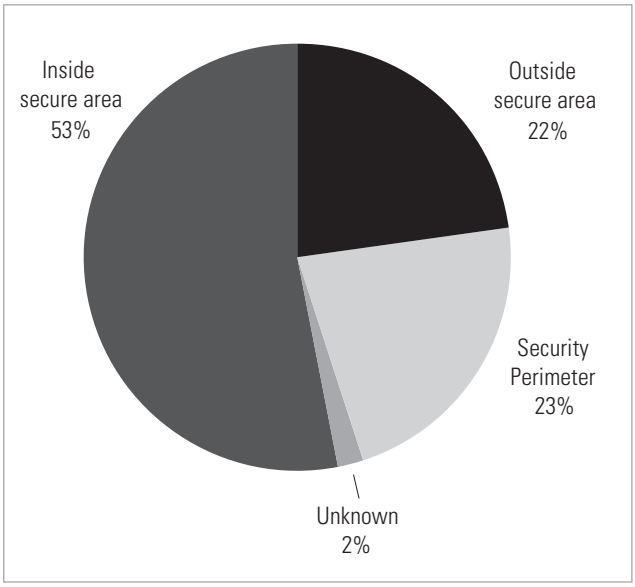


Figure 2.4: Area of recovery (%)

Recovery of product

Information relating to the *area* where recoveries were made was requested. By analysing the areas where recoveries took place it is possible to determine where the greatest challenges lie for the prevention and detection of theft.

Recoveries are, however, only considered a possible indicator of a breach in the security barriers employed by the mine, as GBM is an easily distinguishable product in most of the production stages. A factor that compounds the problem of curbing GBM theft is the availability of GBM from surface sources. Gold can, for instance, be obtained from a variety of legitimate sources, such as from the recovery of old jewellery and by recycling redundant computer hardware; or illegally, from illegal mining activity and theft. Most of these sources

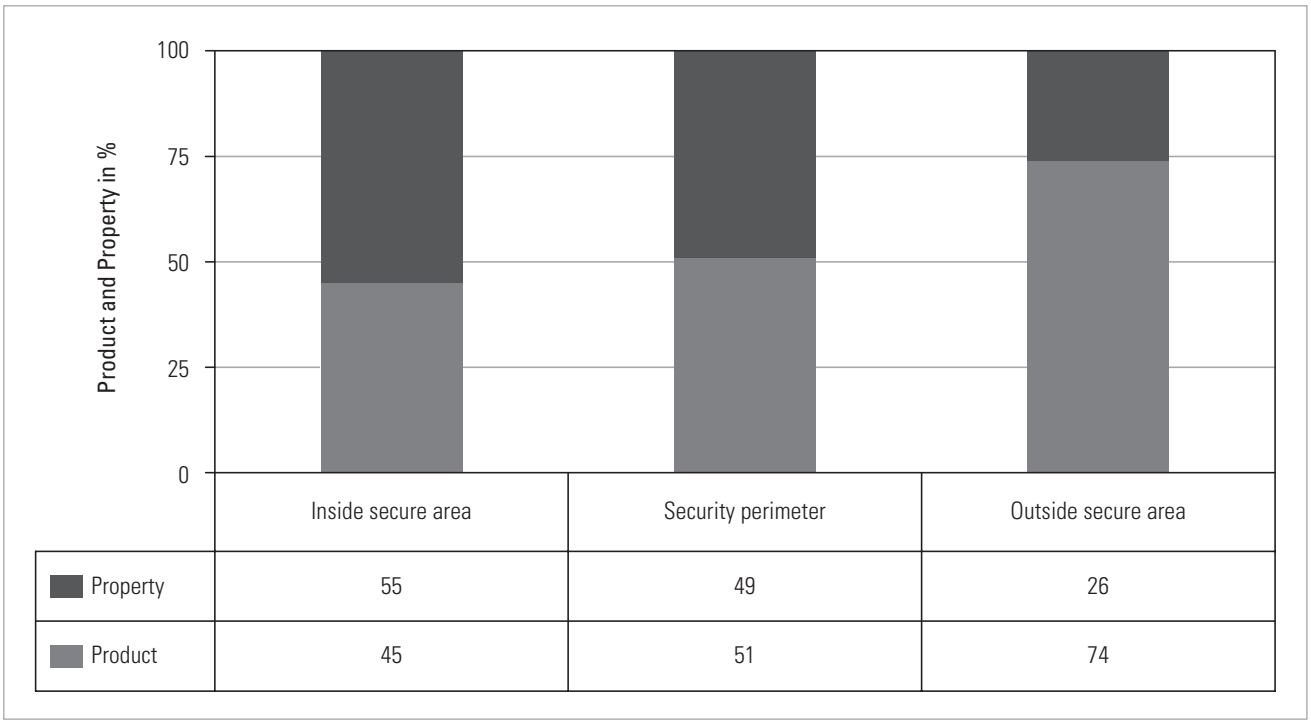
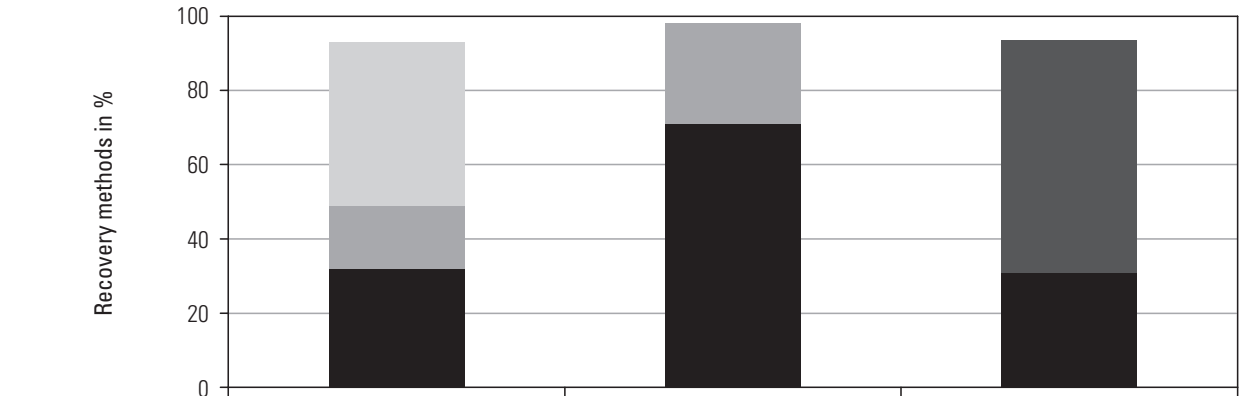


Figure 2.5: Area of recovery (GBM and mine property)



	Inside secure area	Security perimeter	Outside secure area
Investigation			62
Reported	44		
Surveillance	17	27	
Searches	32	71	31

Figure 2.6: Area of recovery (recovery methods)

cannot be controlled or monitored by the gold mining industry, complicating the process of estimating how much product was lost from the mines themselves. Figures 2.4 and 2.5 illustrate the recovery of product and property in specific areas.

Recoveries within security perimeters indicate effective prevention as the product is still under the control of the mine. However, recoveries made outside the secured areas indicate effective recovery methods, but simultaneously imply ineffective prevention as the product was removed from the control of the mining house.

As reflected in Figure 2.4, more than half [53% (102/194)] of the recoveries analysed were made inside the secure area of the mines, and a further 23% (45/194) of the recoveries were made at the security perimeters. Most of the recoveries [74% (31/42)] made outside the secure area of the mines involved GBM, and 55% (56/102) of the recoveries made inside the secure area involved mine property or equipment (see Figure 2.5).

Security measures utilised have three main purposes in terms of the prevention of crime, namely: to detect the unauthorised removal of GBM and mine property; the recovery of attempted efforts to remove GBM and mine property; and to discourage opportunistic offenders. Figure 2.6 illustrates the different *recovery methods* used in the cases analysed in the dataset.

As shown in Figure 2.6, inside the secure area 44% (45/102) of the crimes analysed were reported to security. It should be noted that all the crimes (45/45) reported to security related to loss of property. No loss of GBM was reported.

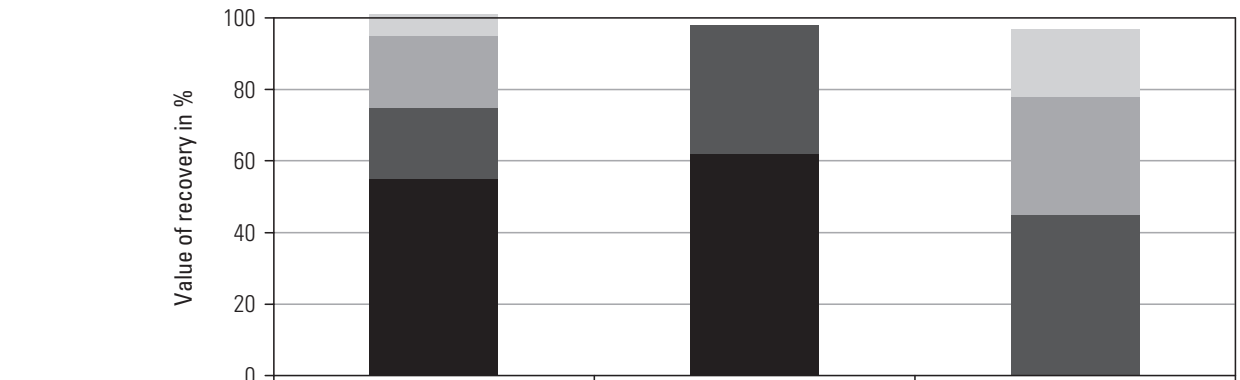
Outside the secure area of the mines, 62% (26/42) of the crimes were detected by means of investigation (Figure 2.6). It should be noted that in 22% of the cases, the recovery was made outside the secured perimeters of the mines. This indicates that all security measures implemented to secure the product inside the mine perimeters failed in these cases: 74% of these cases involved the loss of GBM which was only recovered through successful investigative operations.

The *value* of the recovery is another consideration to take into account. Crime is a form of business; therefore criminals too consider profitable solutions measured against the assessed risk involved. Increased security measures for certain stages of the production process should therefore correlate with the increased value of the product. Figure 2.7 illustrates the value of recoveries made in relation to the area where it was found.

With reference to the value of property such as shoes and overalls or GBM stolen in the dataset, 55% (56/102) of the recoveries made inside the secure area and 62% (28/45) of the recoveries made at the security perimeters of the mines involved GBM or property with a value of less than R500. Note that an average of 52% (100/194) of all the recoveries made had a value of less than R500. Recoveries made outside the secure area of the mines mostly involved GBM or property with a value greater than R2,500 [52% (22/42)] (see Figure 2.7).

Further analysis of the dataset indicated that recoveries made at the security perimeters of the mines with a value lower than R500 were mostly detected by security searches [82% (23/28)]. Of the recoveries made inside the secure area of the mines with a value lower than R2,500, 38% (29/76) were detected by means of security searches, 13% (10/76) were observed through surveillance and 46% (35/76) had been reported to security. Outside the secure area, recoveries of GBM or property with a value lower than R2,500 were mostly made through investigation [63% (12/19)] and surveillance or routine searches [37% (7/19)].

Recoveries made outside the secure area of the mines that involved GBM or property with a value between R2,500 and R10,000 were mainly detected through investigation [71% (10/14)] and surveillance or routine searches [29% (4/14)].



	Inside secure area	Security perimeter	Outside secure area
More R10000	6		19
R2500 - R10000	20		33
R500 - R2500	20	36	45
Less R500	55	62	

Figure 2.7: Area of recovery (value of GBM and mine property)

The manner used by offenders to commit theft on mines was requested to determine common places and methods used. Information relating to where stolen GBM or property was concealed and subsequently recovered was analysed. In a criminal business, methods are constantly evaluated and improved to correlate with the security measures utilised to prevent theft. Criminals test the security defences using a variety of methods to find a breach through which to move stolen product. Figure 2.8 illustrates the most *common places* where recoveries were made in the dataset.

In cases where offenders used clothing or anything else on the body to conceal stolen GBM or property, it was established that:

- 83% (15/18) of the offenders were detected at the security perimeter;
- 94% (17/18) of the offenders were detected by means of security searches;
- 28% (5/18) of the offenders were found guilty in court;
- 50% (9/18) of the recoveries were dealt with internally;
- 56% (10/18) of the recoveries involved theft of property; and
- 89% (16/18) of the recoveries involved GBM or property with a value less than R500.

In cases where recoveries were made at the residence of the offenders, it was established that:

- 94% (15/16) of the recoveries were detected by means of investigation;
- 25% (4/16) of the offenders were found guilty in court;
- 38% (6/16) of the recoveries were dealt with internally;
- 56% (9/16) of the recoveries involved theft of property; and
- 44% (7/16) of the recoveries involved GBM or property with a value less than R500.

In cases where offenders used vehicles (sedan, taxi or truck) to conceal stolen GBM, it was established that:

- 40% (8/20) of the recoveries were made at the security perimeter;
- 50% (10/20) of the recoveries were made outside the mine area;
- 70% (14/20) of the recoveries were made through security searches;
- 65% (13/20) of the offenders were found guilty in court;
- 10% (2/20) of the recoveries were dealt with internally; and
- 55% (11/20) of the recoveries involved GBM or property with a value less than R10,000.

Result of cases

The role-players involved in the mining industry perceive the successful *result of crime* differently. The criminal court system regards a successful result as the conviction of a guilty person and the acquittal of an innocent person. The police regard a successful result as the arresting of offenders and the preparation of evidence to be presented in court that proves the acts constituting the crime implicating the accused. The mining industry regards a successful result in relation to the detection of an attempted theft before the product was removed, and also considers the recovery of stolen product to be a successful result.

Certain losses that are accepted in the mining industry to be as a result of product processing or part of the operational process provide an opportunity for the criminal business to function successfully. To the offender, even the unpunished theft of mine safety shoes constitutes a successful result that inspires further criminal activity.

Figure 2.9 shows the result of the cases analysed in the dataset. A significant 38% (72/194) of the cases resulted in a

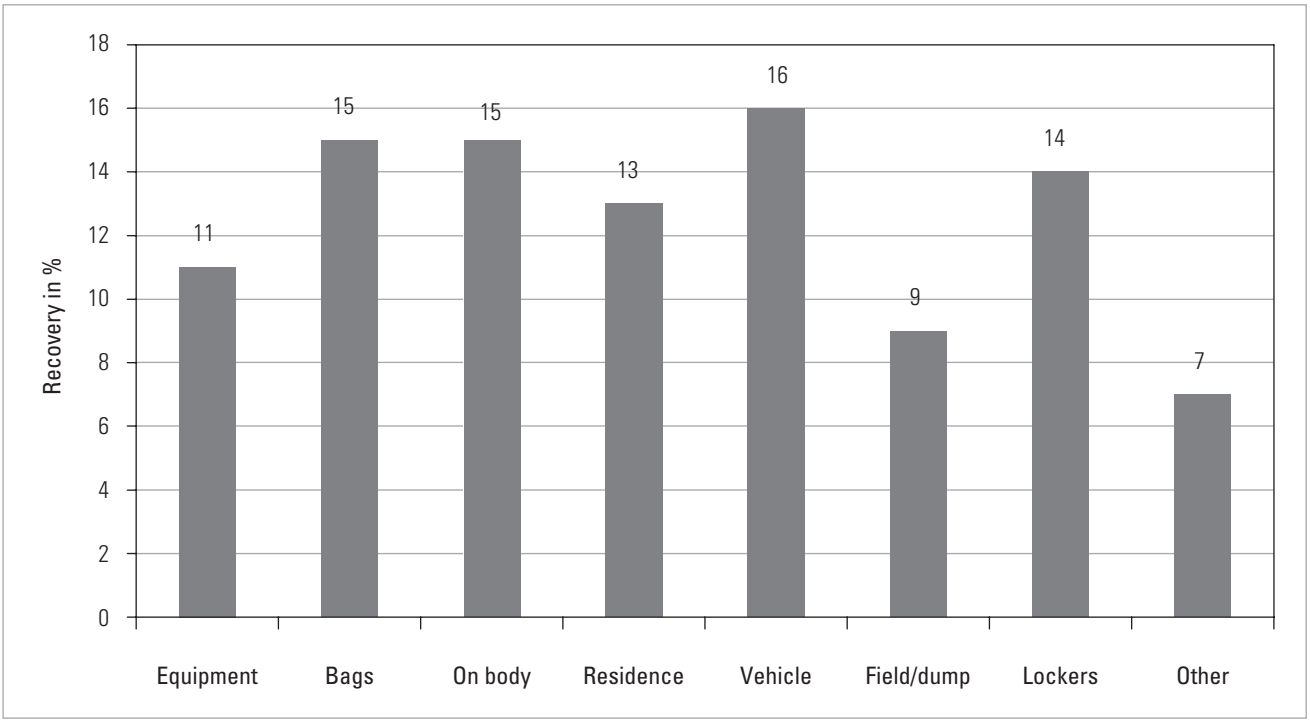


Figure 2.8: Common places of recovery

guilty verdict in court. In a further 35% (66/194) of the cases, no suspects were apprehended and the cases were closed as 'undetected'.

Regarding the categories of crime in the cases analysed, 56% (108/194) involved theft of mine property and 44% (86/194) of the cases involved theft of GBM. Most of the cases resulting in guilty findings involved the loss of GBM, and most of the undetected cases and cases dealt with internally involved loss of property (see Figure 2.10).

Information pertaining to the court sentences given in the cases that resulted in a *guilty verdict* was requested. The

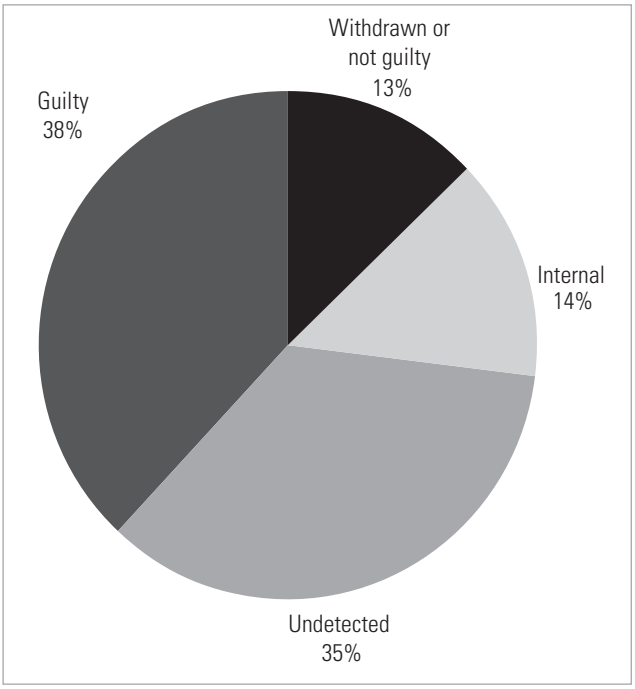


Figure 2.9: Result of cases (%)

victims of crime as well as potential offenders consider a consistent and inflexible criminal justice system to be reliable and effective. A minimum sentencing policy in certain crime categories has proven to be an effective method in providing consistent and inflexible sentencing of convicted persons. The crime categories considered for this policy are evaluated with reference to the risk posed by the crime.

Figure 2.11 illustrates the court sentences given to convicted offenders in relation to the value and type of recovery.

Figure 2.11 shows the value indexes of the property and GBM in the analysed cases that resulted in a guilty verdict in court:

- 54% (39/72) of the recoveries had a value of less than R500;
- 22% (16/72) of the recoveries had a value between R500 and R2,500;
- 18% (13/72) of the recoveries had a value between R2,500 and R10,000; and
- 6% (4/72) of the recoveries had a value greater than R10,000.

Regarding the analysed cases that remained undetected:

- 44% (29/66) of the recoveries had a value of less than R500;
- 24% (16/66) of the recoveries had a value between R500 and R2,500;
- 24% (16/66) of the recoveries had a value between R2,500 and R10,000;
- 8% (5/66) of the recoveries had a value greater than R25,000.

With reference to the cases in the dataset that were dealt with internally:

- 67% (18/27) of the recoveries had a value of less than R500; and

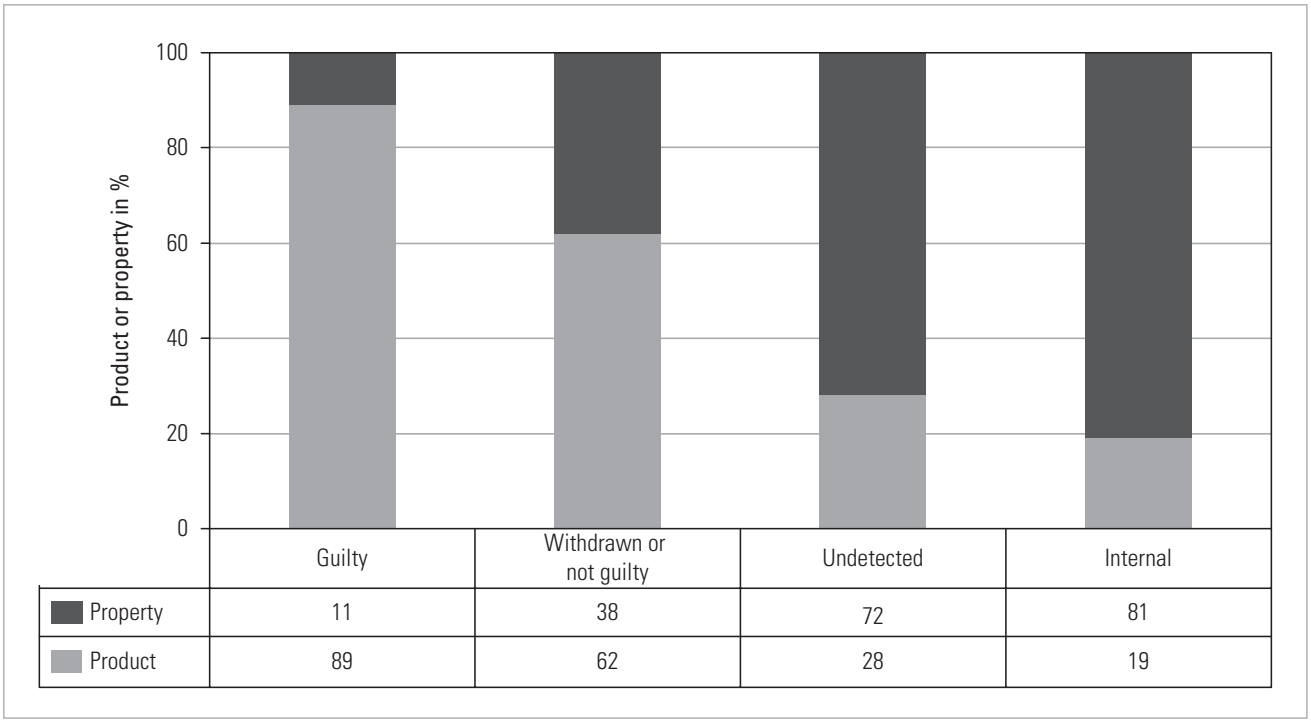


Figure 2.10: Result of cases (GBM and mine property)

- 19% (5/27) of the recoveries had a value greater than R10,000.

The sentences given to offenders found guilty of crimes in the dataset varied extensively. Offenders found guilty of cases that involved attempted theft of GBM, illegal possession of GBM or theft of GBM with a value of less than R500 received the following sentences:

- 60% (21/35) of these offenders received a fine;
- 20% (7/35) of these offenders received a suspended fine; and
- 20% (7/35) of these offenders received a suspended prison sentence.

Of the offenders that received a fine or suspended fine for attempted theft of GBM, illegal possession of GBM or theft of GBM with a value of less than R500, the following fines were handed down:

- 56% (15/28) of the offenders received a fine of less than R1,000;
- 14% (4/28) of the offenders received a fine between R1,000 and R1,500;

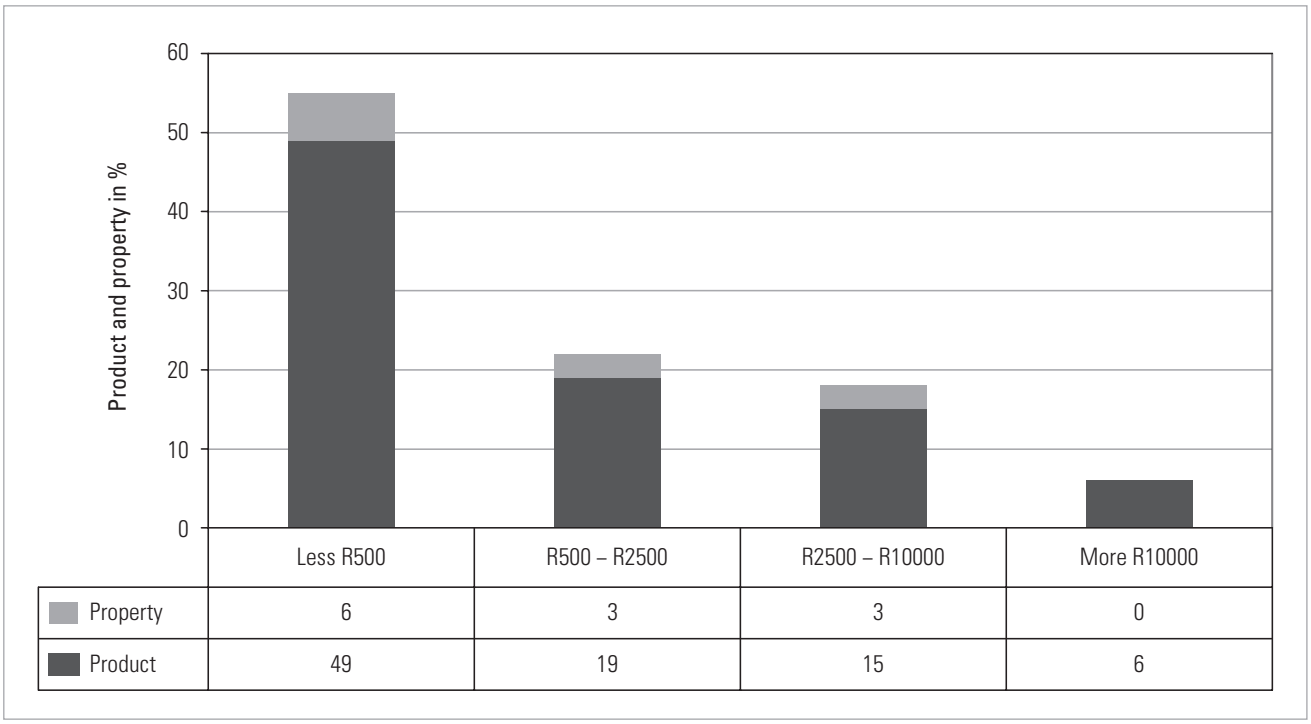


Figure 2.11: Guilty verdicts: Value of GBM and mine property

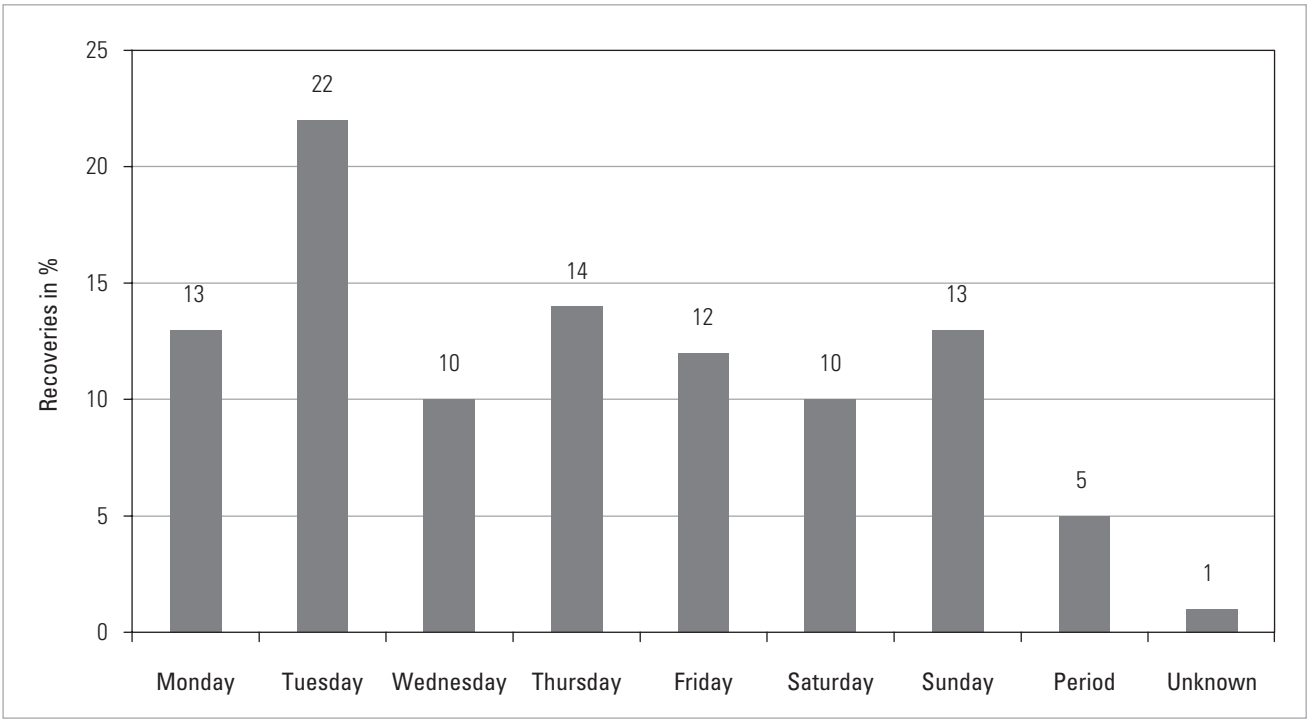


Figure 2.12: Day of recovery

- 18% (5/28) of the offenders received a suspended fine between R2,000 and R3,000; and
- one offender convicted for illegal possession of GBM received a fine of R6,000.

Of the offenders that received a suspended prison sentence for attempted theft of GBM, illegal possession of GBM or theft of GBM with a value of less than R500, the following sentences were handed down:

- six offenders [85% (6/7)] received a suspended prison sentence of 12 months or less; and
- one offender [15% (1/7)] received a suspended prison sentence of five years.

Offenders found guilty of cases that involved attempted theft of GBM, illegal possession of GBM or theft of GBM with a value between R500 and R2,500 received the following sentences:

- 50% (7/14) of these offenders received a fine of R4,000 or more;
- 21% (3/14) of these offenders received a suspended fine; and
- 14% (2/14) of these offenders received a suspended prison sentence of two years or more.

Offenders found guilty of cases that involved attempted theft of GBM, illegal possession of GBM or theft of GBM with a value between R2,500 and R10,000 received the following sentences:

- 37% (4/11) of these offenders received a fine of R1,000 or less;
- 37% (4/11) of these offenders received a suspended fine; and
- 18% (2/11) of these offenders received a suspended prison sentence of 12 months or less.

Of the four offenders found guilty of cases that involved attempted theft of GBM, illegal possession of GBM or theft of GBM with a value greater than R10,000:

- three of these offenders received a fine of less than R1,500; and
- one received a fine of R10,000.

Crime patterns

It is important to correlate patterns found in the days and time frames that recoveries are made with routine security procedures, specific contractors on site, specific employees working on the shifts and specific security personnel on duty. It is often found that more recoveries are made when specific security personnel are on duty or when specific security procedures are implemented, indicating more effective results.

Figure 2.12 reflects the days on which recoveries of stolen GBM material or mine property was made in the dataset. Most [22% (43/194)] of the recoveries were made on Tuesdays: note that 63% (27/43) of these cases involved theft of GBM.

Figure 2.13 reflects the times at which recoveries of stolen GBM material or mine property was made in the dataset. Most [27% (53/194)] of the recoveries were made between 18:01 and 00:00: note that 87% (46/53) of these cases involved theft of GBM.

In 30% (59/194) of the cases analysed, the respondents did not describe the area where the recoveries of GBM material or mine property were made. For analysis purposes, Figure 2.14 reflects only the cases where the information was available.

The following reflect the areas in the dataset where most recoveries were made:

- 35% (47/135) of the recoveries were made outside the mine area;
- 28% (38/135) of the recoveries were made at the plants; and

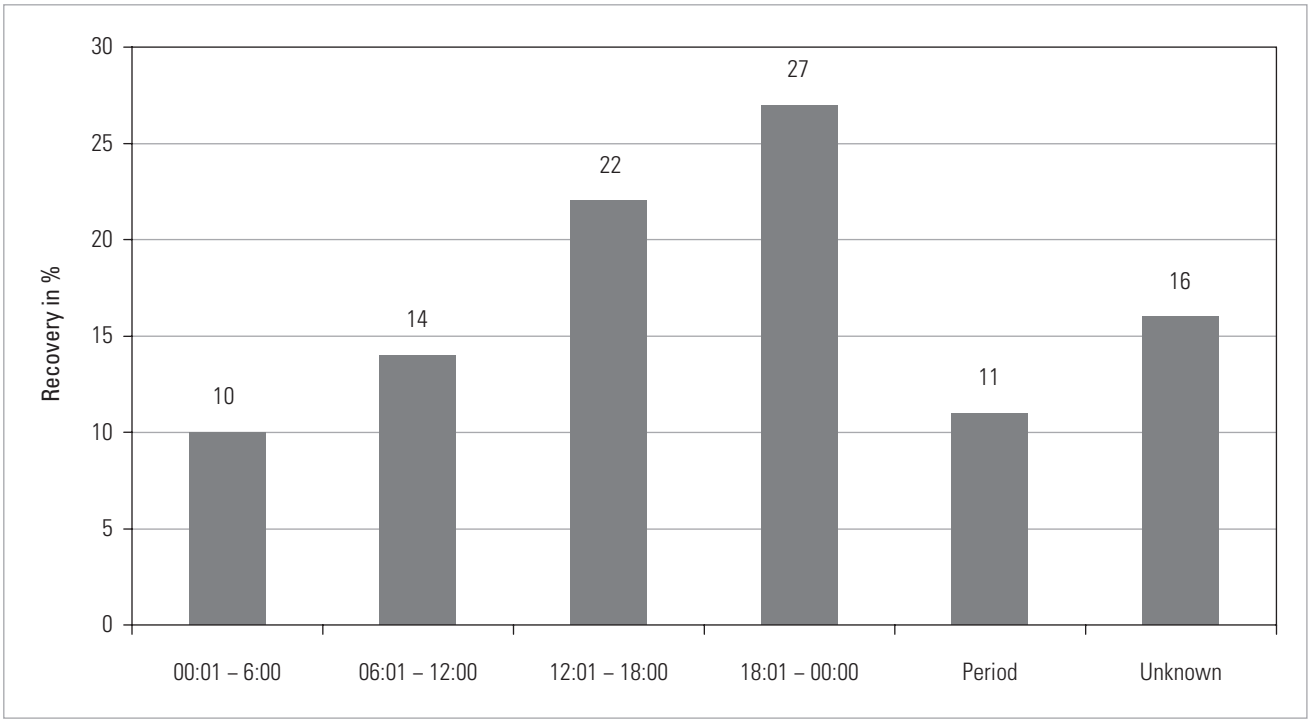


Figure 2.13: Time of recovery

■ 27% (36/135) of the recoveries were made at the shafts.

The cases analysed indicate that 54% (105/194) involved the loss of GBM and 46% (89/194) involved the loss of property. As illustrated in Figure 2.15, 92% (178/194) of the cases involved GBM or mine property with a value less than R10,000.

Further analysis of the dataset indicates that 55% (49/89) of the cases that involved the loss of property had a value of less than R1,000, and 60% (63/105) of the cases that involved the loss of GBM had a value of less than R1,000.

OFFENDER TRENDS

Offender trends in the precious metals mining industry are influenced by the demographic of the population in the mining sector. The cases that were used are the total number of reported cases for the period January–June 2003, and no exceptions were made.

Data extract

In the dataset of 194 cases received for analysis, the information of 121 offenders was made available. In order to conduct

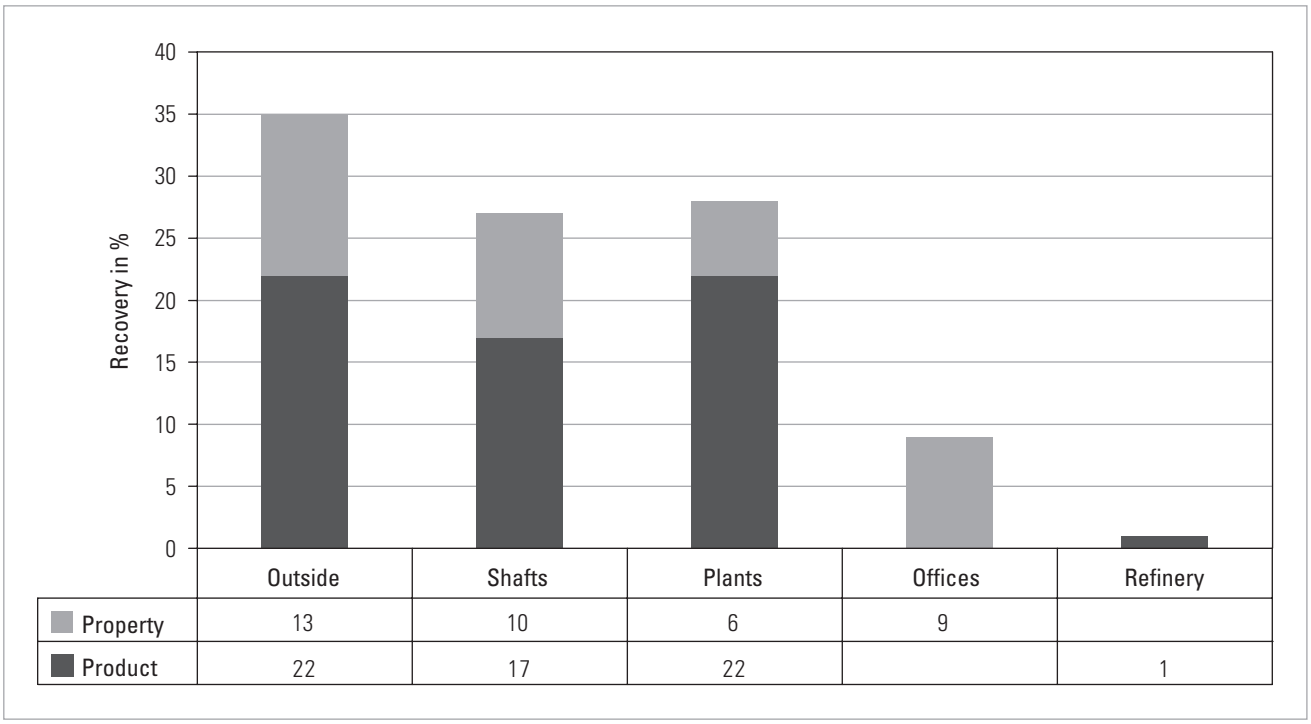


Figure 2.14: Location of recovery

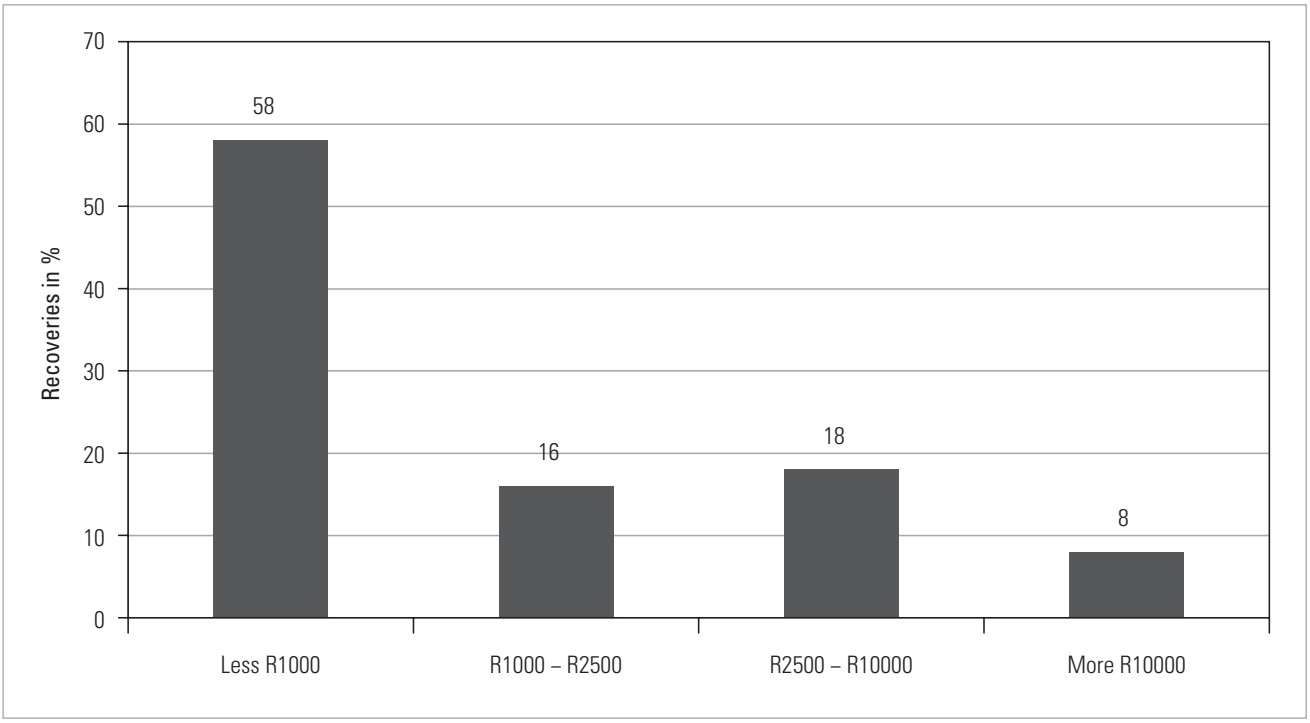


Figure 2.15: Value of recovery

anonymous crime analysis, no information that could identify the persons in the dataset was requested. General profiles and basic trends are consequently provided.

With reference to the occupation of the offenders in the dataset, 56% (68/121) of the offenders were unemployed and 41% (49/121) were mine employees. Regarding the domicile of the offenders in the dataset, 13% (16/121) of the offenders were not South African residents and 63% (10/61) were unemployed.

Regarding the marital status of the offenders in the dataset, 46% (55/121) were married and 26% (31/121) were single. In 29% (35/121) of the cases, the marital status of the offenders was not stated.

Bearing in mind that 30% (59/194) of the cases analysed did not include information relating to the area where the recoveries were made, the following offender profiles were recognised in the dataset:

- 51% (28/55) of the unemployed South African residents that were arrested were found inside the secure mine area; and
- 73% (8/11) of the illegal immigrants that were arrested were also found inside the secure mine area.

These findings indicate that 30% (36/121) of the offenders arrested for mine-related theft were trespassers (unemployed South African residents or illegal immigrants) found inside the mine area. In the dataset, 73% (40/55) of the unemployed South African residents and 64% (7/11) of the illegal immigrants were arrested through security searches or surveillance.

CHAPTER 3

Product theft: Platinum group metals

INTRODUCTION

The theft of platinum group metals (PGM) occurs mostly above ground during one of the extraction processes. This is because platinum can only be removed from its natural state through the complicated processes of refining and extraction, in contrast to gold where the valuable metals can be easily identified.

The ore from which the valuable platinum particles are extracted contain several different metals, such as platinum, rhodium, iridium, palladium, ruthenium and osmium. The ore body from which it is mined may contain copper, chrome and nickel, with some minor gold deposits and several other elements found in the ore body. Specialised knowledge and equipment is therefore needed to refine PGM to a commercially valuable commodity.

There are two main platinum-bearing reefs in South Africa, both contained in the Bushveld Igneous Complex. This area is a horseshoe-shaped geological feature in the northern part of South Africa. The Merensky Reef and the UG2 Reef extend from Rustenburg in North West Province to Potgietersrus in the Northern Province, and down to Lydenburg in Mpumalanga.

POLICE STATISTICS

Some SAPS units reported zero returns on recovery and arrests for PGM or GBM (Table 3.3). The police explained that these units are located in areas where that specific type of crime does not occur: for example, one would not expect to find gold-related cases in Rustenburg because there is little or no gold mining in that area, while it would be unusual for the branch in Klerksdorp to investigate platinum-related cases.

The Lichtenburg branch made 43 arrests during 2002 (Table 3.4) for PGM-related offences. This contradicts the pattern from 2000–03 where no arrests were made. The police explained this occurrence as a cross-regional operation, where officers were sent to areas where they were not known in order to work on intelligence-driven undercover operations to combat crime syndicates. These cases were recorded at the detectives' stations where the projects were initiated and registered.

The statistics received from the police were compiled by the Pretoria head office from information obtained from nine branches that reported theft of precious metals cases investigated for the period January 2000–June 2003. These branches are Klerksdorp, Barberton, Polokwane, West Rand, East Rand, Rustenburg, Lichtenburg, Johannesburg and Welkom.

The Rustenburg branch and protection services of the platinum mining houses held joint operations, resulting in the recovery of large quantities of PGM material in 2001. This created an artificial increase, as reflected in tables 3.1 and 3.2.

Table 3.1 reflects the recoveries made by the police, as well as recoveries made by the mining industry and reported to the police. Many recoveries were made with joint operations between the police and mine protection services. The tonnage specified in kilograms illustrates the actual mass of unrefined PGM material in a particular instance.

As shown in Table 3.1, approximately 1,003 metric tons of PGM material was recovered during the period January 2000–June 2003. During this period, 1,014 cases were investigated and the police made 511 arrests.

The Rustenburg branch reported the recovery of 940,789 kg of PGM material during the same period (see Table 3.2).

Table 3.1: Police statistics of PGM recovered from January 2000–June 2003

Year	Mass in kg	Cases	Arrests
2000	931.1	171	101
2001	617,680.4	232	140
2002	259,692.6	327	178
2003	124,268.1	284	92
Total	**1,002,572.2**	**1,014**	**511**

Table 3.2: PGM recovered (in kg) by police from January 2000–June 2003

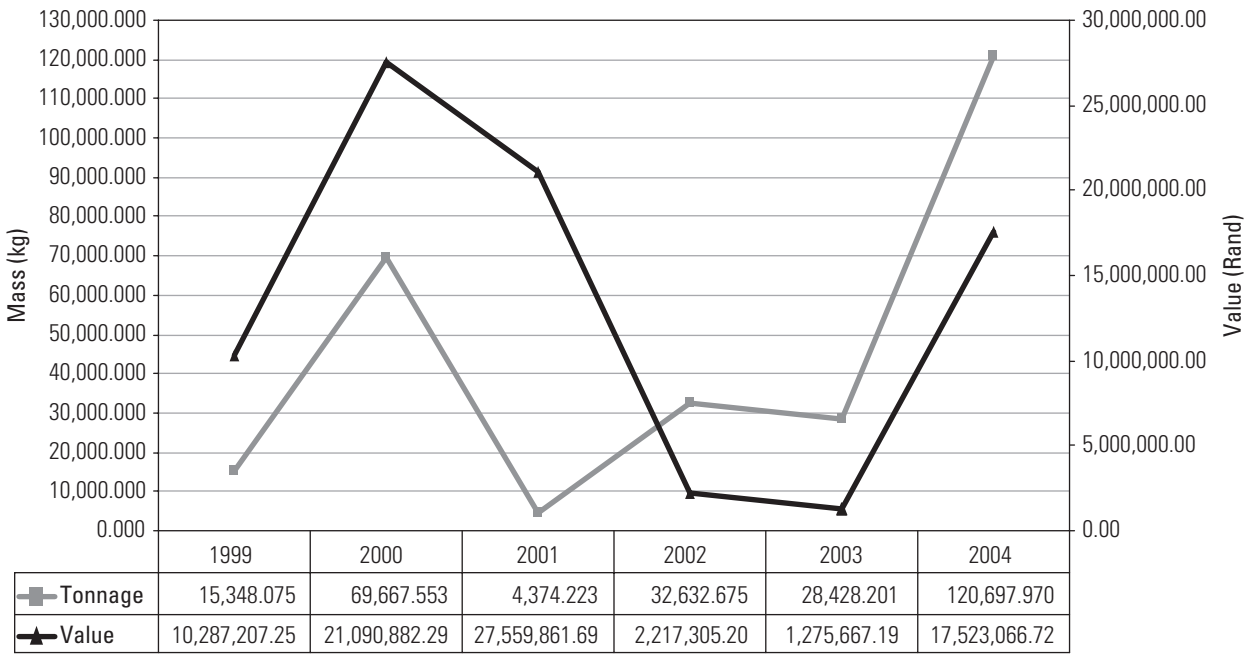
Branch	2000	2001	2002	2003	Total
Klerksdorp	0	0	0	0	0
Barberton	0	0.8	0	0	0.8
Polokwane	3.0	45.8	1.1	27.7	77.6
West Rand	900.0	0	0	0	900.0
East Rand	19.8	16.9	4.8	33.7	75.1
Rustenburg	0	617616.9	243685.7	79486.4	940789.0
Lichtenburg	0	0	16000.0	24720.0	40720.0
Johannesburg	8.4	0	1.0	20000.0	20009.4
Welkom	0	0	0	0.3	0.3
Total	**931.2**	**617,680.4**	**259,692.6**	**124,268.1**	**1,002,572.2**

Table 3.3: Cases of PGM theft investigated by police from January 2000–June 2003

Branch	2000	2001	2002	2003	Total
Klerksdorp	0	0	0	0	0
Barberton	0	1	0	0	1
Polokwane	15	22	44	38	119
West Rand	1	0	0	0	1
East Rand	24	39	33	15	111
Rustenburg	130	170	148	109	557
Lichtenburg	0	0	99	117	216
Johannesburg	1	0	3	4	8
Welkom	0	0	0	1	1
Total	**171**	**232**	**327**	**284**	**1014**

Table 3.4: Arrests made by police for PGM theft from January 2000–June 2003

Branch	2000	2001	2002	2003	Total
Klerksdorp	0	0	0	0	0
Barberton	0	1	0	0	1
Polokwane	10	26	20	9	65
West Rand	4	0	0	0	4
East Rand	3	11	12	6	32
Rustenburg	83	102	101	73	359
Lichtenburg	0	0	43	0	43
Johannesburg	1	0	2	2	5
Welkom	0	0	0	2	2
Total	**101**	**140**	**178**	**92**	**511**



	1999	2000	2001	2002	2003	2004
Tonnage	15,348.075	69,667.553	4,374.223	32,632.675	28,428.201	120,697.970
Value	10,287,207.25	21,090,882.29	27,559,861.69	2,217,305.20	1,275,667.19	17,523,066.72

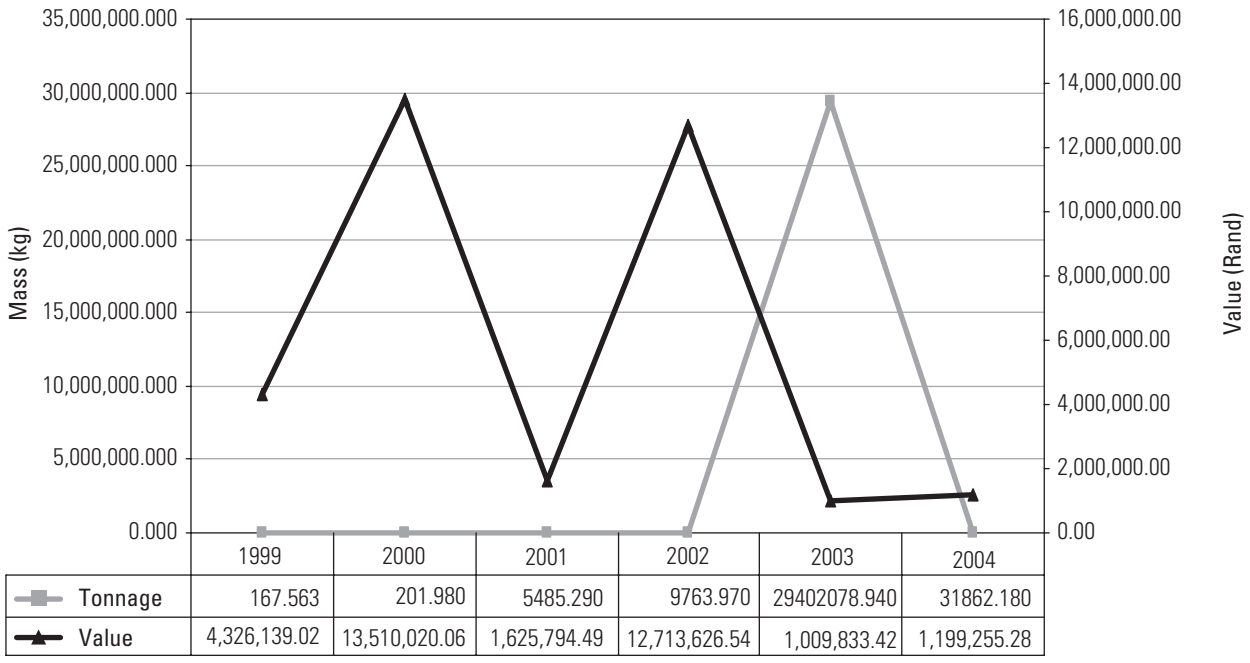
Figure 3.1: Mine statistics of PGM theft reported to police from January 1999–December 2004

As mentioned, joint operations between the Rustenburg branch and protection services of the platinum mining houses resulted in the recovery of large quantities of PGM material (an average of 1,689.03 kg/case). The recoveries made in Rustenburg therefore comprise nearly 94% of all the recoveries and approximately half the cases that were investigated and arrests made, as shown in tables 3.3 and 3.4.

The Johannesburg branch made most of its recoveries during 2003, with large quantities of PGM material recovered presumably on its way to be exported.

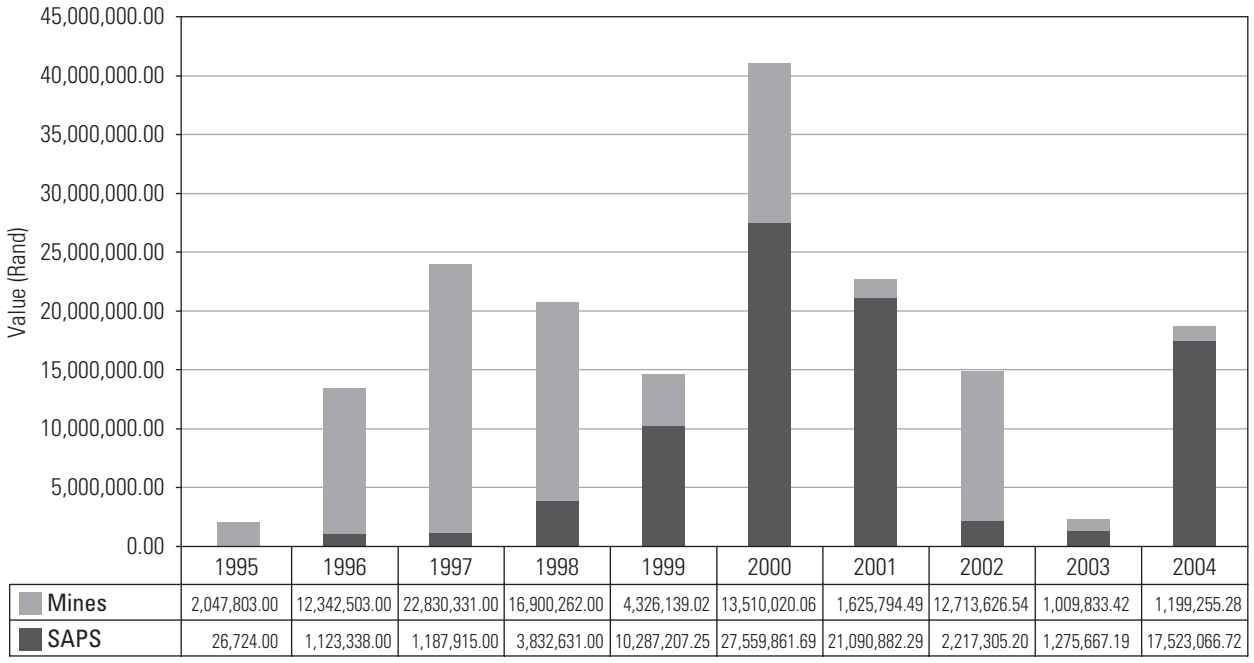
STATISTICS FROM THE SOUTH AFRICAN PLATINUM MINING INDUSTRY

Two platinum mining houses participated in the study; all statistics in this section reflect the information received from these participants. The mining houses reported 271,148.697 kg to the value of R79,953,990.34 recovered PGM material to the police, and recovered 29,449,559.923 kg to the value of R34,384,668.81 of PGM material internally during the period January 1999–December 2004 (see figures 3.1 and 3.2).



	1999	2000	2001	2002	2003	2004
Tonnage	167.563	201.980	5485.290	9763.970	29402078.940	31862.180
Value	4,326,139.02	13,510,020.06	1,625,794.49	12,713,626.54	1,009,833.42	1,199,255.28

Figure 3.2: Mine statistics of PGM theft reported/dealt with internally January 1999–December 2004



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mines	2,047,803.00	12,342,503.00	22,830,331.00	16,900,262.00	4,326,139.02	13,510,020.06	1,625,794.49	12,713,626.54	1,009,833.42	1,199,255.28
SAPS	26,724.00	1,123,338.00	1,187,915.00	3,832,631.00	10,287,207.25	27,559,861.69	21,090,882.29	2,217,305.20	1,275,667.19	17,523,066.72

Figure 3.3: Value of PGM thefts reported from 1995–2004

The participating mining houses reported 69,667.553 kg recovered PGM material to the police for the period January–December 2000, and 4374.223 kg for the period January–December 2001 (see Figure 3.1). The police reported 931.154 kg recovered PGM material for the period January–December 2000, and 617,680.416 kg for the period January–December 2001 (see Table 3.1). It is therefore clear that the reporting methodologies used by the mining industry and police are not compatible for comparative analysis and need to be addressed and standardised before reliable statistical analysis can be made.

In the statistics pertaining to cases reported internally (Figure 3.2), recoveries include instances where intelligence-driven operations were conducted by the mining houses' protection services, as well as where abandoned parcels were found during attempted thefts. These recoveries are recorded separately and are not reported to the police, as the attempted thefts were not accomplished and no suspects were identified.

The values of the recoveries documented by the Gastrow study and the statistics provided by the mining industry since 1995 are reflected in Figure 3.3.

As reflected in Figure 3.3, there was a substantial increase in 2000 with regard to the value of recoveries made. The participating mining houses' protection services confirmed that extensive operations were held during 2000, as reflected in Figure 3.1.

CRIME ANALYSIS

The area of the crime was analysed to determine the physical location of the criminal act. Determining the specific area where a recovery takes place could indicate a well protected and controlled security area, where a high incidence of recovery could be expected. It could, however, also be an indicator of an area that is targeted by criminals because there is an opportunity to evade security measures.

Each participant should therefore evaluate these analyses in correlation with internal findings regarding the hotspots identified by mine protection services. Hot spots should be analysed bearing in mind that a recovery at a certain control point indicates a successful security measure, but simultaneously indicates unsuccessful security measures up to that controlled perimeter.

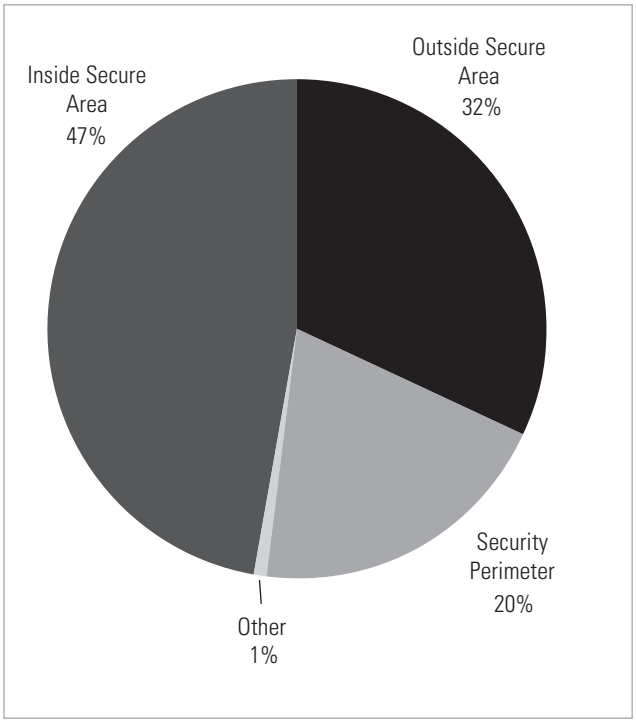
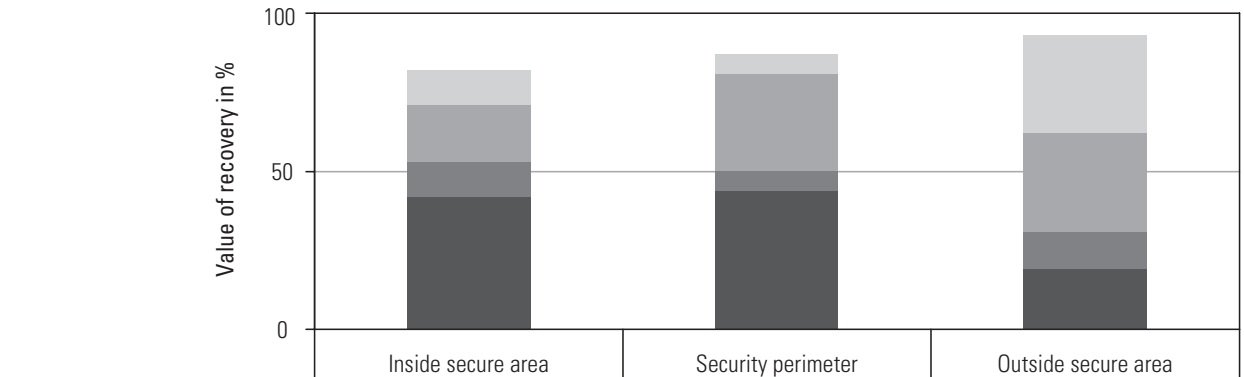


Figure 3.4: Area of recovery (%)



	Inside secure area	Security perimeter	Outside secure area
More R25000	11	6	31
R10000 – R25000	18	31	31
R2500 – R10000	11	6	12
Less R2500	42	44	19

Figure 3.5: Area of recovery (value involved)

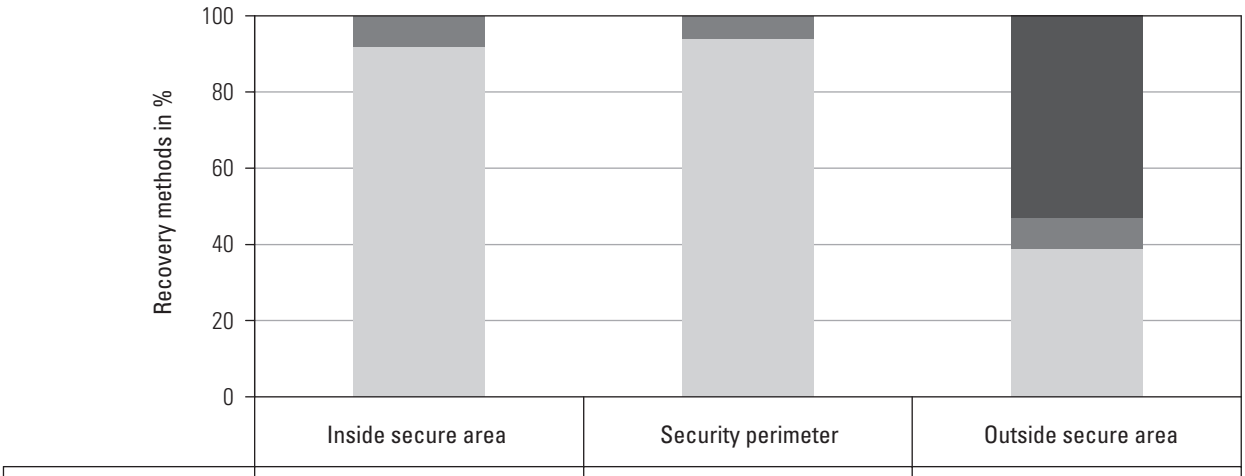
The value of the recovered product is an indicator of the stage of processing targeted by criminals. Each process that the ore is put through has a concentrating effect on the precious metal content of the product, making it possible to determine where in the process the material was removed.

The two participating platinum mining houses completed content analysis questionnaires for 81 cases of precious metals theft for the period January–June 2003. All these cases involved theft of PGM. No cases involving theft of mine property or equipment were received for analysis.

Recovery of product

As illustrated in Figure 3.4, most recoveries in the dataset [67% (54/81)] were made within the secure area or at the security perimeters of the mines.

An average of 43% (23/54) of the analysed recoveries that were made inside the secure area of the mines or detected at the security perimeters involved PGM with a value lower than R2,500: 62% (16/27) of the analysed recoveries that were detected outside the mine area had a value of more than R10,000 (see Figure 3.5).



	Inside secure area	Security perimeter	Outside secure area
Investigation	0	0	5 4
Surveillance	8	6	8
Searches	9 2	9 4	3 9

Figure 3.6: Area of recovery (recovery methods)

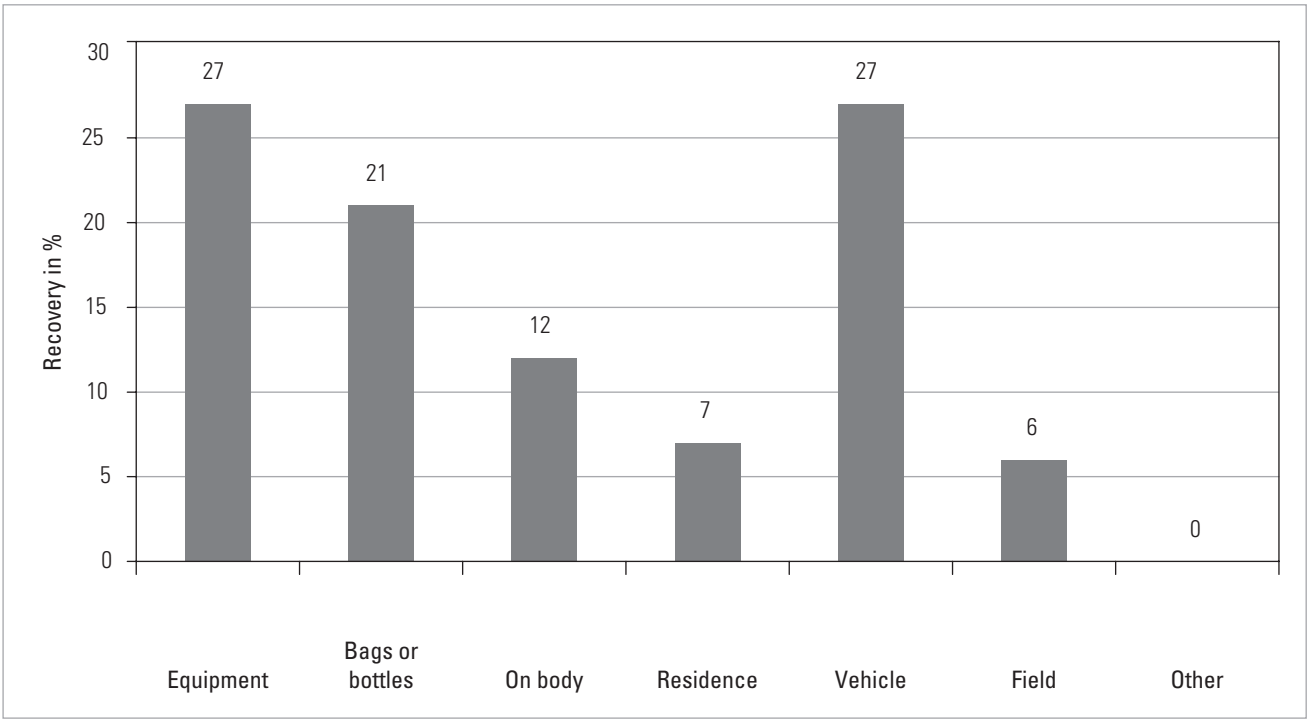


Figure 3.7: Common places of recovery

More than half [54% (14/26)] of the recoveries made outside the mine area were detected through investigations by the SAPS or mine protection services (see Figure 3.6)

As reflected in Figure 3.6, an average of 93% (50/54) of the recoveries that were made inside the secure area or at the security perimeters of the mines were detected through searches.

Figure 3.7 shows the most common places where stolen PGM was recovered in the cases analysed.

Cases where equipment (e.g. pipes, taps) was used to conceal stolen PGM were analysed and it was established that:

- 95% (20/21) of these recoveries were made inside the secure area (mostly product that was found abandoned);
- 91% (19/21) of these recoveries were detected by means of security searches;
- 52% (11/21) of these recoveries involved PGM material with a value of less than R2,500; and
- 81% (17/21) of these recoveries were dealt with internally and not reported to the SAPS.

Cases where bags or bottles were used to conceal stolen PGM were analysed and it was established that:

- 88% (14/16) of the recoveries were made inside the secure area (mostly PGM material that was found abandoned);
- 75% (12/16) of the recoveries were detected by means of security searches;
- 31% (5/16) of these recoveries involved PGM material with a value of more than R10,000;
- 38% (6/16) of these recoveries were dealt with internally and not reported to the SAPS; and
- 13% (2/16) of these recoveries resulted in a guilty verdict in court.

Cases where offenders used clothing or anything else on the body to conceal stolen PGM were analysed and it was established that:

- 56% (5/9) of these offenders were detected at the security perimeter;
- 44% (4/9) of these offenders were detected inside the secure area;
- 100% (9/9) of these offenders were caught by means of security searches;
- 33% (3/9) of these recoveries involved PGM material with a value greater than R10,000;
- 56% (5/9) of these recoveries were dealt with internally and not reported to the SAPS; and
- 22% (2/9) of these recoveries resulted in a guilty verdict in court.

Cases where vehicles were used to conceal stolen PGM were analysed and it was established that:

- 48% (10/21) of these recoveries were detected at the security perimeter;
- 52% (11/21) of these recoveries were detected outside the mine area;
- 76% (16/21) of these recoveries were detected by means of security searches;
- 19% (4/21) of these recoveries were detected through investigation;
- 5% (1/21) of these recoveries were detected with surveillance;
- 43% (9/21) of these recoveries involved PGM material with a value of R2,500 or less;
- 52% (11/21) of these recoveries involved PGM material with a value greater than R10,000;
- 52% (11/21) of these cases were still pending at the time of the analysis;
- 10% (2/21) of these cases were withdrawn; and
- 24% (5/21) of these cases resulted in warrants of arrest when the offenders did not attend court after receiving bail.

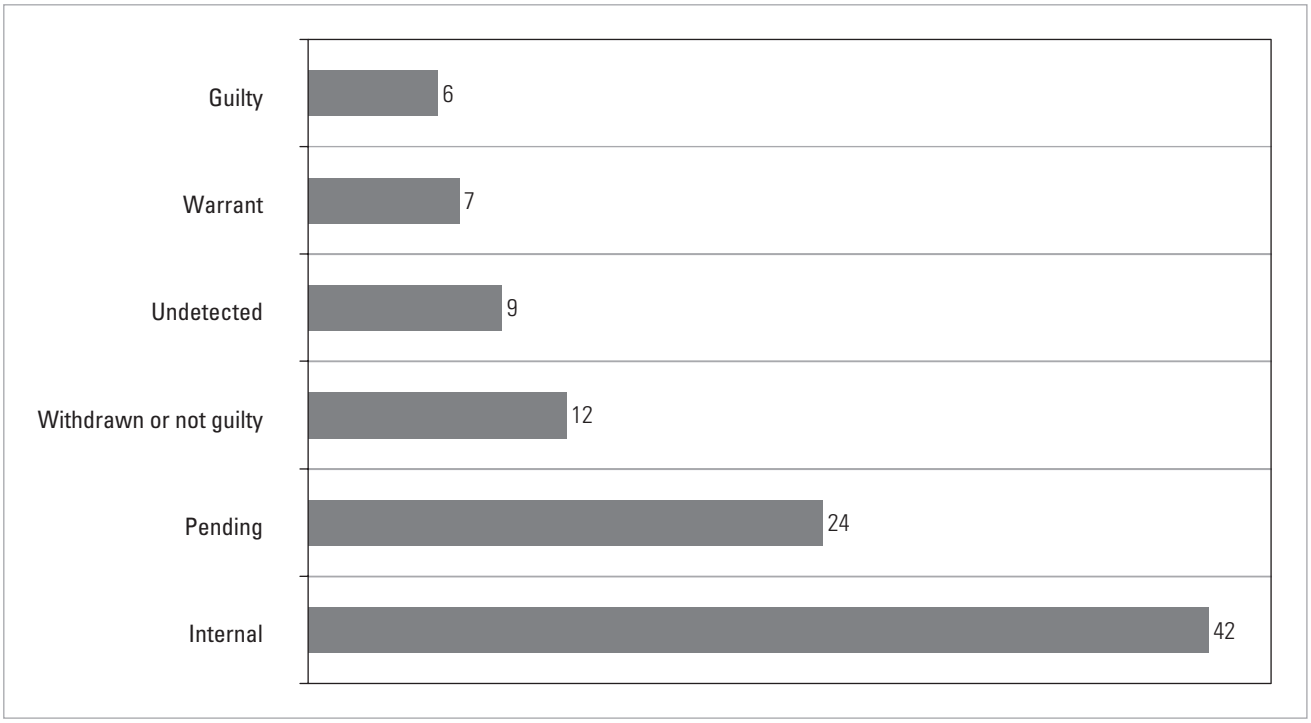


Figure 3.8: Result of cases (%)

Result of cases

Regarding the categories of crime analysed in the dataset:

- 53% (43/81) of the cases were reported as attempted theft of PGM material;
- 6% (5/81) of the cases were reported as dealing with PGM material;
- 6% (5/81) of the cases were reported as illegal possession of PGM material; and
- 35% (28/81) of the cases were reported as theft of PGM material.

It should, however, be noted that there is no standardised view regarding the classification of the categories of crime in the mining industry. The mining houses interpret and report attempted theft, illegal possession and theft differently. One mining house would, for example, classify PGM detected at a security perimeter as an 'attempted' crime, while another mining house would consider it to be 'theft' as the product was already removed from the control of the owner. As it is sometimes easier to prove possession rather than the elements of theft, some mining houses would report the same conduct as 'illegal possession'. In order to do comparative analysis, it is necessary for the mining industry to interpret and report criminal conduct according to a standardised view. For the purposes of this report, no distinction will be made between the different categories of crime and these will be discussed as all PGM-related offences in the dataset.

As reflected in Figure 3.8, 24% (19/81) of the cases were still pending when the content analysis questionnaires were completed. The analysis therefore represents only 76% of the cases analysed. Furthermore, in 12% (10/81) of the cases the value of the recovered PGM material was not available at the time. The analysis of the results may consequently show discrepancies. Where cases reflect as 'Undetected', it refers to those instances where the product was removed from the normal processes but no arrests were made.

In cases where PGM material with a value of less than R10,000 was recovered, the following results were obtained:

- 60% (18/30) of the cases were concluded internally and not reported to the SAPS;
- in 23% (7/30) of the cases no arrests were made and remained undetected;
- 10% (3/30) of the cases were withdrawn or the accused was found not guilty;
- 3% (1/30) of the cases resulted in a warrant of arrest after offenders received bail; and
- 3% (1/30) of the cases resulted in a conviction.

The cases where PGM material with a value greater than R10,000 was recovered, the following results were obtained:

- 40% (10/25) of the cases were dealt with internally;
- 24% (6/25) of the cases were withdrawn or the accused was found not guilty;
- 20% (5/25) of the cases resulted in a warrant of arrest after offenders received bail; and
- 16% (4/25) of the cases resulted in a conviction.

Only five cases (6% of the dataset) resulted in a guilty verdict in court; analysis regarding the sentencing of offenders will therefore not be meaningful.

Crime patterns

Figure 3.9 reflects the days of the week on which recoveries of PGM material were made. The most [22% (18/81)] recoveries were made on Mondays and the least [4% (3/81)] recoveries were made on Wednesdays.

Figure 3.10 reflects the times at which recoveries of PGM material were made. Most [30% (24/81)] recoveries were made

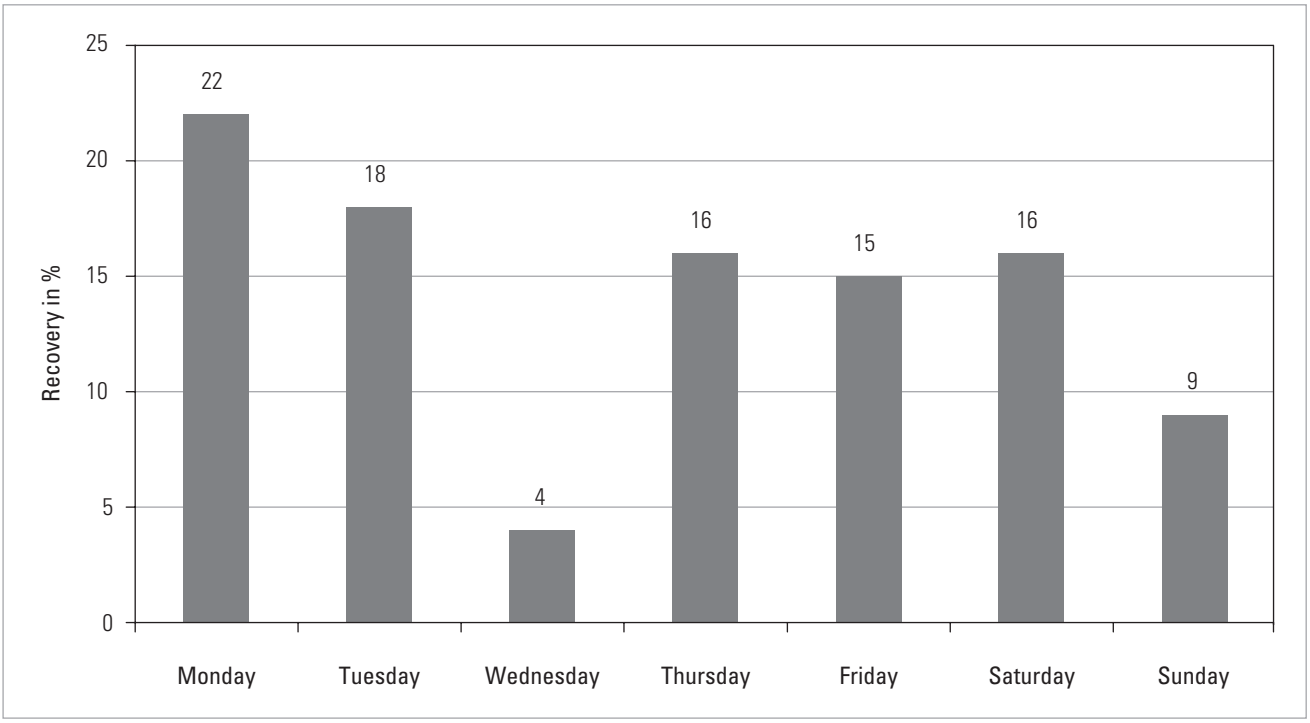


Figure 3.9: Day of recovery

between 12:01 and 18:00, and the least [9% (7/81)] recoveries were made between 18:01 and 00:00.

Further analysis of the dataset indicates that Mondays between 12:01 and 18:00 and Tuesdays between 06:01 and 12:00 had the highest significance (15%) of recoveries of PGM material.

In 51% (41/81) of the cases analysed, the respondents did not describe the area where the recoveries of PGM material were made. For analysis purposes, only the 40 cases where the information was available are reflected in Figure 3.11.

Further analysis of the dataset indicated the following trends:

- 50% (5/10) of the recoveries made at the concentrators occurred on Mondays between 12:01 and 18:00;
- 46% (5/11) of the recoveries made outside the mine area occurred on Thursdays between 12:01 and 18:00; and
- 83% (5/6) of the recoveries made at the smelters occurred on Mondays between 18:01 and 00:00.

The aim of trend analysis is to highlight possible risks for further investigation and/or observation. Trends should be

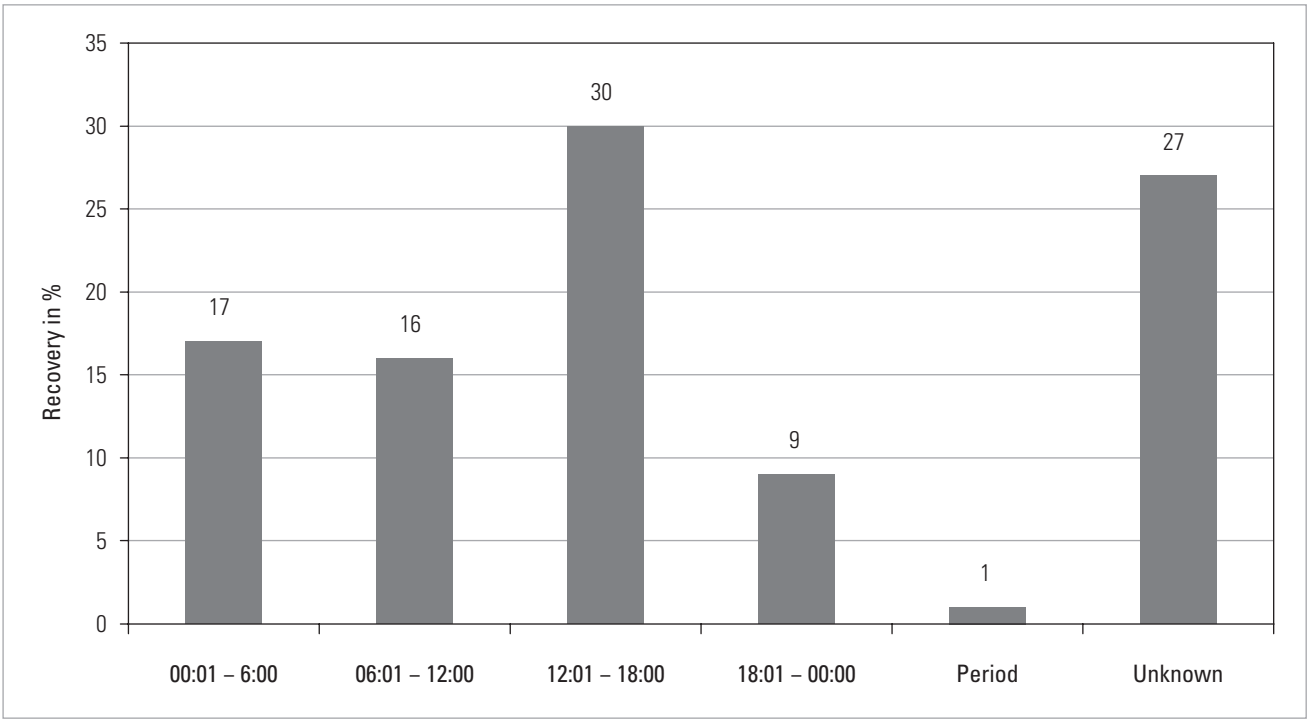


Figure 3.10: Time of recovery

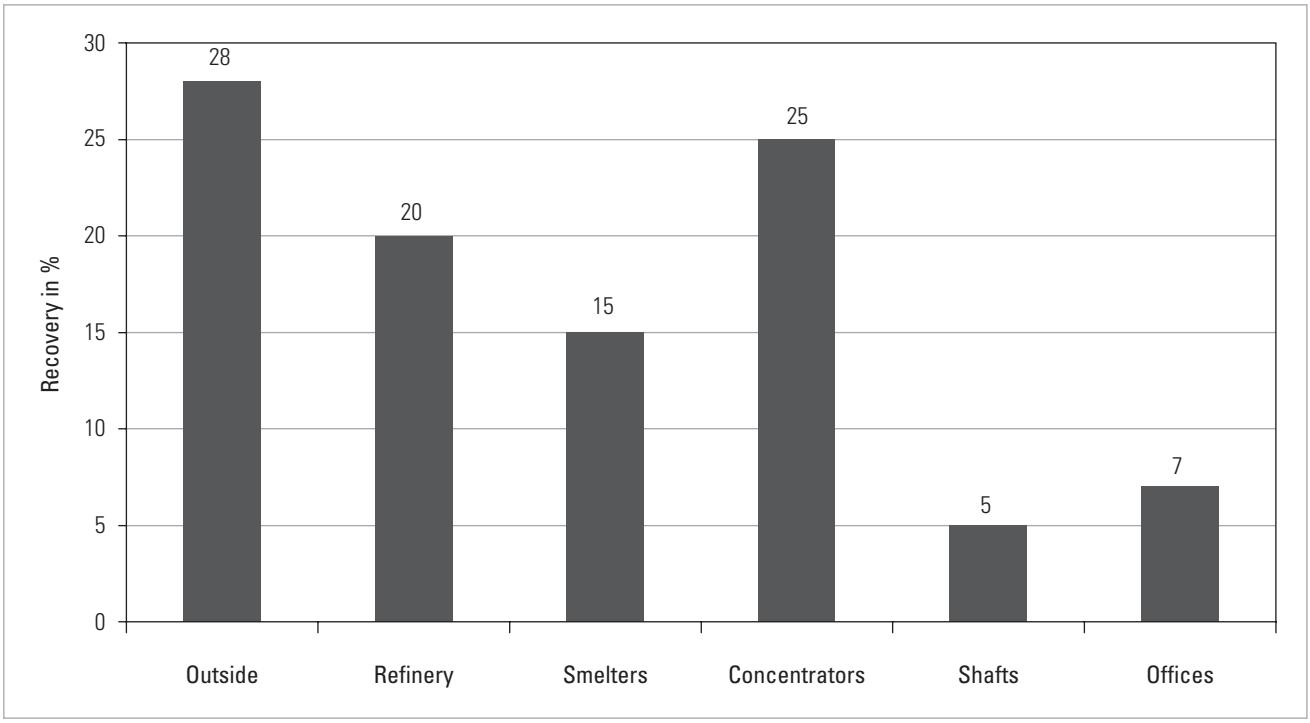


Figure 3.11: Location of recovery

correlated with contractors or employees on shift, specific security procedures or personnel on shift, etc., to determine if any of these factors correlate with the crime occurrence. If, for instance, a strong correlation is found between a specific employee on shift and a trend, further analysis and investigation can be conducted to establish if this employee is involved in the commission of the crime.

OFFENDER TRENDS

The demographics of the population is a factor to consider when examining offender trends.

Data extract

In the dataset of 81 cases received for analysis, the information of 40 offenders was made available.

Bearing in mind that 51% (41/81) of the cases analysed did not include information relating to the area where the recoveries of PGM material were made, the following offender profiles were recognised in the dataset:

- 78% (7/9) of the offenders detected at the concentrators were mineworkers;
- 50% (3/6) of the offenders detected at the smelters were unemployed;
- 75% (6/8) of the offenders detected outside the mine areas were mine contractors; and
- all (3/3) the offenders detected at the refineries were mine employees.

As only five of the cases sent for analysis resulted in a guilty verdict in court, the sample is not sufficient to provide effective offender profiles relating to court sentences.

CHAPTER 4

Perceptions of the role-players in the mining industry

INTRODUCTION

Security measures are implemented based on observations made by security personnel. In order to evaluate these observations, the perceptions of the mineworkers, security personnel, mine management and police regarding security measures should be considered.

Due to the large number of employees in the mining industry, a representative survey would have been too time-consuming and would have interfered with production processes. It was therefore decided to use a qualitative comparative analysis of the perceptions of the various role-players in the mining industry.

A standardised questionnaire was designed to test a range of opinions regarding product theft and some general aspects relating to the different respondent categories, namely: mineworkers; security guards; mine management; and the police. The alphabetical numbering used in the questionnaire is employed throughout this chapter. The questions were numbered (a) through (p).

The various mining unions were contacted to participate in the study, but all attempts to solicit their participation failed. This does not preclude the possibility of their participation in further studies or the active participation of unions to fight crime in the workplace.

MINEWORKERS AND SECURITY PERSONNEL

The mineworkers and security guard dataset comprised 300 respondents. The researchers conducted face-to-face interview surveys at one gold mining house and one platinum mining house, during which 250 questionnaires were completed.

THE DATASET COMPRISED THE FOLLOWING GROUPS:

Mineworkers: 194 respondents
Gold mineworkers: 104 respondents
Platinum mineworkers: 63 respondents
Postal group mineworkers: 27 respondents

Security guards: 106 respondents
Gold security guards: 28 respondents
Platinum security guards: 55 respondents
Postal group security guards: 23 respondents

The remaining five mines contributed towards a control group of 50 respondents by means of postal interview surveys conducted by the mining houses. The function of the control group was to test significant findings against researcher bias.

Understanding of crime

The respondents' knowledge of what constitutes a crime regarding theft of precious metals and theft of mine property was tested in four categories:

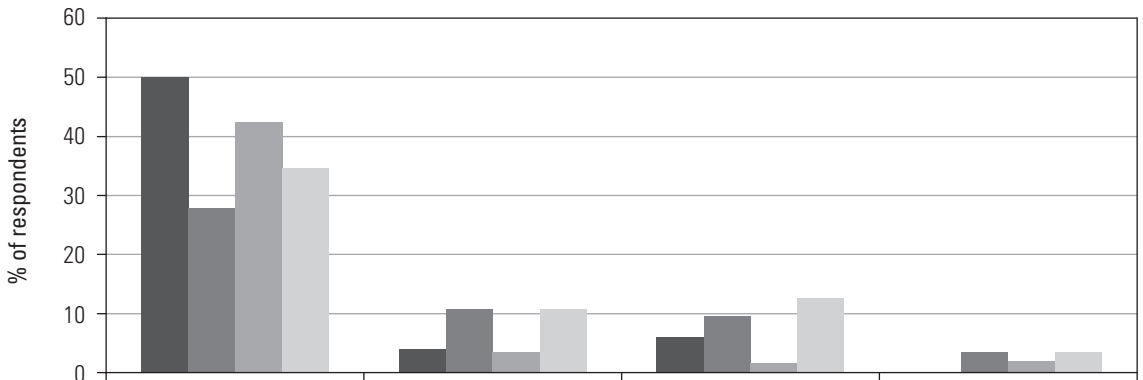
- Is it theft if someone removes gold bearing material (GBM) or platinum group metal (PGM) from the mine premises without authorisation?
- Is it a crime if someone takes GBM or PGM that was removed from the mine premises without authorisation by another party?
- Is it theft if someone removes equipment from the mine premises without authorisation?
- Is it a crime if someone takes equipment that was removed from the mine premises without authorisation by another party?

The respondents had the option to choose either 'Yes', 'No' or 'Do not know' as an answer to the questions. The anticipated answer to all the questions was 'Yes'.

Figure 4.1 shows the percentages of respondents who did not answer 'Yes' to questions (a–d) above. Questions (a) and (b) relate to precious metals (GBM and PGM), and questions (c) and (d) relate to mine property. In turn, questions (a) and (c) relate to the understanding of theft, and questions (b) and (d) relate to the understanding of unauthorised possession.

As reflected in Figure 4.1, 50% (52/104) of the respondents in the 'gold mineworkers' category did not answer 'Yes' to questions (a) and (b), relating to the understanding of theft and illegal possession of precious metals. Twenty-eight per cent (29/104) of the gold mineworker respondents did not answer 'Yes' to questions (c) and (d), relating to the understanding of theft and possession of stolen mine equipment.

In the dataset, 42% (44/104) of the gold mineworker respondents did not answer 'Yes' to questions (a) and (c), relating to the understanding of theft of precious metals and mine equipment. Thirty-five per cent (36/104) of the gold mineworker respondents did not answer 'Yes' to questions (b) and (d), relating to the understanding of possession of stolen precious metals and mine equipment (see Figure 4.1).



	Gold workers	Gold security	Platinum workers	Platinum security
GBM & PGM	50	4	6	0
Equipment	28	11	10	4
Theft	42	4	2	2
Possession	35	11	13	4

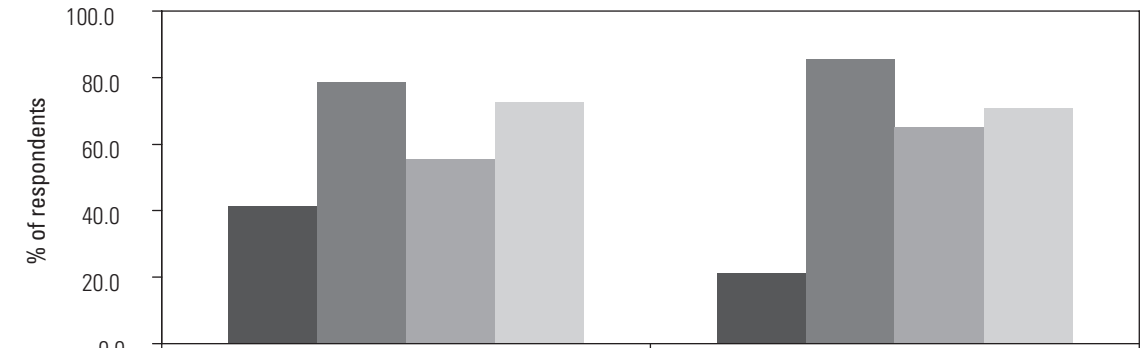
Figure 4.1: Understanding of crime

Further analysis done on the dataset indicated that 91% (47/52) of the gold mineworker respondents who did not answer 'Yes' to questions (a) and (b) did not have a matric certificate or equivalent tertiary education. Bearing in mind that many mineworkers had little or no formal education, the questions were formulated focusing on not having authorisation in the taking or accepting of PGM or GBM, in order to simplify the interpretation thereof. The fact that many respondents did not interpret or understand the questions correctly should be considered when providing training and orientation to mineworkers (with lower educational backgrounds), to ensure that the concepts of theft and unauthorised possession are understood clearly.

Perceptions regarding impact of crime

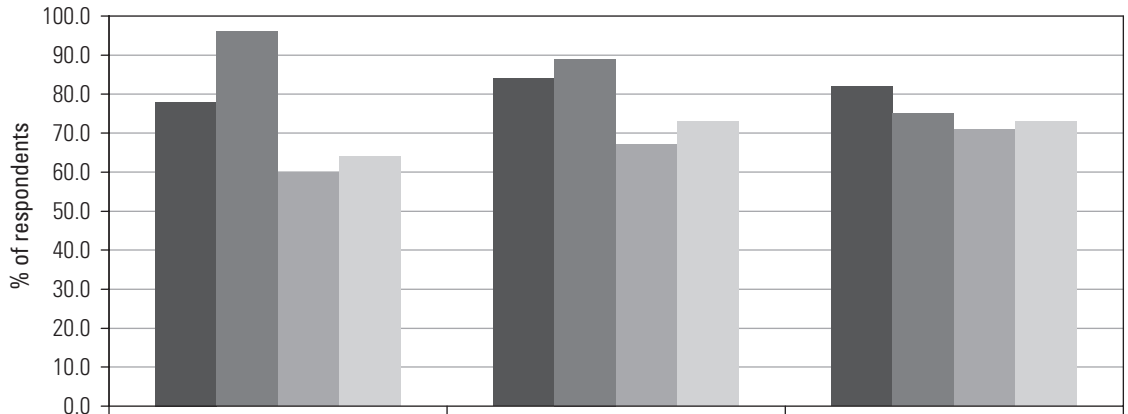
The respondents' opinions of the impact of product theft and theft of mine property were tested in six categories:

- Is theft of GBM or PGM from the mine premises a threat to job creation of employees of mines?
- Is theft of GBM or PGM from the mine premises a threat to job security of employees of mines?



	GBM & PGM	Equipment
Gold workers	41.3	21.2
Gold security	78.6	85.7
Platinum workers	55.6	65.1
Platinum security	72.7	70.9

Figure 4.2: Perceptions regarding impact of crime



	Security Searches	Access control	Surveillance Cameras
Gold workers	78.0	84.0	82.0
Gold security	96.0	89.0	75.0
Platinum workers	60.0	67.0	71.0
Platinum security	64.0	73.0	73.0

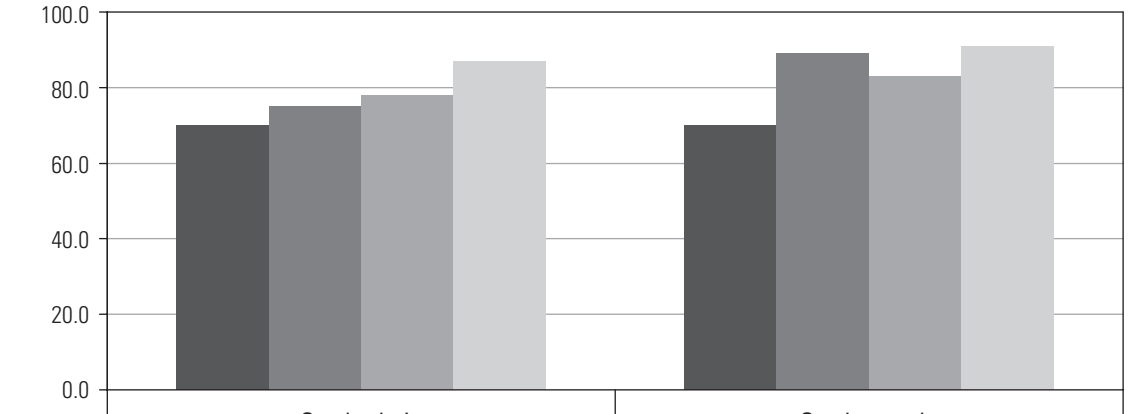
Figure 4.3: Perceptions regarding effectiveness of security measures

- Is theft of GBM or PGM from the mine premises a threat to close marginal mines?
- Is theft of mine equipment a threat to job creation of employees of mines?
- Is theft of mine equipment a threat to job security of employees of mines?
- Is theft of mine equipment a threat to close marginal mines?

The respondents had the option to either choose 'Yes', 'No' or 'Do not know'. Figure 4.2 shows the percentages of respondents who answered 'Yes' to questions (e)–(j) above.

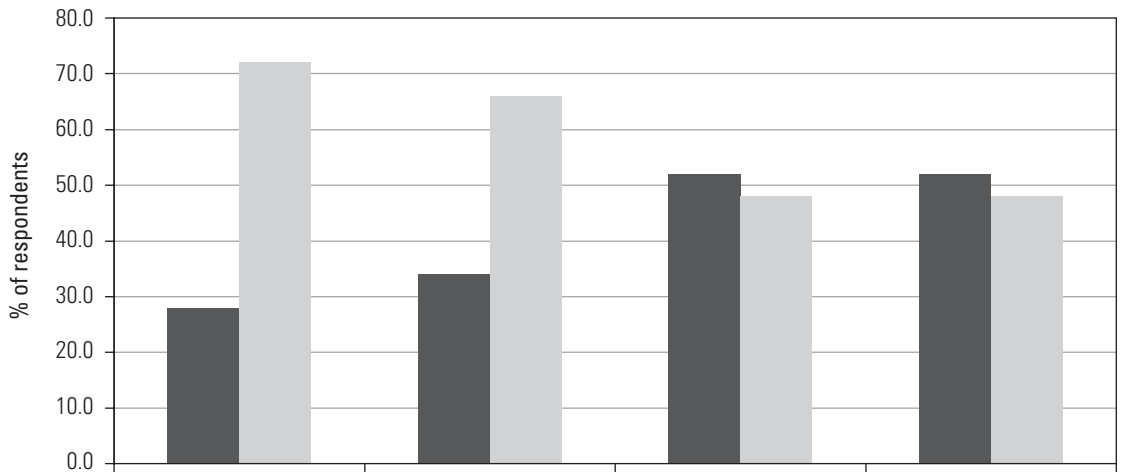
As reflected in Figure 4.2, 41% (43/104) of the gold mineworker respondents and 56% (35/63) of platinum mineworker respondents stated that theft of GBM or PGM from the mines poses a threat to job security, job creation and the viability of marginal mines.

In the dataset, 21% (22/104) of the gold mineworker respondents answered that theft of mine equipment poses a threat to job security, job creation and the viability of marginal mines (see Figure 4.2). An average of 58% (173 / 300) of all the respondents in the dataset believed that mine-related theft



	Good salaries	Good rewards
Gold workers	70.0	70.0
Gold security	75.0	89.0
Platinum workers	78.0	83.0
Platinum security	87.0	91.0

Figure 4.4: Perception regarding effectiveness of prevention methods



	Material theft	Material possession	Equipment theft	Equipment possession
Less than 5 years	28.0	34.0	52.0	52.0
More than 5 years	72.0	66.0	48.0	48.0

Figure 4.5: Suggested prison sentences

poses a threat to job security, job creation and the viability of marginal mines. Although many of the respondents did not correctly interpret the questions regarding what conduct constitutes theft and unauthorised possession, they understood the possible negative impact of crime on the mining sector.

Perceptions of crime prevention methods

Respondents' opinions and attitudes regarding crime prevention methods were tested. Figure 4.3 shows the percentages of respondents who answered 'Yes' when asked if they thought random security searches, security access control and surveillance cameras at mines are successful in the prevention of theft from mine premises.

As shown in Figure 4.3, 78% (81/104) of the gold mineworker respondents and 60% (38/63) of the platinum mineworker respondents indicated that random security searches are successful security measures to prevent theft from mine premises.

In the dataset, the following perceptions were recognised regarding the effectiveness of security measures implemented to prevent theft from mine premises:

- 73% (219/300) of the respondents replied that random security searches are successful;
- 79% (237/300) of the respondents replied that security access control is successful; and
- 78% (233/300) of the respondents believed that surveillance cameras are successful.

Figure 4.4 shows the percentage of respondents who answered that good salaries and good rewards are important methods to prevent theft from mine premises. (As the questionnaire was used over a broad spectrum of employees, a 'good salary' was not quantified on each salary level but left for respondents' personal interpretation. The amount respondents consider to be a good salary or reward was not specified in this questionnaire).

In the dataset, 76% (229/300) of all the respondents believed that good salaries could prevent theft from the mine premises. Furthermore, 81% (244/300) of all the respondents replied that positive rewards for the reporting of crime are an important method to prevent theft from mines.

The survey showed that 82% (61/74) of the mineworker respondents earning more than R3,500 a month, compared to 68% (81/120) of the mineworker respondents earning less than R3,500 a month thought good salaries could prevent crime. It was interesting to find that employees from higher-income sections were more inclined towards better salaries to prevent crime than employees with lower incomes.

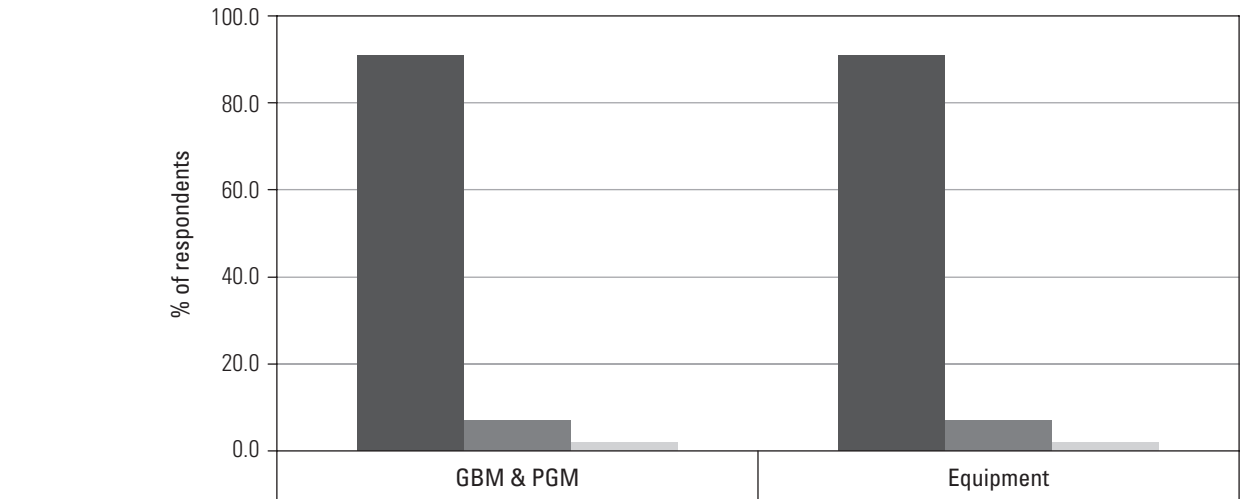
Perceptions of imprisonment of convicted offenders

Respondents' opinions and attitudes regarding the imprisonment of convicted offenders for mine-related theft were tested. Sixty-four per cent (191/300) of all respondents thought that a policy where a minimum prison sentence was instituted for convicted offenders of mine-related theft could serve as prevention. Figure 4.5 shows the percentage of respondents to reply on suggested prison sentences for certain crime categories.

Bearing in mind that 64% of respondents were in favour of an effective minimum sentencing policy, 72% (53/191) of the respondents suggested a prison sentence of more than five years for convicted offenders of theft from mine premises.

Suggested position of mine management towards offenders

Respondents were asked to choose which action mine management should take against offenders of theft from mines. 'Offenders' (persons who committed a crime) do not refer to accused persons (criminally charged with a crime) or convicted



	GBM & PGM	Equipment
Dismissal and charge	91.0	91.0
Transfer	7.0	7.0
Nothing	2.0	2.0

Figure 4.6: Suggested position of management

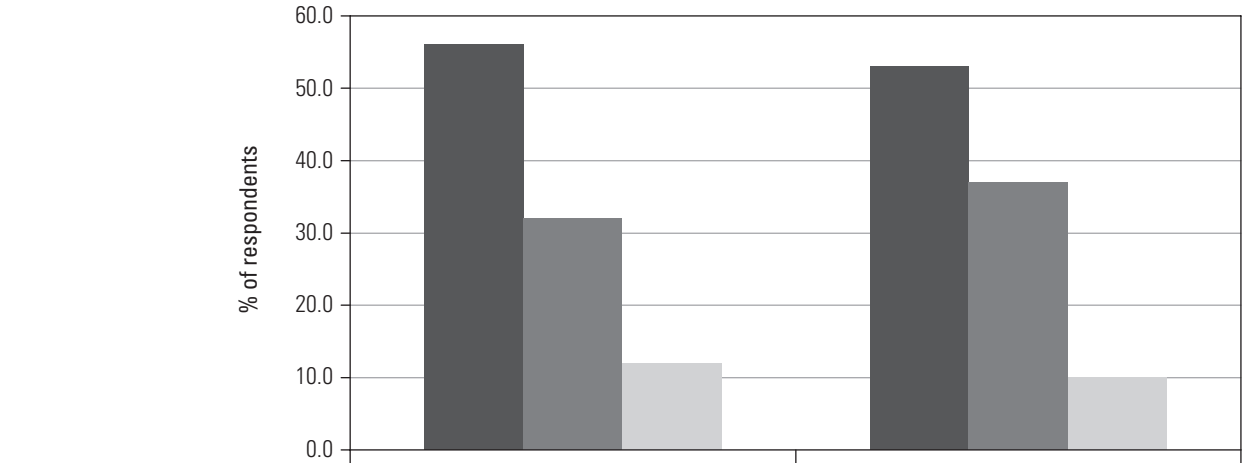
persons (found guilty in a court for a crime). The categories to choose from included 'dismissal and/or a criminal charge', 'transfer to a lower-risk area' and 'nothing'.

As shown in Figure 4.6, 91% (272/300) of the respondents suggested that the position of mine management towards offenders of precious metals theft should be dismissal and/or criminal charges. Further analysis of the dataset showed that 79% (82/104) of the gold mineworker respondents indicated that the position of mine management towards offenders for possession of stolen mine equipment should be dismissal and/or criminal charges.

Furthermore, 14% (14/104) of the gold mineworker respondents and 8% (5/63) of the platinum mineworker respondents indicated that the position of mine management towards offenders should be transfer to a lower-risk area.

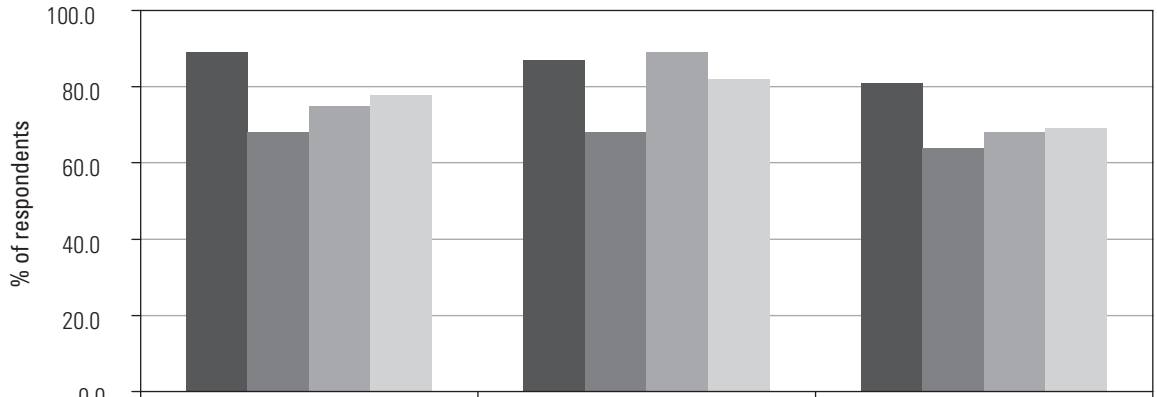
Suggested position of mineworkers' unions towards offenders

Respondents were asked to choose which action mineworkers' unions should take against offenders of theft from mines. The categories to choose from included 'Cancellation of



	GBM & PGM	Equipment
Cancellation of membership	56.0	53.0
Legal assistance	32.0	37.0
Nothing	12.0	10.0

Figure 4.7: Suggested position of unions



	Prevention	Reporting	Investigation
Gold workers	89.0	87.0	81.0
Gold security	68.0	68.0	64.0
Platinum workers	75.0	89.0	68.0
Platinum security	78.0	82.0	69.0

Figure 4.8: Perceptions regarding role of mineworkers' unions

membership', 'Provide legal assistance' and 'Nothing'.

As shown in Figure 4.7, 56% (168/300) of the respondents suggested that mineworkers' unions should cancel the membership of offenders of precious metals theft. Further analysis of the dataset indicated that 39% (40/104) of the gold mineworker respondents and 65% (41/63) of the platinum mineworker respondents believed that the position of mine unions towards offenders of precious metals theft should be the cancellation of their membership.

Furthermore, 46% (48/104) of the gold mineworker respondents and 25% (16/63) of the platinum mineworker respondents indicated that the position of mine unions towards offenders of precious metals theft should be to provide legal assistance to their members. In addition, 15% (16/104) of the gold mineworker respondents and 10% (6/63) of the platinum mineworker respondents stated that the position of mine unions towards offenders of precious metals theft should be not to get involved and do nothing.

It can therefore be concluded that although most (91%) respondents were in favour of harsh action from management towards offenders (Dismissal and/or criminal charge), many (44%) of the respondents were not in favour of strict intervention by mine unions (cancellation of membership) against offenders.

Perception of the responsibilities of role-players

The respondents were asked to indicate the importance of the various role-players regarding the prevention, reporting and investigation of precious metals theft and theft of mine equipment and property.

Perceptions of the responsibilities of the mineworker regarding crime

The survey indicated that 87% (90/104) of the gold mineworker respondents and 94% (59/63) of the platinum mineworker respondents thought that mineworkers could play an important role in the prevention of theft from mine premises. In the dataset, only 54% (105/194) of the mineworker respondents thought they play an important role in reporting theft from the mine premises. However, 80% (155/194) of the mineworker respondents indicated that it is important to report knowledge of people involved in syndicates or if they are approached by a syndicate to work for them.

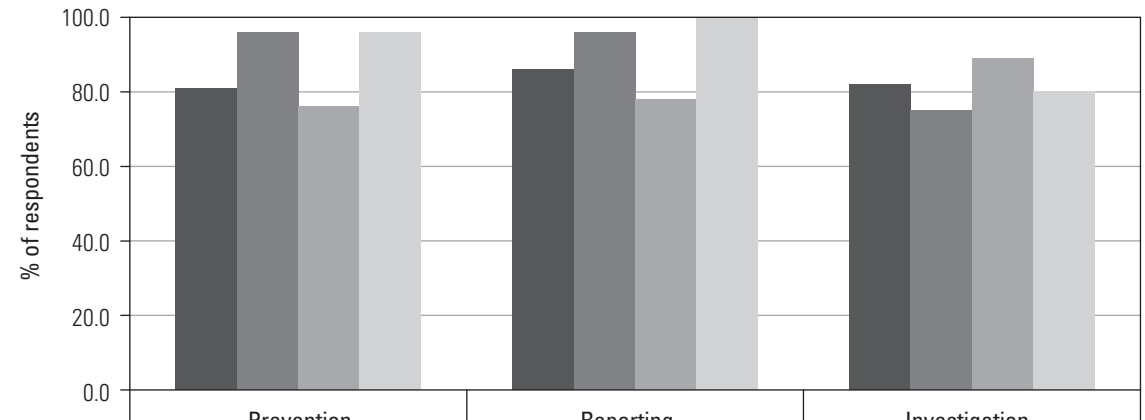
The survey showed further that 88% (91/104) of the gold mineworker respondents and 75% (47/63) of the platinum mineworker respondents thought they could play an important role in the investigation of theft of precious metals and equipment from mines.

It can be concluded that respondents thought they could play an important role in the prevention and investigation of crime. They stated they would report an incident were they approached by a syndicate to commit a crime, but regarded the reporting of theft less important and appeared reluctant to come forward with information pertaining to these incidents.

Perceptions of the responsibilities of the mineworkers' unions regarding crime

Figure 4.8 shows the percentage of respondents who believed that the mineworkers' unions could play an important role in the prevention, reporting and investigation of mine-related thefts.

An average of 83% (160/194) of the mineworker respondents and 78% (83/106) of the security guard respondents replied that mine unions could play an important role in the prevention of theft from mine premises. Mine unions could therefore consider playing a more active role in preventative information-sharing or they might consider public condemnation of theft. There are many ways the unions could get involved in the fight against



	Prevention	Reporting	Investigation
Gold workers	81.0	86.0	82.0
Gold security	96.0	96.0	75.0
Platinum workers	76.0	78.0	89.0
Platinum security	96.0	100.0	80.0

Figure 4.9: Perceptions regarding role of South African Police Service

crime without endangering their role as protector of the rights of their members.

Furthermore, an average of 86% (166/194) of the mineworker respondents and 81% (86/106) of the security guard respondents replied that mine unions could play an important role in the reporting of theft from mine premises. In addition, an average of 73% (141/194) of the mineworker respondents and 67.9% (72/106) of the security guard respondents believed that mine unions could play an important role in the investigation of theft from mine premises.

Although 44% of the respondents were not in favour of mine unions taking an active position (cancellation of membership) against offenders, most respondents believed that mine unions could take on more responsibility by assisting mine management in the prevention, reporting and investigation of crimes on mine premises, as reflected in Figure 4.8.

Perceptions of the responsibilities of the police regarding crime

Figure 4.9 shows the percentage of respondents who believed that members of the SAPS play an important role in the prevention, reporting and investigation of mine-related crimes.

As shown in Figure 4.9, 81% (157/194) of the gold mineworker respondents and 93% (98/106) of the security guard respondents stated that the police play an important role in the prevention of theft from mine premises. In addition, an average of 84% (163/194) of the mineworker respondents and 93% (98/106) of security guard respondents replied that the police play an important role in the reporting of theft from the mines. Furthermore, an average of 86% (167/194) of the mineworker respondents and 96% (102/106) of the security guard respondents stated that the police play an important role in the investigation of theft from mines.

Bearing in mind that many mineworkers (46%) did not regard the reporting of crime as an important responsibility for themselves, most (84%) indicated that the police had a responsibility to report crime. It is therefore not clear if the respondents understand their role in the reporting of crime – a factor that should be considered when providing training and orientation to mineworkers regarding their responsibilities to report crime incidents to which they are exposed.

Exposure to crime at the workplace

Respondents had the opportunity to indicate if they had ever been exposed to crime at the workplace. The different categories outlined in the survey included the following:

- Have you ever seen someone illegally remove GBM or PGM from mine premises?
- Has anyone ever asked you to remove GBM or PGM from mine premises?
- Have you ever seen someone illegally remove equipment from mine premises?
- Has anyone ever asked you to remove equipment from mine premises?
- Have you ever seen or do you know of a crime syndicate at your workplace?
- Have you ever been approached by a crime syndicate to work for them?

The respondents had the option to choose either 'Yes' or 'No' to questions (k)-(m) above. The survey shows that 15% (29/194) of the mineworker respondents replied 'Yes' to question (k) and 11% (22/194) of the mineworker respondents replied 'Yes' to question (l) regarding exposure to precious metals theft. Furthermore, 14% (27/194) of the mineworker respondents replied 'Yes' to question (m) and 13% (25/194) of the mineworker respondents replied 'Yes' to question (n)

regarding exposure to theft of mine equipment. Fifteen per cent (29/194) of the mineworker respondents replied 'Yes' to question (o) and 10% (20/194) of the mineworker respondents replied 'Yes' to question (p) regarding exposure to syndicates at the workplace.

The survey shows that 34% (36/106) of the security guard respondents replied 'Yes' to question (k) and 5% (5/106) of the security guard respondents replied 'Yes' to question (l) regarding exposure to precious metals theft. Furthermore, 46% (49/106) of the security guard respondents replied 'Yes' to question (m) and 4% (4/106) of the security guard respondents replied 'Yes' to question (n) regarding exposure to theft of mine equipment. Twenty-six per cent (27/106) of the security guard respondents replied 'Yes' to question (o) and 1% (1/106) of the security guard respondents replied 'Yes' to question (p) regarding exposure to syndicates at the workplace.

There were 274 positive replies in the dataset pertaining to exposure to crime at the workplace. It is clear that employees are exposed to crime incidents and it is therefore critical that all mine employees be thoroughly educated on what acts constitute crime, as well as the responsibility of each employee to report crime.

MINE MANAGEMENT AND THE SAPS

The mine management and police dataset comprised 15 respondents. Eight Diamond and Precious Metal branches of the police completed postal questionnaires, and respondents from the security management divisions of participating mining houses completed seven postal questionnaires.

Perceptions regarding impact of crime

The respondents' opinions of the impact of precious metals theft and theft of mine property were tested in six categories:

- Is theft of GBM or PGM from the mine premises a threat to job creation of employees of mines?
- Is theft of GBM or PGM from the mine premises a threat to job security of employees of mines?
- Is theft of GBM or PGM from the mine premises a threat to close marginal mines?
- Is theft of mine equipment a threat to job creation of employees of mines?
- Is theft of mine equipment a threat to job security of employees of mines?
- Is theft of mine equipment a threat to close marginal mines?

In the dataset, 13 of the mine management and police respondents stated that precious metals theft is a threat to job security, job creation and the viability of marginal mines. The survey indicated that 41% (43/104) of gold mineworker respondents and 56% (35/63) of platinum mineworker respondents held the same opinion.

Ten of the mine management and police respondents stated that theft of mine equipment poses a threat to job security, job creation and the viability of marginal mines. The survey indicated that only 21% (22/104) of the gold mineworker respondents answered 'Yes' to the question.

Perceptions of crime prevention methods

It was clear from the responses that the police and mine management hold different opinions regarding the effectiveness of security measures and preventative strategies implemented at the mines.

In the mine management dataset, five respondents believed that random security searches are successful in preventing the theft of precious metals and mine equipment. Five respondents from the police disagreed with this assessment.

Five respondents from the mining houses stated that security access control is a successful measure to prevent the theft of precious metals and mine equipment. Six respondents from the police disagreed with this statement.

Six respondents from the mining houses stated that the use of surveillance cameras is a successful measure to prevent the theft of precious metals and mine equipment. Four respondents from the police disagreed with this evaluation.

Seven respondents from the police believed that good salaries play an important role in the prevention of theft at mines. None of the respondents from the mining houses agreed with their police counterparts.

Seven respondents from the police believed that positive rewards for reporting a crime could prevent theft from mines. Five respondents from the mining houses agreed with this opinion.

All the respondents from the mining houses and six respondents from the police stated that an effective sentencing policy for offenders of mine-related theft could play an important role in preventing theft from mines.

The different perceptions of the police and mine management could be ascribed to the different functions they perform: mine management focuses on the prevention of crime and the safekeeping of product and property, while the police are mostly involved in the recovery of product and property outside the mine security perimeters.

Suggested position of mine management towards offenders

Respondents were asked to choose which action mine management should take against offenders of precious metals theft and theft of mine property. The categories to choose from included 'Dismissal and/or criminal charges', 'Transfer to lower-risk area' and 'Nothing'. Most (14/15) of the respondents replied in favour of dismissal and/or criminal charges if mine employees commit crimes, with 91% (272/300) of the mineworker and security guard respondents in agreement.

Suggested position of mineworkers' unions towards offenders

Respondents were asked to choose which action mineworkers' unions should take against offenders of precious metals theft and theft of mine property. The categories to choose from included 'Cancellation of membership', 'Provide legal assistance'

and 'Nothing'. Most (13/15) of the respondents believed that mineworkers' unions should cancel the membership of offenders of mine-related theft, while 44% (132/300) of the mineworker and security guard respondents disagreed.

Perceptions of the responsibilities of role-players

The respondents were asked to indicate the importance of the various role-players regarding the prevention, reporting and investigation of product and mine equipment theft.

Perceptions of the responsibilities of the mineworker regarding crime

All the respondents from the mining houses stated that mineworkers play an important role regarding the prevention and reporting of crime, and five respondents stated that mineworkers could play an important role during the investigation of crimes committed at mines. All the respondents from the police stated that mineworkers play an important role regarding the prevention, reporting and investigation of crimes committed at mines. By contrast, only 54% (105/194) of the mineworker respondents thought they play an important role in the reporting of theft from mine premises.

Perceptions of the responsibilities of mineworkers' unions regarding crime

All the respondents stated that mineworkers' unions play an important role regarding the reporting of crime, 93% (14/15) of the respondents thought that the unions play an important role regarding the prevention of crimes committed at mines, and 60% (9/15) of all the respondents stated that mineworkers' unions play an important role regarding the investigation of crimes committed at mines. An average of 86% (166/194) of the mineworker respondents thought mine unions play an important role in the reporting of theft from mine premises.

Perceptions of the responsibilities of the police regarding crime

Six respondents from the mining houses stated that the police play an important role regarding the prevention, reporting and investigation of crimes committed at mines. Seven respondents from the police stated that the police play an important role regarding the prevention, reporting and investigation of crimes committed at mines. An average of 84% (163/194) of the mineworker respondents thought the police play an important role in the reporting of theft from mines.

Conclusion

Although there are different perceptions regarding crime prevention methods and the effectiveness of security measures, all respondents acknowledge the importance and responsibility they have in preventing crime. Effective educational programmes to address the various perceptions regarding what conduct constitutes a crime and the effectiveness of security measures could lay the foundation for a more collaborative approach to crime prevention.

CHAPTER 5

Relationship between the mining industry and the SAPS

INTRODUCTION

Diamond and Precious Metal branches of the South African Police Service form an integral component of the mining industry's fight against the theft of their product. With the restructuring of the specialised branches within the police, some doubts have arisen as to how effective the mining industry's unique needs would be addressed in the future. This uncertainty was not only found within the mining industry but also within the police.

The reasoning behind the restructuring may be sound from an effective policing standpoint, and the detective branches at station level can use the expertise gained from the redeployed specialised detectives. However, the impact of moving dedicated detectives away from areas where they are known and away from large clients who have come to trust them, might not be to the police's advantage.

While the restructuring of the police is necessary to move more experienced detectives to the first level of investigation where they are currently most needed, the loss of experience in the investigation of precious metals–related cases could be significant in the short term. However, the restructuring may prove to be advantageous for the mining industry in the future. If the transfer of detective skills does take place, as envisaged by the SAPS, more detectives from different backgrounds would investigate precious metals cases and younger, first-level detectives would gain experience and guidance from their more experienced colleagues.

METHODOLOGY

Diamond and Precious Metal branches formed part of the study to determine the impact of precious metals theft on the mining industry. The branches that are still in existence were asked to complete postal questionnaires similar to those completed by the rest of the precious metals mining industry.

The detectives from these branches were asked to define their role in the detection process and their perceptions regarding the role of the police in preventing precious metals theft and organised crime. The questionnaire also tested their perceptions on the integration process that is currently being executed within the SAPS. The participating mining houses and refinery completed a variation of this questionnaire containing the same topics.

Follow-up face-to-face interviews were conducted with the participating mining houses and some of the detectives to obtain a more in-depth understanding of their opinions and concerns regarding the relationship between the mining industry and police. Some of the perceptions obtained with this questionnaire and follow-up interviews are reflected in the sections discussed below.

DIAMOND AND PRECIOUS METAL BRANCHES

The SAPS' intention to re-organise the detective service was announced early in 2000. The previous model implemented by the SAPS entailed several specialised branches that investigated a variety of crimes such as hijackings, gang activities, vehicle theft, crimes against the state, illegal immigration, cross-border crime, crimes relating to the occult, taxi violence, murder and robbery, organised crime, firearms, drug trafficking and use, stock theft, trafficking in endangered species, family violence, crimes against children, sexual offences, and diamond and gold theft.

The restructuring process comprises the transfer of the majority of detective service members working at specialised branches to detective branches based at police stations. The 503 specialised branches in the 42 policing areas of South Africa will be combined into approximately 200 branches. This restructuring will result in most cases being investigated at local or station level instead of at branch level, as in the previous model.

It is anticipated that by moving the focus of investigations to station level, competent detectives from various fields of expertise would establish skilled crime combating teams. These teams would be composed of most of the investigative disciplines.

Reasons for restructuring

Poor performance was the main reason for the restructuring of the specialised branches.[7] Performance evaluation was based on caseloads, productivity records and areas where the offices were situated. Restructuring has provided an opportunity to remove underperforming detectives from specialised branches. Branch managers generally believe that the investigative branches are now filled with a new sense of purpose and direction.

As most cases that were previously sent to the special investigation branches were processed at police stations first,

it is believed that the initial investigation would now be done with greater expertise as the specialised detectives can provide guidance at station level.

The redeployment of detectives is motivated by the need to transfer investigative skills to station level. In the past, specialised branches resulted in skilled and experienced detectives pursuing the prestige associated with specialisation. Police stations became reporting offices, while investigations took place at other locations.

In addition, integrating specialised branches with local police stations would lessen administrative costs,[8] with the duplication of premises, vehicles, equipment and administrative personnel being eliminated. Integration would therefore boost the capacity of police offices with much-needed vehicles and equipment.

Cutting the number of specialised branches by integrating them into one all-encompassing branch would also eliminate some uncertainty vis-à-vis the issue of responsibility. In the past, stations and branches had to communicate with one another to establish who would take responsibility for each case. This resulted in crucial delays in investigations, which in turn led to delays in evidence gathering. Under the new system, detectives at station level would have to investigate cases that were previously mandated for the specialised branches.

The increase of organised crime in South Africa contributed greatly to the confusion regarding areas of investigative responsibility. Organised crime groups are usually involved in more than one crime category and these crimes could not be investigated effectively if not treated as one entity.

Furthermore, it is believed that integration would enhance communication between branches. The previous organisational structure did not promote the flow of information between different specialised branches. This led to duplication of efforts between the different investigation teams from various branches.

Specialised branches served more than one community at a time. As these communities were in many cases fairly isolated, the detectives found it difficult to build relationships based on trust with members of the communities. Detectives would now be able to access the local pool of information from the communities in which they serve.

Detectives are accountable to the victims of the crimes they investigate. When victims of crime report their cases at the police station, they expect to be able to talk to the investigating officer to enquire about the case. Specialised branches were not always based within easy access of the victim.

New specialised branches

Two new specialised branches will be created comprising members that were not redeployed to station level. These branches are the Organised Crime Branch, consisting of ultimately 600 detectives based in 21 branches throughout the country, and the Serious and Violent Crime Branch.

The SAPS adopted a multidisciplinary approach in this regard to concentrate "on key syndicates as opposed to individual crimes".[9] The purpose of this approach is to ensure that investigations are intelligence driven and coordinated by experienced detectives.

Perceptions regarding the future of Diamond and Precious Metal branches

The closing of the specialised branches raised several questions regarding the service the SAPS would be able to deliver when these branches ceased to exist. The concern was mainly that investigative knowledge and experience would be lost when these detectives were transferred. There is the perception that serious cases would not receive the specialised expertise that the branches were generally expected to provide.

Diamond and Precious Metal branch members believed that the integration would have a negative impact on the investigation of cases, with cases possibly not receiving the required attention. It was also mentioned that during the transitional period more attempts might be made to steal product or expand criminal groups due to the perceived lack of investigative capacity. These detectives saw the Diamond and Precious Metal branch members as specialists and thought that the integration of these branches into Organised Crime branches would lead to less professional investigations of precious metals theft cases. Organised Crime branches have many priorities and precious metals theft would be regarded as merely another one of these.[10]

There were, however, some detectives who believed that the integration would have a positive effect on the investigation of cases as well as on the prosecution of offenders. They held the opinion that criminals would be threatened by the thought of being investigated by the Organised Crime branches as opposed to the Diamond and Precious Metal branch detectives.

Perceptions of the mining industry

There is a general feeling in the mining industry that government could do more to support the industry's plight to curb precious metals theft. Interviewees were not very positive when asked if the fight against precious metals crime could be won; they were mostly of the opinion that as long as poverty exists there would be criminals trying to obtain illegal precious metals.

The industry believes that it is the responsibility of the police to investigate criminal cases and that mine security should only provide assistance during the process. They are of the opinion that the police should provide more support to the justice system to ensure that perpetrators are convicted. They also believe that the police play a crucial role in investigating the involvement of organised crime syndicates in crimes committed against the mines.

The restructuring of the detective division has caused some concern in the mining industry. The industry perceives the integration of the Diamond and Precious Metal branch detectives into other detective branches as a loss of investigative expertise and trust. Participants from the mining industry believe they would not receive adequate service from the detectives located at police stations, compared to the service they received from the 'specialist' Diamond and Precious Metal branch detectives. They realise that the police

may be able to afford a more holistic approach to the challenge of precious metals theft in the long run; but there is concern regarding the proficiency of the station-level detectives. There is uncertainty about the level of competency and service delivery the restructured detective service would be able to provide, hampered by the loss of knowledgeable and respected 'specialist' detectives from the respective areas.

The mines are generally not in favour of the integration of the Diamond and Precious Metal investigation branches into Organised Crime branches; however, if integration must take place, they believe it should be undertaken in such a way that specialists are retained, resources pooled and the integrity of personnel ensured.

The greatest obstacle in the process of integration could be the lack of transparency by the police regarding reasons for the integration of the Diamond and Precious Metal branches. Many role-players in the mining industry were not approached by the SAPS to provide opinions of how the integration process should be conducted, and therefore lack confidence in its envisioned efficiency. Allaying the fears of the mining industry and incorporating them into the integration process would therefore facilitate better working relationships between the parties. This in turn would have a positive effect on the investigation of crime.

FACTORS AFFECTING THE RELATIONSHIP BETWEEN THE MINING INDUSTRY AND THE SAPS

The mining industry has in the past extended support to the SAPS Diamond and Precious Metal branches with funding for projects, as well as providing specialised training for detectives regarding certain aspects of the precious metals mining industry.

Certain crimes compel collaboration between the police and the mining industry: both parties recognise that a symbiotic relationship must be attained in order to be successful in their respective tasks. Some of these crimes are discussed in this section.

Illegal underground mining

The mining industry believes that the focus of precious metals thieves has in recent years shifted from refineries to pre-metallurgical phases in the production process.[11] This shift has resulted in an increase in illegal underground mining activity, which is cause for serious concern since illegal mining is conducted without supervision and no safety procedures are adhered to. Illegal mining is therefore not only regarded as a security issue but also a safety issue that has serious impacts on the physical structure and layout of mines, with potentially disastrous consequences.

The highest incidence of illegal underground mining is detected in the Free State goldfields. These mines are connected underground and create the opportunity for illegal miners to enter the underground system from less controlled access points. When access has been gained, the illegal miners make their way to the more profitable mining areas. Illegal miners minimise the risk of discovery by restricting the number of times they enter and exit the mineshafts. According to mine personnel, these miners can stay underground for extended periods of time. They travel several kilometres underground to reach a safe area, where they set up a base camp for the duration of the illegal mining operation. Food and consumables are obtained through the cooperation of legitimate mineworkers and dedicated runners. This process enables them to stay underground for up to a month at a time.

Closed off areas, tunnels that are not presently being mined in and areas considered unsafe for commercial mining are the most common places where illegal mining occurs. Illegal mining activity has also been detected recently in high-grade ore areas. These areas are mined when mine employees are not in the tunnels, during or directly after blasting operations have taken place, and over weekends when mines run on skeleton staff.

Arresting illegal miners has become more dangerous during the past few years as violent resistance with firearms occurs more frequently. Since it is dangerous to discharge a firearm in some underground places due to the presence of explosive methane gasses, mine security personnel do not, as a rule, carry firearms underground. They are consequently unable to defend themselves in a confrontation where firearms are used by illegal miners.

Illegal miners are equipped with rudimentary mining equipment comprising mostly mine property stolen from underground storage facilities.

Stolen equipment includes:	Other equipment includes:
■ Oxy-acetylene equipment	■ Firearms
■ Hard hats	■ Flashlights
■ Cap-lamps with batteries	■ Candles
■ Emergency rescue packs	■ Matches
■ Gumboots	
■ Overalls	
■ Drilling equipment	
■ Blasting equipment	
Own equipment may include:	
■ Self-manufactured hand mills	
■ Mercury	
■ Blasting equipment	
■ Gas cylinders for cooking food	

Illegal mining poses a safety risk to the industry and must be eradicated. During the past three years the mining houses most affected by this phenomenon have used extensive access control measures at all possible entrances to their mining operations, including access to linked underground areas.

Since this criminal activity could have an enormous impact in terms of human lives at risk as well as on the economy of the country, it has become necessary to build an effective and proactive relationship between the mining industry and government. In an attempt to address this challenge, a stakeholders' forum was held in Welkom comprising the local department of Minerals and Energy representatives, mine management and the SAPS.

The organised crime threat

According to South African legislation, organised crime can be interpreted as an illegal business operating for profit. The analyses of syndicates indicate that eliminating one syndicate or its leader would not stop the illegal activity indefinitely.

Eradication of organised crime businesses poses unique challenges: as long as there is a market, there will be a person or a group to supply the product. Removing one group will raise the price for the product, which in turn would become an incentive for another group to fill the gap.

The government must consider two main concerns when it comes to the organised crime threat. First, organised crime creates an economy outside the scope of official markets. This part of the economy is not taxable by the state, with considerable loss of revenue implications. Second, this is one of the few crimes that threaten the sovereignty of the state; it lays the foundation for corruption within government and political structures. The business sector is also vulnerable to organised crime groups using it to launder illicit gains back into the legitimate financial system.

Asset forfeiture legislation enables the state to acquire the property and money of persons connected to criminal activity. Policing organised crime can therefore have rewards for the state and could serve as a deterrent for offenders.

Furthermore, South Africa has become a regional power and has to consider international interests when determining national priorities. The presence of organised crime and corruption within a country may negatively affect foreign investment and economic growth.

Considering the fact that the mining industry has become a target for organised criminal activity, it is imperative that the problem be addressed with effective collaboration between the mining industry and government at all levels.

The criminal justice system

Specialised courts have been a successful government-led initiative to act decisively against the perpetrators of certain crimes. Commercial crime was identified as one of the crimes to be addressed with this solution, and the first specialised Commercial Crime Court in South Africa was established in 1999. Since then, several specialised Commercial Crime courts have been established. These courts were instituted as a joint effort between the National Prosecuting Authority, the SAPS and the Department of Justice and Constitutional Development to fight the rising tide of commercial crime. Funding for these courts is sourced from the business sector.

The motivation for the establishment of these courts included, among other factors, more consistent sentencing and trained magistrates and prosecutors to facilitate the processing of these complicated cases. Before establishment of the Specialised Commercial Crime courts, only 6% of all commercial crime perpetrators prosecuted were convicted, compared to the 23% currently being achieved in Pretoria.[12]

The success of the initiative can be ascribed to capacity building and skills development within the justice system and a holistic approach to the challenge presented by this kind of crime. Investigators and prosecutors are encouraged to function as a team to combat commercial crime.

Former National Director of Public Prosecutions, Bulelani Ngcuka – who has been a driving force behind this initiative – said that commercial crimes cost the country R4.6 billion during 1998/99. These crimes made up about half of overall crime committed during this period.[13]

In comparison, Peter Gastrow estimated that approximately R1.8 billion was lost to South Africa per year during the period 1994-98. Furthermore, from 1995–98, the total value of stolen PGM material recovered was approximately R59 million. (These losses reflect actual recoveries of PGM as no estimation could be made as to what the potential losses would amount to.)

As precious metals theft also poses a significant financial threat to South Africa, the mining industry should approach the Justice Department to determine if a specialised court could be implemented for precious and non-ferrous metals–related crimes.

Minimum prison sentencing has proved to be another effective countermeasure used by the criminal justice system to address certain crime phenomena that pose a significant threat to the public. It has a proactive function vis-à-vis potential offenders as well as a reactive function, encouraging victims to report crimes as there is no uncertainty as to the result of a guilty conviction for the crime.

Considering the significant differences in sentencing passed down to offenders found guilty of crimes relating to precious metals theft (discussed in Chapter 2), a minimum sentencing policy may be an effective solution to curb precious metal theft.

PERCEPTIONS OF ROLE-PLAYERS CONCERNING THEIR RELATIONSHIP WITH EACH OTHER

The different role-players in the industry have their own perceptions regarding certain factors that affect the investigation of precious metals theft. These perceptions sometimes differ and this can influence the working relationship between the parties. Some of these perceptions are discussed below.

Reflections on recovery of product

Both the mining industry and the police record crime statistics; however, the methods used are not standardised within the mining industry and the statistics do not correlate with those of the police. All respondents agree that the recovery of precious metals is not an accurate reflection of what is stolen.

One of the most difficult obstacles facing the mining industry, and which is an integral component of the industry, is the mine core factor. This is the acceptable loss of product during mining and processing. It is therefore inherently impossible to determine exactly how much product is lost before the final precious metal product is produced.

There are different opinions regarding the distrust of recovery figures. Some interviewees believed that not all cases are reported to the SAPS and that many cases are dealt with internally by the mines. If this is the case, non-reporting will distort police statistics and may result in decisions being made based on incorrect data.

Some mining houses indicated that they do not report some attempted theft cases to the police as recoveries were made before the product was removed from the mine premises (such as the discovery of abandoned packages).

There is also concern that normal investigative techniques do not expose the impact of organised criminal groups completely. Some key players in the mining industry believe that the recoveries reflect only 20–40% of the true losses due to crime.

Criminal profile

The respondents believed that precious metal thieves could vary from top management personnel, including security personnel and mine employees, to the illegal miners. It is generally believed that the motivation for these thefts is personal financial gain, which can lead to theft, fraud, bribery, etc.

The mining industry agreed that there are various profiles of offenders in this regard. The highest occurrence of illegal activity was found among security personnel: it is believed that in as much as 90% of the cases, the criminals involved had the cooperation of security guards.

A further concern for the mining industry is the high occurrence of criminal involvement by contractors. As employees of contracting companies are not always properly screened, it was found that employees dismissed at one company would turn up as employees of a sub-contracting or another vendor company.

Syndicates

The police and mining industry respondents generally agreed that the precious metals mining industry is the victim of organised crime groups. By analysing several cases, the JIG came to the conclusion that local syndicates are connected to larger international operations. This theory seems to be supported by other sources, which speculate that much of the proceeds of precious metals crime were laundered through Switzerland, and that 90% of smuggled gold was transported there before it was distributed to other markets.[14]

The activities of these national and international syndicates are highly organised and usually go hand-in-hand with money laundering and other commercial crimes. South African organised crime groups can be linked to international crime groups consisting of Nigerians, Russians, Germans and Indians.[15] Triads are also implicated in the smuggling of precious metals and precious stones from South Africa to China. The Triads are well-structured and organised and are difficult to penetrate for investigative purposes.[16]

Demand for product

There is general agreement within the SAPS and the mining industry that there is a demand for the product both internationally and locally. Many respondents believed there is a strong link between ethnicity and the demand for unwrought precious metals in South Africa. The Middle East, Asia and Europe were named as major foreign consumers of illicit precious metals, with India mentioned in particular as a suspected destination of much of the stolen South African precious metals.

The illegal trade in precious metals is based on a supply and demand model, much the same as any legitimate business. This implies that the person offering the best price would be the preferred buyer for the smuggler supplying the illegally obtained precious metals. This practice resulted in much of the product moving out of South Africa to certain foreign countries, with more buying power, offering better prices. It is also easier to launder the proceeds in foreign countries and then either to bring it back into the South African banking system through legitimate transactions or to keep the money offshore in tax havens using numbered bank accounts.

The demand for gold and platinum is fuelled by the perception that the possessor of a product is the owner thereof. This makes it an attractive commodity for smugglers, international terrorists and general tax evaders. Precious metals are some of the commodities that are accepted as payment for a wide variety of goods and services without questions being asked about its origin. The advantage of using this form of payment is that it can be moved from one country to another without significant loss in value, and it is largely untraceable. This factor, in conjunction with the lack of substantive legislation in many countries governing the control of precious metals movement in and out of borders, makes it easy to accept the commodity as payment for arms and ammunition, human trafficking victims, drugs and many more regulated items.

As mentioned, Chinese citizens are suspected of illicit precious metals trade through the involvement of Triads.[17] Sources within the mining industry also indicated that PGM are mainly exported to Belgium, the Netherlands and Luxemburg (Benelux), the United Kingdom and the United States.[18] The range of countries that these products are exported to makes it clear that the control over precious metals is almost impossible. Tax- and duty-free gold can be bought in Dubai and numerous other countries, which can be used as access points where stolen precious metals are melted and mixed with legally obtained precious metal to enter the legitimate world markets.

The global trade in unwrought precious metals exists because, from a smuggler's perspective, there are no taxes on smuggled precious metal, no bank charges on transactions and because it is outside of the control of governments and banks. This commodity, as well as diamonds, is the best method of payment for all 'less than legal' transactions between suppliers

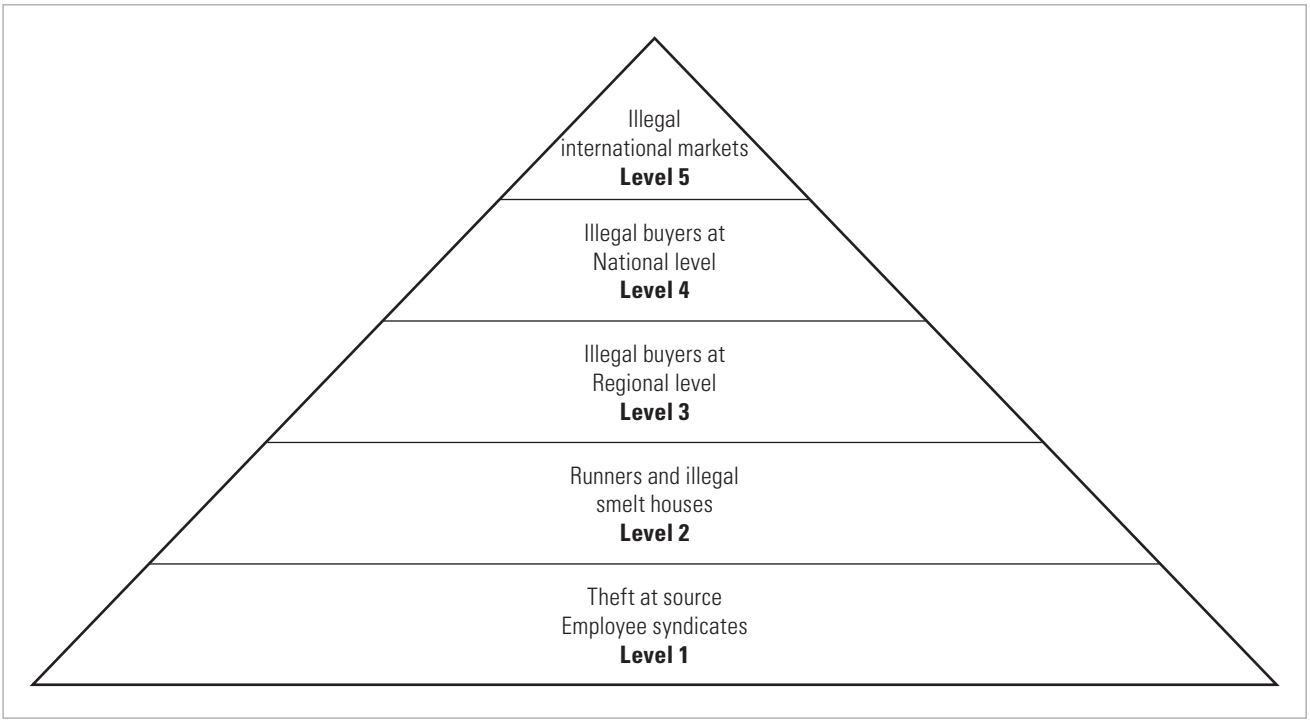


Figure 5.1: JIG categorisation of syndicates

who want to remain anonymous and buyers who do not want their purchases to become public knowledge.

Collaborative approach

The nature of precious metals theft requires a combination of effective informer networks and undercover work in order to combat it effectively. The mining industry believes that the following approach could enhance the investigative process and results of prosecutions:

- Investigations must be intelligence driven and conducted by competent police officials and mine investigators, supported by an effective judicial system.
- Dedicated and motivated investigation task teams should investigate reports by employees of fellow workers acting strangely.
- Indicators that theft of product may be committed should be followed up internally by mine security divisions, and where necessary with the assistance of the police by means of special operations. These indicators include:
  - plastic bags hanging on the inside of plant fences;[19]
  - frequent and suspicious movement in and out of plants by workers;
  - unnecessary movement of equipment such as welders in and out of ultra high-risk areas; and
  - employees living above their means (new cars, expensive clothing, etc.).
- Coordinated and integrated security systems should comprise:
  - effective intelligence networks in macro and micro areas;
  - comprehensive analysis of information;
  - effective sharing of information, while preserving security;
  - good management of security personnel;
  - coordinating operations;
  - the implementation of, for example, surveillance cameras, alarm and tracking systems as well as covert technical measures in identified high-risk areas that follow the production line;
  - crime awareness programmes;
  - anonymous reporting systems; and
  - effective monitoring and auditing.

JOINT INVESTIGATION GROUP

The JIG was established in 2002 as a joint initiative between nine mining houses and the SAPS' Diamond and Precious Metal investigation branches. Its function and role is to investigate and analyse high-ranking syndicates involved in the theft of precious metals.[20] All participants in the JIG venture contribute to the team's operational support. Initial support included vehicles, personnel and funding. The most important contributing factor to the success of the JIG is the sharing of information by all participants in the initiative.

The JIG initially investigated crime syndicates and arrested criminals at the highest levels of these structures; however, the JIG's focus after the first few months shifted to lower-level syndicate members, with the change in strategy ascribed to more successful arrests and recoveries. From a short-term financial perspective it made sense to focus on the runners and low-level buyers; this would reflect a high success rate and would show a profit from recovery. This approach may, however, be less productive in the long run, taking into consideration that organised criminal groups would always be able to recruit low-level members cheaply. As long as there is a demand and the international smuggling

routes stay open, South African mines will lose more product through theft.

In order to prioritise JIG efforts, syndicates were categorised according to five levels (see Figure 5.1):

- Level 5: Illegal international networks
- Level 4: Illegal national buyers
- Level 3: Illegal regional buyers
- Level 2: Runners and illegal smelt houses
- Level 1: Theft at source. (mineworkers, couriers, labourers, intruders, illegal miners, etc.)

Level 5 – Illegal international networks

It is suspected that Level 5 syndicates are located outside South Africa and that they have international contacts and buyers who assist in the process of laundering stolen precious metals into the legal system. This component of the crime syndicate is usually not known to the network partners on the lower tiers of the network hierarchy, making it the most difficult component of the organised crime group to identify and prosecute successfully.

This tier is also highly organised and usually functions as a legitimate business, apart from its criminal activities. Most of these criminals are politically influential in their own countries and are relatively safe from prosecution because even though they may be suspected of profiting from crime, corporations and corporate law insulate them from personal accountability.

Level 4 – Illegal national buyers

Buyers at the national level are the 'high-flyers' in South Africa. They may be known as legitimate businessmen and women, and are affluent members of society. They tend to own several legitimate businesses and are well connected, both in business and politically. Their contacts enable them to move large illegal consignments out of the country to the international market, without drawing the attention of authorities. These contacts are often high-ranking officials in government departments dedicated to controlling the movement of goods. They may also cultivate relationships with local police, using them as an unofficial informer network to keep ahead of any official investigation.

Level 3 – Illegal regional buyers

Owing to the physical location of the different sources of precious metals in South Africa, there was a need for another level in this organised crime group. These buyers know some of the regional buyers. They collect ore from Level 2 persons throughout the region, and make it ready for the more discerning market by further refining the product and having greater consignments ready for buyers.

Level 2 – Runners and illegal smelt houses

This class can be seen as the 'middle management' of the organised crime group. They are buyers who know Level 1 members, and they buy low-grade ore at low rates from the first level. Some refining takes place at this stage and the grade of ore is somewhat increased. This tier functions as another safety layer between the final recipient and the police. Should these people be caught, they would be able to tell the SAPS very little because they may only know the person who buys from them and some of the lower-level runners in the business.

Level 1 – Theft at source (mineworkers, couriers, labourers, intruders, illegal miners, etc.)

Level 1 comprises largely 'unskilled' criminals who are the lowest-ranking members in the organised crime industry. They are controlled by higher-ranking members of the group. These members do not receive large financial rewards for the product they provide to the next tier in the organisation. These lower-level members give the higher-ranking members a sense of security and lower the risk of capture as well as the risk of disruption in the organisation if a higher-ranking group member is caught.

This level also comprises support personnel for the organised crime group, without which very little theft would be possible. These crime facilitators include corrupt miners, mine security personnel, police officials and justice system employees. This type of criminal activity is very difficult to expose because in many instances these 'facilitators' do not have to contribute physically to the theft; they are generally only detected if they become careless in the performance of their duties.[21]

The JIG made the decision to focus on Level 3, 4 and 5 suspects in particular. According to their initial analysis, 73 suspects were identified on Level 3, another 16 suspects on Level 4 and 7 suspects on Level 5.

In order to grasp the magnitude of organised criminal activity in the mining industry, estimated figures provided by the JIG based on a case study of one Level 3 syndicate member, one Level 4 syndicate and one Level 5 syndicate will be discussed.

A Level 3 syndicate member caught during 2003 had records of illegal transactions in his possession during his arrest. These records were seized and examined. An analysis of the transactions indicated that this suspect bought an average of 92 kg of GBM (with a purity of between 75% and 95%) per month, for a period of two months.

Assuming a gold price of R90,000/kg and an average of 85% purity of bought product, it is conceivable that the suspect bought unwrought gold to the value of R7,038,000 during the two-month period. The actual revenue loss to the mine was calculated at R9,175,000 over a period of only two months.

The JIG established in 2004 that a Level 4 syndicate supplied a Level 5 international buyer on a monthly basis with approximately 250 kg of GBM with an estimated purity of 80%. Using an average of R90,000/kg, the value involved is R18 million (R22,500,000 x 80%) a month. According to JIG information, 17 Level 4 syndicates are supplying the three (identified) Level 5 gold smuggling syndicates currently operating within South Africa.

To quantify the possible extent of GBM theft by Level 4 syndicates in South Africa, an extrapolation based on the case study of one identified Level 4 syndicate is considered. If it is assumed that the 17 Level 4 syndicates deal in half the estimated

average of R18 million a month, the Level 4 syndicates could be selling unwrought gold in excess of R1,836 billion a year. In comparison, Peter Gastrow estimated that approximately R1.8 billion was lost to the country a year during the period 1994–98. The illustrated 50% business success of the Level 4 syndicates could therefore be considered to be a very moderate estimation.

The JIG exposed a Level 4 syndicate exporting 232 tonnes of PGM to a Level 5 international buyer. The value of the 13 containers was estimated to be between R17 million and R85 million (with an average estimation of R51 million) based on the variation in g/ton PGM in the shipments.

According to the JIG's information, there are currently five Level 5 platinum smuggling syndicates buying from the Level 4 syndicates active in South Africa.

To demonstrate the possible extent of PGM theft by the active Level 5 syndicates in South Africa, the following estimation was made: assuming each Level 5 syndicate receives one shipment averaging R51 million a year, these (five) syndicates could be exporting in excess of R255 million worth of PGM a year. The question, however, is: How many shipments are exported?

Recovery licence holders are also of great concern to the industry as they are entitled to buy, possess, refine and sell unwrought precious metals whilst the regulation of this industry is not very effective. An analysis of one such licence holder's transactions revealed that he bought almost 500 kg of fine gold in ten months. This fine gold had an average purity of more than 80%. This particular licence holder is suspected of buying more than half his product from illegal sources. This could be calculated to be more than R26 million of illegal precious metals bought by one relatively small buyer in ten months.

A South African refinery received more than 17 tons of gold from 52 recovery-works licence holders during 2004, with an average purity of 80%. Should only half of the recovery-works licence holders have the same profile as the suspect, it would suggest that almost R400 million worth of stolen gold was fed back into the legal trade using this method.

JIG successes

Table 5.1 illustrates the JIG's successes in terms of recoveries achieved due to the efforts of this initiative during the period February 2002–May 2004. Further successes include R455,940 cash seized during arrests.

The South African Revenue Service (SARS) and Asset Forfeiture branches provide assistance in the case of asset forfeiture regarding suspects arrested by the JIG. Four cases requiring asset forfeiture involving R2.4 million have been finalised and another four cases involving R52.5 million are pending.

Bearing in mind the financial impact that identified suspects could have on the South African economy, it is evident that the continued and extended efforts of the JIG are necessary in order to curb precious metals theft.

PRECIOUS METALS AND SOUTH AFRICA'S BORDERS

Introduction

Strong relationships and a working environment conducive to cooperation are needed if the haemorrhaging of precious metals from South African mines is to be stopped at South Africa's borders. The mining industry should realise that a border police member cannot be familiar with all the different forms that precious metal bearing product may be found in, and the mining industry should take some responsibility in training these police members in what to look for. Information distribution and expert opinions are crucial components of the law enforcement effort to curb precious metals theft, and the mining industry can make valuable contributions to this process.

Without cooperation and the sharing of information, the theft and illegal export of precious metals and precious stones from South African soil will continue indefinitely. The worrying aspect is that South African precious metals and precious stones have found their way to various legitimate as well as illegal dealers throughout the world during the past decade. The product had to cross the border at some point: this should be a mayor concern for both the mining industry and the SAPS.

The mining sector is spending millions on the best security personnel and security devices money can buy. The industry realises the threat posed by criminal mining to their profit margins and, ultimately, to the sustainability of mining operations. Acknowledgement of the threat is, however, not enough. Active industry participation has been solicited by the Chamber of Mines of South Africa to form a united front against criminal mining operations. In an attempt to stem the flow of illegal precious metals, senior security operations managers representing many of the precious metal mines gather frequently to share crime information. However, several different factors impact on the success of this approach from the mining sector. The general lack of standardisation in investigative procedures is one such contributing factor.

Table 5.1: JIG recoveries, February 2002–May 2004

	Gold	Platinum	Total
Cases	26	17	43
Value in Rand	1,359,187.93	11,855,776.60	13,214,964.53
Arrests	42	25	67

During an analysis of the mining industry and the challenges they face, it became apparent that they are fighting an uphill battle against overwhelming odds. The industry is faced with opponents who, in most cases, are trained by the industry itself and who know the mining processes and procedures.

Porous South African borders

Tonnes of precious metal bearing ore are moved from South Africa to other countries, where it is refined to the product sold on legitimate markets in many parts of the world.[22] This raises the question: How is this volume of product moved from South Africa to its final destination?

The weight of the product transported has to be taken into account. It is usually not totally refined precious metal that is smuggled to foreign refineries, but rather precious metal bearing product at various stages of refining. The bulk volume of the smuggled product increases when the grade of refinement lowers, as the value of the lower refined product also decreases. It would therefore be theoretically possible for one person to move a R1 million worth of platinum alone, if it were completely refined in the form of jewellery, for example. This would, in most cases, not be noticed by airport security when travelling to another country. Conversely, a team of criminals with trucks would be needed to transport R1 million worth of precious metal bearing material if the product was stolen at an earlier stage of refinement.

There is a common school of thought in the mining industry that stolen product is refined to some degree within South Africa. The number of illegal refining operations that have been discovered and closed by the combined effort of mining security agencies and the SAPS underwrites this idea.[23]

The locally refined, illegal product is not pure enough for use in high-grade jewellery and industrial applications; it has to be refined again by a dedicated refinery. It stands to reason that not all the product stolen from platinum mines is of such a high grade that simple use of acetylene blowtorches would generate enough heat to melt the raw material into a workable product. It would therefore seem that the raw or semi-refined product is moved through South African borders in bulk. Police officials at border posts are largely unable to identify this product. This can partly be attributed to lack of training and knowledge on what may be exported to foreign countries, and the fact that few people can distinguish between product from the extraction process in platinum refinement and granite gravel for road works.

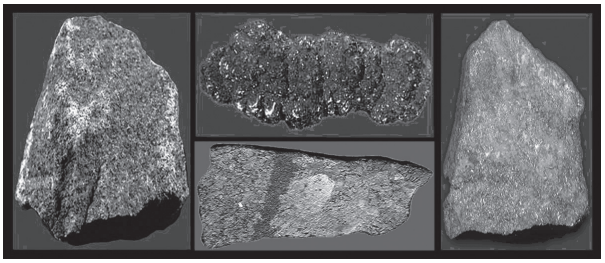
The threat of detection and prosecution becomes negligible after the illegally obtained product is shipped from South African shores and enters a neighbouring country. Counterfeit documentation is produced to support the origin of the precious metals, and the product can usually be exported legally from hundreds of international transit points. A product exported in this way then enters the destination country legally, supported by all the necessary documentation, and is then incorporated within the normal flow of legal product.

This unlawful method of obtaining product on the black market has the advantage of 'plausible deniability': even if the refinery is caught processing the illegally obtained product, the paper trail can be followed to the exporting entity in the country that has exported the product legally. The refinery can argue that its responsibility ended with verification of the export/import documentation. It would be unreasonable to expect a refinery to determine the true origin of each product it acquires, beyond checking the accompanying paperwork. Neither the exporting nor the destination country's law enforcement agencies would question the legitimacy of the product if documentation accompanying the shipment appeared to be correct and legal.

SELF-TEST

The general comment that it is difficult to distinguish between different types of raw ore can be demonstrated by means of a self-test.

From the selection of ore samples chosen for their easily recognisable characteristics, which is the PGM ore?



(Answer: Middle, bottom.)

It seems clear that unless one has some prior knowledge of the subject it would be almost impossible to determine which of these rocks is the PGM ore. One therefore cannot expect a police official at a border post to be able to identify correctly PGM ore.

Border control and smuggling

This section briefly examines the effectiveness of the border control procedures currently in place at South African borders. The Scholes report, which assessed the need for capacity building against drug-trafficking and organised crime in Southeast Africa stated that "the South African, Mozambique and Swaziland land border area [is] one of the principal routes for the flow of illegal goods in the region".[24] This report focused only on the north-east borders of South Africa; however, it is unlikely that other South African borders are any better.

This section relies on previous studies on unrelated issues since there is little substantiated evidence of precious metals crossing South African borders. The common denominator in these studies is that a substantial amount of product has to cross the border from South Africa to a neighbouring country without being detected.

The first instance looked at was the illicit trafficking of stolen and hijacked vehicles across South African borders. According to Gastrow, South Africa is a major source of vehicles smuggled within Southern Africa. Interpol statistics revealed that up to 98% of illicitly acquired vehicles in the Southern

African Development Community (SADC) region are of South African origin. These statistics were supported by the results of a joint operation, Operation V4, conducted in 1997 involving security agencies from Botswana, South Africa, Zambia and Zimbabwe. Of the 1,576 stolen vehicles recovered, 1,464 were stolen in South Africa.[25]

The SAPS estimated that approximately half the vehicles stolen and hijacked during 2001 were smuggled to other countries.[26] However, the smuggling of stolen vehicles across South African borders should not be as rife, taking into account the computer systems and professionalism of the SAPS Border Police, SARS and South African Customs officials. These three government components are tasked with controlling border posts and, in theory, they work together to ensure the effective and quick transit of people and goods.

Some of the lack of effective border control may be attributed to the ingenuity of criminals who, according to Jenni Irish, use a "method of smuggling vehicles across the borders [that] involves the use of duplicate papers."[27]

The next example of ineffective border control is the illicit abalone trade from South Africa. According to Jonny Steinberg, it is almost impossible to determine precisely how much and in what way abalone is smuggled from South Africa due to the lack of monitoring of South African commercial ports. A disturbing finding of his research is that exports are not searched at South African sea ports for contraband unless the authorities have information regarding the illegality of a consignment.[28]

These two examples lay bare the challenges the South African border control units face. Despite the commitment of law enforcement agencies to eradicate abalone poachers and illicit vehicle exportation, they are hampered by lack of personnel, equipment and, primarily, experience in this regard.

The parallel between abalone poaching, illicit vehicle trafficking and precious metals smuggling is non-detection of the product during transborder shipment. If a priority such as abalone and vehicles – which are more recognisable than a truckload of rocks – escapes detection, how could raw precious metal bearing ore be detected?

Conclusion

Effective control of South Africa's border is one component of the fight against precious metals theft; however, this is not the only component that needs to be enhanced – control over the product at the mines also needs improvement. Both these processes depend heavily on cross-training and collaboration to succeed. But a collaborative relationship can only exist in an environment where there is trust between the partners; and trust can only be built if there is a degree of transparency between the groups.

For example, the restructuring of the SAPS may not have been such a controversial issue if the SAPS' ultimate goal was disclosed from the onset. Equally, it would not have been difficult for the precious metals mining industry to provide SAPS personnel with basic training in precious metals product identification and identification of equipment associated with illegal mining. By using the resources at hand, the SAPS would have enhanced their own capacity and would have been in a position to reassure the mining industry that no investigative capacity would be lost due to the restructuring.

The SAPS and the precious metals mining industry must now concentrate on rebuilding the relationship based on trust that existed in the past. Both parties should acknowledge that there is need to work together to curb precious metals theft in the future, and they should act as a united front against criminals.

CHAPTER 6

Theft prevention and contributing factors

INTRODUCTION

Asset protection is a main concern for the mining industry as the loss of its assets and product has a direct negative impact on a mine's profit margin. Considerable differences between the physical location of mines and other external influencing factors have led to various methodologies being adopted by the mining houses vis-à-vis the best method of asset protection for the industry.

These diverse approaches led to substantial variations in the allocation of human resources involved in the physical protection of assets, as well as in the technology used to supplement the active security methods. Attempting to create a rigid 'best practice' document would not be practical in these circumstances. Some parallels may, however, be drawn by analysing the physical security measures currently implemented by various mines.

During the past decade there has been a radical change in the mindset of asset protectors. They have moved away from a purely reactive function to becoming more proactively focused. Processing plants are now designed to incorporate the security necessary for asset protection, and shafts are placed where natural environmental features will enhance normal security measures. Much of the security budget is currently spent on the latest technological developments. This is part of a programme to put the asset protection components of mines in a better position to detect and prevent theft.

The general move towards finding technological solutions to crime problems has led to some reduction of personnel in the traditional areas of asset protection and security. For instance, perimeter patrolmen and dogs have mostly been replaced with infrared and motion-detection cameras, while hand-held metal detectors are in the process of being replaced with low-level radiation scanners.

The following chapter is not presented as an exhaustive list of security measures and barriers that can be put into effect to prevent crimes in the mining sector. It is merely a reference to some measures observed during visits to mines for the purpose of this project. The success of a security operation does not necessarily hang in the balance if some or even all these measures are not employed. Basic principles do, however, have to be followed when an assessment is made as to the effectiveness, control and management of access to protected areas, and subsequently the product.

COMMON SECURITY MEASURES

Each mine employs its own security model, with significant variations in measures and application. It was established that most mines follow the principle of isolating their operations, wherever possible, from the close proximity of external interference. This model is usually implemented by isolating the entire mining operation from outside contact, mostly by creating a conservation area around the mining sites to create a buffer zone. The purpose of the buffer zone is to make entry on to mine property as conspicuous as possible, as well as to simplify controlled entry into secured areas.

None of the physical security measures can function in isolation: the motion-detection cameras have to be monitored by security personnel and the fences have to be patrolled and monitored on a regular basis. The success of a preventative security package is therefore a measure of the successful integration of technological measures and human experience.

The following are some of the physical security measures installed to control access to mine property:

- **Buffer zones** in the form of *nature reserves* are found around most of the mining operations. The nature reserves are also a way of contributing to the environmental responsibility of the mines. Further strengthening this security measure is '*no man's land*'-type areas. These areas are cleared of all trees and plants that could provide protection from detection next to, but outside, the inner perimeter fence. The purpose of this wide cleared band is to increase the possibility of trespassers being observed while attempting to gain access through the outer perimeter fence. The *outer perimeter fence* is usually the next barrier. It may be a high fence with barbed and/or razor wire to discourage opportunists from illegally entering the mine premises. This fence constitutes the main deterrent for trespassers and must be of sufficient strength and durability to slow down intruders so that security personnel can observe and apprehend them before they have time to penetrate this defensive measure. The next barrier is a *sanitised area* found directly within the outer perimeter fence. It is cleared of all plant growth using pesticides and is continuously monitored with motion-detection and infrared equipment.
- **Technological and physical monitoring** is used to supplement the buffer zones by utilising *security patrols* at fences. Although physical patrols are becoming less necessary for protection purposes, it still continues to be

an important component of a balanced mine protection plan. Observation of physical barriers has become easier, with more mines starting to implement *cameras* to monitor fences and gates. This use of technology has freed up much needed human resources from the monotonous and labour-intensive monitoring functions. The added advantage is that managers can now review incidents from captured video feed. *Security booms* at access points add to control over the movement of vehicles through control checkpoints. These gates are used in conjunction with a security officer who does random searches of vehicles. The same function is fulfilled with *access control gates* where mine personnel are monitored and searched depending on their level of access during their normal daily activities.

Security measures employed inside the perimeter to prevent the unauthorised removal of precious metals from the restricted areas include the following:

- **Vetting of personnel and contractors** is done before they are allowed on to mine property or employed by the mine. This includes checking the applicant against the police's offender database and confirming information supplied by the applicant on his/her application form. This information could be more helpful if an arrangement was made within the industry to vet all personnel throughout the industry and not only against information gathered by one mining house.
- **Each worker is identified** using the latest technology, such as iris scanning, photo identification, access cards, biometric scanning and facial recognition scanning. Identification and access control are key elements to consider when security measures are weighed up against production schedules. Owing to the large number of employees who need to access the mineshafts during a specific period and the logistics involved in sending them kilometres underground, it is a challenge to do effective access control without causing undue delays and inconvenience to the workers.
- Equally important as preventing uncontrolled access to sensitive areas is **control measures** within the security barriers. The use of metal detectors and searches have become commonplace in the mineworkers' normal work environment. These measures are, however, not infallible and rely on the integrity of the person administering the control measure. Further measures such as polygraph testing, random security searches, low-level radiation scanning, 'Goldfinger' devices, X-ray scanning, 'clean' and 'dirty' 'change houses' and a 'metal-free' environment are focused on the control of personnel and preventing the unauthorised movement of precious metal elements. Access to controlled areas is inhibited by the use of double and triple locking systems as well as measures where the right to use specific keys is limited.
- All these measures are enforced through **observation** and security patrols on mine premises. Cameras have been installed in the sensitive areas, and these are manned for immediate response and recorded for in-depth analysis and recordkeeping.

PRODUCT IN TRANSIT

Some plants receive their product from mines outside South Africa's borders. The transport process entails road journeys through many risk areas, with only basic security measures. Product transported in this way is normally low-yielding material and therefore considered low-risk for theft; however, recent hijackings have raised some concern regarding security during this procedure.

The following security measures are generally implemented to safeguard a shipment from its origin to its destination:

- One of the first basic principles is that there is a **random schedule** for departure and arrival at predetermined points along the route. With **satellite tracking** becoming commercially available, most transportation vehicles are now monitored remotely while in transit. Along with tracking, **emergency buttons** have been installed on the transportation vehicles for use when a hijacking attempt is suspected. By pressing the emergency button, response teams from the closest relevant mine are alerted. Another basic principle is to randomly **vary the route** taken by cargo-carrying vehicles and to have these vehicles accompanied by **escorts** to and from the South African border. In most instances, radio and cellular **communication** are constantly available en route and drivers are required to check in at specific points and times.

Bullion transportation

During the study we had the opportunity to evaluate security procedures concerning the transport and security of bullion shipments. The mining industry uses advanced systems and procedures to ensure security of bullion shipments; such measures include minimising road transport and varying flight paths. Security at landing zones is of high standard and is executed rapidly.

Ground transport is minimised where possible. Bullion is generally not transported via road, and where this cannot be avoided, the convoy is tracked by satellite. The armoured vehicles are in constant communication with mine security in the vicinity as well as with the armed escort vehicles accompanying it. Various routes are followed for each consignment, and times for arrival and departure are varied at random.

INTELLIGENCE

Syndicates are an integral part of the precious metals theft phenomenon and they exploit the same sources of information that security personnel would use to apprehend criminals. Criminal undercover operatives infiltrate security divisions, the workforce and even management positions to acquire information on security measures and weak points in the procedures. This information is then passed on to syndicate management to be used for making informed decisions regarding product theft.

Mine management and security personnel should be aware that syndicates are highly organised business units that will use

all the resources at their disposal to infiltrate any mine if the rewards are considered high enough. The risk of being targeted as a possible recruit is not restricted to lower-level employees but extends to any person that may be in a key position crucial to the syndicate, including top management. Recruitment may take the form of willing participation (because of perceived rewards), unwitting participation or coercion.

The organised crime groups will use any means necessary to persuade a person to become part of their organisation. Money is one of the measures used by criminals to entice loyal employees to reveal information or violate procedures. In circumstances where corruption does not succeed, organised crime groups may use violence, or the threat thereof, against trustworthy employees as well as against their families and friends.

Many mine employees could be targeted as unwitting sources of intelligence by infiltrating their social groups. Syndicates also use local *shebeens* and pubs that mine personnel frequent, where careless or disgruntled employees may unintentionally disclose vital security information to syndicate informers.

Passive sources of intelligence should not be disregarded. Aerial photographs and blueprints of buildings and plants are valuable sources of information to syndicates. Most mines, for example, are not situated in restricted airspace areas, making it possible to photograph the secured areas from the air. Information acquired in this way may lead to more focused attacks on a mine's security measures. Security personnel routines can also be established by observing such from vantage points close to the secured sites, and access to sites may be gained from public roads close to or in secured areas.

HUMAN RESOURCES

Human resources are essential to the mining industry, and fluctuations in the number of people employed by each mine as well as personnel transfers within the industry, from one mine to another, are a reality. It is therefore essential to look at establishing an industry-wide personnel database. This database would need to contain the particulars of all people that have been employed by all the mines and related industries, including contractors and maintenance personnel. A well-maintained database of this sort would allow mines to evaluate new employees more thoroughly, ascertaining if someone was employed by the mining industry previously and whether he/she was dismissed from a mine for an offence.

WORKPLACE CONTROL

The precious metals mining industry is dependant on the production and refinement of precious metal elements. It is, however, common knowledge that during some of the production processes, the metal becomes a salt composite that is not magnetic. This composite is therefore not susceptible to searches with metal detectors and the mine is consequently forced to employ other, more invasive, methods to search personnel that have access to secured premises.

Curbing precious metals theft by criminals who try to circumvent security measures by concealing product in or on their person is the first step in controlling theft in general. Employing a metal-free environment in high-risk areas can, in most cases, assist in controlling precious metals theft. Any possible violations to the metal-free protocol would still have to be examined by more invasive searches at the medical centre, but this method would assist in limiting the time spent on searching personnel and their belongings.

The most effective method of preventing a person from removing something from the secured area is to prevent him/her from taking anything in, in the first place. It is therefore essential to control the movement of equipment and tools used by contractors and mine employees. Equipment is time consuming to inspect and lends itself to be used as smuggling containers.

COMMUNICATION

Communication is the essence of syndicate and criminal activity; it would be impossible to convert the stolen product to legal tender without speaking to somebody and making arrangements for sale and purchase. It stands to reason that if communication within the secured areas could be restricted, opportunities for the planning of theft and warnings by collaborators could be limited.

It became clear during visits to the mines that there are, for example, no industry principles or procedures governing the use of cellphones within secured areas, and payphones are installed in rest areas in some zones containing highly concentrated product. While it could be argued that phones were installed to enhance the work environment for personnel, the risk for potential misuse must be kept in mind.

It should be noted that any communication device is a potential risk to a company. Camera phones, in particular, are becoming an effective intelligence-gathering tool employed by criminals.

SUMMARY

Several operations by the National Prosecuting Authority have indicated that professional criminals are targeting the mining industry. There is little doubt that the degree and nature of criminal activity points to the work of large and organised operations. One should not only focus on the loss of precious metals as an indicator of the level of theft, but also on the loss of related mine property: both components are crucial to the existence of mining operations.

The perception survey indicated that although the acts that constitute crime may not be completely understood by mineworkers, there is a general willingness among mine employees to participate in efforts to reduce criminal activity. It may be possible to 'recruit' thousands of watchful workers by educating mine employees and making them aware of what constitutes or is an indicator of criminal behaviour; it is, after all, in their best interests to protect their livelihoods by rooting out criminals.

Security managers and personnel should always remember that, given enough time, weaknesses would be found in the best control and security systems money can buy, as prospective criminals continuously test security measures. That said, it would be irresponsible not to keep security measures up-to-date by using the latest technology. However, security measures should be balanced with human interactivity in order to create a more pleasant work environment.

Most mines are implementing state-of-the-art security measures in an effort to protect their assets against theft: it is astonishing to see how much money is spent on the newest security measures and on security personnel. What is even more astounding is that the criminal element continues to thrive within such a secure environment. This observation can only lead to the conclusion that security measures alone do not address the challenge properly. The industry will have to look at other approaches to supplement current security measures.

Balancing the use of resources for security upgrades and projects designed to **acquire loyalty from personnel** may deliver better results in the long run. Some resources could be used to ensure that the mine employees feel loyalty and respect towards their employer, and realise that the impact of crime is disadvantageous to them and their families.

Although it is not the social responsibility of the mining industry to do so, one such measure may be to provide subsidised schooling for the children of mine employees as well as training opportunities for employees. This system is already in place at higher levels, with mine employees encouraged to study and better themselves. By using this kind of motivational tool, the industry may become more family orientated; it may begin to police itself when employees realise that it is to their social advantage to assist the company actively in its crime prevention efforts. This kind of endeavour has to go hand-in-hand with an educational process aimed at employees, ensuring that the workforce understands the advantages of assisting the company in combating crime.

Communication within the mining industry remains one of the most challenging areas of concern. Substantial inroads have been made with the sharing of information, but there is still some reluctance to share crime information openly. This may, however, be due to the non-standardised definitions, non-standardised terminology and different work methodologies that exist.

It is crucial for the well being of the precious metals mining industry that information sharing takes place in a formally structured way. Terms of reference should be agreed upon and terminology should be standardised to enable mines to share data in compatible formats.

Vetting systems should be shared between the different mining houses. All personnel currently employed should be vetted against a combined database to ensure that criminals do not move from one type of mining operation to another without being traced. This would imply a much closer relationship throughout the whole mining industry and not only restricted cooperation among precious metals mining houses.

A closer relationship between the mining houses was one result of the previous study conducted by Peter Gastrow,[29] and cooperation has improved considerably since then. There is, however, still much work to be done before the type of open relationship needed to combat crime effectively is realised.

Physical security measures will only serve as a deterrent for as long as they have not been tested and ways found to circumvent them. Crime syndicates could create circumstances where expendable runners 'test' newly implemented security measures to determine their effectiveness. Professional precious metals thieves would then have to assess if the security measures would allow them to continue functioning in that area of the mine.

Security-related personnel should consider the possibility and likelihood that their operation has been compromised. All managers should remember that their employees are only human and they may be tempted to steal if the opportunity presents itself. There is no definitive method of determining if a syndicate has approached employees to persuade them to participate in theft of the product they are supposed to produce or guard. The only deterrent against becoming involved in crime is the mindset of the worker. The company should therefore strive to create a culture of responsibility and loyalty within workers towards their employer.

Organised criminal groups usually order large amounts of product from illegal suppliers and distribute it to large processing plants. The opportunistic criminal would in all probability not be able to process any substantial amount of PGM, even if the material was easier to process, as with GBM. But the question remains as to what the criminal would do with the product after refining it to a workable form. The criminal would still need a safe distribution network through which the semi-refined product could be sold.

Cooperation between the SAPS and the mining industry has to be praised in most cases. Investigators at the mines currently do most of the investigation before handing over a docket to police detectives. This procedure seems to be working to the advantage of both organisations. The almost complete investigation saves detectives a considerable amount of time and effort since the facts of the case need only be verified before taking the docket to court. The mining industry is afforded the opportunity to examine the case and to compile offender profiles for future use, as well as to evaluate the effectiveness of security measures.

This procedure works well and ensures that the SAPS handles only cases where convictions are almost assured. However, the relationship between the mining industry and the justice system could be improved upon. These organisations should cooperate closely to combat mine-related crime. Investigators must understand that evidence should be led during trial to inform the presiding judicial officer of the impact of precious metals theft on the South African economy and of the role each individual criminal plays in the theft.

During initial investigations, more attention should be paid to the collection of evidence which would prove that the accused formed part of a syndicate. Longer sentences may

then be secured for criminals if organised crime involvement can be proven.

The Law Commission of South Africa should also be approached with the statistics on convictions for the past ten years. There are significant inconsistencies in sentences handed down by different presiding officers and a strong case could be made to implement minimum sentencing for mining-related crimes.

CHAPTER 7

Findings and recommendations

INTRODUCTION

Since the previous study undertaken by Peter Gastrow, the mining industry has restructured the management of crime-related information. Most mines have developed comprehensive databases to record information pertaining to product theft. The need to be more transparent with regard to crime information was also acknowledged, and this has led to collaborative investigations and the sharing of information among the mining houses and with the police. The methods used to compute statistics for the police as well as for the mining industry are, however, still not completely standardised for comparative analytical purposes.

The findings and recommendations in this chapter are based on data provided by the mining industry and the SAPS. The authenticity of the data has been verified where possible. In most instances, however, the researchers had to rely solely on the integrity of the mining industry and the police to provide them with the accurate information.

FINDINGS

Statistics

- In relation to the first study, there was a significant decrease in recovered refined gold from 1998 (see Figure 2.3). The mining houses commented that the decrease could be contributed to the extensive improvement of security since the previous study was undertaken. It could not, however, be ascertained whether or not the decrease was influenced by the different reporting methods adopted after 1998.
- The participating gold mining houses reported 4,002.768 kg recovered GBM material to the police for the period January–December 2000 and 23,669.416 kg for the period January–December 2001 (see Figure 2.1). The police reported 25,560.9 kg recovered GBM material for the period January–December 2000 and 43,127.9 kg for the period January–December 2001 (see Table 2.1). These discrepancies indicate the lack of a standardised reporting protocol, making comparative findings impracticable.
- The participating platinum mining houses reported 69,667.553 kg recovered PGM material to the police for the period January–December 2000 and 4,374.223 kg for the period January–December 2001 (see Figure 3.1). The police reported 931.154 kg recovered PGM material for the period January–December 2000 and 617,680.416 kg for the period January–December 2001 (see Table 3.1). It is therefore clear that the reporting methodology used by the mining industry and police needs to be addressed before a reliable statistical analysis can be made.

Content Analysis

Gold Bearing Material

- Most of the crimes that were committed inside the secure area or detected at the security perimeters of the gold mines involved GBM or mine property with a value lower than R500. Almost half were reported to security. All crimes reported to security involved the theft property. No loss of GBM was reported.
- The most common places used to conceal GBM or property included equipment, bags, on the body, residences, vehicles, fields/dumps and lockers. Only 7% of the crimes constituted other places or methods of concealment.
- With reference to the profile of offenders at gold mines, 56% of the offenders were unemployed and 41% were mine employees. It was alarming to find that such a high percentage of offenders were trespassing on the secure mining areas while committing theft.
- Thirty-eight per cent of the court cases, at gold mines, resulted in guilty findings and 35% remained undetected. Most (89%) of the guilty findings involved the loss of GBM, while most (72%) of the undetected cases involved loss of property.
- No pattern was detected in the analysis of 71 cases regarding the criteria for sentencing used in court. Sentences not only varied extensively regardless of the type of crime, but it was also evident that the value of the crime held no consistent measure. Furthermore, where offenders received the same sentences, the personal profiles of the offenders varied significantly.

Platinum Group Metals

- Nearly half of the crimes committed and/or recoveries were made inside the secure area of the platinum mines.
- An average of 43% of the crimes committed inside the secure area of the platinum mines or detected at the security perimeters involved product with a value lower than R2,500.

- The common places where PGM was recovered at platinum mines were in equipment, bags or bottles, residences, vehicles, fields and on the body. None of the crimes constituted other places or methods of concealment.
- Of the platinum mine cases analysed, 24% were still pending at the time of the analysis. A further 42% of the cases were dealt with internally.
- At platinum mines, 73% of the offenders were mine employees or contractors and 18% of the offenders were unemployed.

Perceptions survey

- Half the respondents in the 'gold mineworkers' category did not answer the questions relating to the understanding of theft and illegal possession of precious metals correctly. Training and orientation should therefore include the concepts of theft and unauthorised possession to ensure that employees clearly understand what conduct constitutes a crime.
- A significantly high percentage (87%) of mineworker respondents thought they played an important role in the prevention and investigation of theft of GBM, PGM and equipment from the mine premises. However, only 54% of the mineworker respondents indicated that the reporting of theft from mines was important.
- The general perception of the mineworker respondents was that the mine unions could play an important role in the prevention, reporting and investigation of theft from mine premises.
- Most mine employee respondents believed that the position of mine management towards offenders of GBM or PGM theft should be dismissal and/or criminal charges.
- None of the mining house management respondents believed that salaries played an important role in the prevention of GBM, PGM and equipment theft from mine premises.
- However, most respondents from the police believed that improved salaries could play an important role in the prevention of product and property theft at mines.

Extent of theft of precious metals in South Africa

The mining industry faces unique challenges in its fight against crime. Despite advanced technology to detect and prevent theft, it cannot be determined exactly how much product is lost during processing phases, leaving a window of opportunity for theft and corruption. Furthermore, although most mines have developed processes to record and manage crime-related information, the methods used by the police and the mining industry are not standardised for efficient analysis purposes.

It became evident during interviews conducted for the study that there is a general perception in the mining industry that most stolen product sold on the black market eventually ends up in some organised illegal business or syndicate. It is assumed that most of the stolen product is finally disposed of by top-level syndicate members who supply organised criminal dealers. In order to approximate figures pertaining to the extent of theft of precious metals in South Africa, statistics recorded on identified syndicates may therefore reflect the most reliable magnitude of losses suffered.

The JIG identified that three Level 5 gold smuggling syndicates supplied by 17 Level 4 syndicates are operating in South Africa. To quantify the possible extent of GBM theft of the identified Level 4 syndicates in South Africa, an estimation based on the case study of one Level 4 syndicate identified in 2004 is illustrated. The identified Level 4 syndicate supplied the Level 5 syndicates with an average of R18 million worth of GBM a month. If it is assumed that each of the 17 Level 4 syndicates deal in 50% of the estimated average of R18 million a month, the Level 4 syndicates could be selling unwrought gold in excess of R1,836 billion a year. In comparison, Peter Gastrow estimated that approximately R1.8 billion was lost to the country a year during the period 1994–98. The illustrated 50% business success of the Level 4 syndicates could therefore be considered a very moderate estimation.

The JIG identified five Level 5 platinum smuggling syndicates active in South Africa. One shipment of 13 containers with an estimated value of R51 million was confiscated in 2004. The following illustrates the possible extent of PGM theft of the identified Level 5 syndicates in South Africa: if it is assumed that the Level 5 syndicates each receive one shipment worth an average of R51 million a year, they could be exporting more than R255 million worth of PGM per year.

Although the estimated figures provided by the JIG are not based on scientific calculations or exact reporting figures of the mines, they do reflect product stolen from mines and which is sold illegally by the criminal businesses identified thus far. It may not be possible to break down the information to the exact time and place of theft, but it does provide a better indication of the possible extent of theft of precious metals in South Africa.

RECOMMENDATIONS

Government responsibility

The longstanding, cooperative relationship between the South African government and the precious metals mining industry has been tense during the past decade. Government has tightened its control over mining activities in an attempt to channel more of the country's natural wealth to the population at large. While participating fully with government, the mining industry has been facing another, more direct, threat to its existence in the form of more expensive mining processes and the general rise in costs of mining operations. It will at some point become more expensive to produce precious metals than what the product can be sold for; at which stage mines will be forced to close down operations until the markets change or more cost-effective mining techniques can be employed. This will, however, imply job losses for the many employed by the mining industry.

The criminal threat to the precious metals mining industry is thus becoming a threat to South Africa's national growth

and economic future. Government should therefore consider enhancing the service and protection it provides to the precious metals mining industry. As a priority, the criminal threat to the continued existence of marginal mines has to be acknowledged. All precious metals mines are victims of precious metals theft; the profitability of large mining operations is under pressure from these thefts, but more concerning is the threat to the existence of some marginal mines. If the service provided by the South African government does not provide adequate protection to precious metals mines, they will become unprofitable in some cases, and cease to exist in others. This in turn would lead to many job losses in the mining and related industries.

The measures in place, and the existing forums to develop cooperation between government and the precious metals mining industry should therefore be enhanced. Government should consider providing more assistance and becoming more actively involved with crime prevention in the precious metals mining industry. More government involvement in crime prevention would assist in promoting growth in the mining sector, which would provide for a more robust economy and more employment opportunities.

Focus should be placed on the crimes committed against the industry as a whole. As mentioned, the mining industry is suffering losses due to product theft that threatens the continuation of marginal mines. Even more serious, the theft of non-ferrous metal threatens the lives of all underground personnel. The mining industry loses millions in production downtime when, for example, electrical copper cable leading to ventilation shafts is stolen; and the risk posed to the lives of those working underground cannot be over-emphasised. These threats need to be addressed with comprehensive action plans and drastic measures.

Cooperation with the JIG

The JIG was established in February 2002 as a joint initiative between the mining industry and the SAPS to address syndicates involved in precious metals theft. The success of the JIG is the result of an integrated approach followed by its investigative teams. Information and resources are shared to focus on specific criminals and their networks. These methods have proven to be very effective in eradicating organised crime groups from the mining industry. Continued financial backing or extended manpower for this investigative team is considered a good investment, based on its successes to date.

There may be some value in expanding the JIG team to incorporate investigators from other sectors in the mining industry, for example, the diamond mining and coal mining sectors. By analysing the industry more holistically, it may be possible to identify offenders from other sectors in the mining industry that move from one area to the next, and from one type of mining activity to the next.

The need for a National Copper Theft Forum was identified during the past decade, and it came into existence to investigate the theft of non-ferrous metal. The theft of copper and copper cable poses a threat to the profitability of many industries in South Africa, and life threatening to the underground personnel in the mining industry. Due to the seriousness of this threat, a joint approach to identify and eradicate syndicates involved in the theft of non-ferrous metal should be a priority as well, and the scope of the JIG should also be enlarged to include such theft. Members of the JIG and the National Copper Theft Forum should, however, guard against isolating the two teams from each another; data and information must be shared in a continuous and structured way. This would enable analysts to examine the trends between copper and precious metals theft.

Re-evaluation of historical data

Personnel data and data from investigations should be captured and incorporated in a comprehensive database. Criminal profiles can be compiled from this data to determine risk factors within the workforce. Sharing this data could result in a very effective and low-cost vetting system, based on workers currently employed well as those previously employed by the mining industry. A central industry database to store this information could be a workable solution to ensure that corrupt employees do not move from one mine to another.

Lack of comprehensive comparative data

The mining industry and the police do not have a standardised method to compute statistics relating to the theft of precious metals. All the relevant role-players need to agree on a standard in order to facilitate a comprehensive method for calculating comparative data for analytical purposes. In addition, there should be consistency within the industry regarding the interpretation of the definitions of crimes, as well as what is recorded as an actual recovery in relation to what is considered a potential loss.

Social development

Security measures are only one solution to counter the theft of precious metals: they can help prevent theft by making it difficult to gain access to protected product, but they cannot stop the phenomenon completely. Poverty and unemployment have been found to be some of the main contributors fuelling criminal behaviour.

Social development is therefore an important method of countering crime more holistically. Some mining houses already participate in and contribute to social upliftment in their communities. Mining houses not doing so should consider participating in such initiatives. Social upliftment in local communities with prominent mine involvement can be essential in combating the crime phenomenon. Most of the mine's workforce will also benefit from better housing, schools and infrastructure in the community in general.

Education on relevant issues

Analysis of the data obtained through the study led to the belief that there should be more comprehensive education on relevant issues in the mining industry. A number of mineworker respondents did not interpret questions relating to theft correctly, did not seem to realise that theft poses a threat to job

security and seemed reluctant to report any observed cases of theft. The survey indicated, however, that they do believe they can play an important role in the prevention and investigation of crimes.

Minimum sentencing

The cases received for analysis indicated little or no consistency regarding the sentences imposed for precious metals theft. It is suggested that the mining industry, in conjunction with the Justice Department, explore minimum sentencing legislation for precious metals theft.

Specialised courts

Conviction rates increased significantly after specialised criminal courts were instituted to handle commercial crime cases. The mining industry should approach the Justice Department to determine if the same model could be implemented for precious metals–related crimes.

Price fluctuations

The table is included in the report to assist the reader in calculating price fluctuations during the past seven years. For example, the loss of 1 kg of gold in 2000 was equal to R62,108, while in 2002, it was equal to R104,453. If 1 kg was stolen in June 2006 the mine would stand to lose R119,504.

Price fluctuations for the period January 2000 – June 2006

Year	Gold	Platinum	PGM production weighted
	R/kg	R/kg	R/kg
2000	62,108	122,299	156,483
2001	75,150	144,818	169,914
2002	104,453	181,683	168,526
2003	87,952	166,287	127,174
2004	84,732	175,294	137,425
2005	90,904	183,743	156,953
2006 to June	119,504	224,872	221,577

As reflected in the Peter Gastrow (April 2001) report, the SAPS handed in all recovered GBM (whether refined or unrefined) for processing at the mines. The mine laboratories determined the value of the recovered product. The SAPS then divided the value of the recovered product by an average gold price of R 50 to determine the weight in grams of precious metal recovered. The recovered tonnage therefore reflected the weight and value of refined gold.

This method has changed since the Gastrow study. The police now send the recovered product to the mines or police laboratories to determine the tonnage and value based on the gold and PGM price of that day.

Glossary

Accused The person or persons being charged in a criminal case

Change house An area designated for workers to change into work clothing before the start of each shift. Washing facilities are provided for workers to wash themselves at the end of each shift. In these areas there are lockers for the safekeeping of private clothing

Clean change house In this change house the employee changes into clean work clothing provided by the mine.

Concentrators An industrial plant that produces purified or concentrated mineral ore

Convicted Declared guilty of a crime in a court of law

CPTED Crime Prevention Through Environmental Design

Dirty change houses In this change house the employee changes out of the dirty work clothing.

Domicile Place of permanent residence. Somebody's true, fixed and legally recognised place of residence, especially in cases of prolonged absence that require the person to prove a continuing and significant connection with the place

FSL Forensic Science Laboratory

GDP Gross domestic product

GBM Gold bearing material – ore in all the forms it is found during mining and processing until it is classified as refined gold

Gold Soft, heavy yellow metal that is highly valued and widely used to make jewellery; symbol – Au

Goldfinger A very sensitive walk-through metal detector. This type of metal detector is able to detect abnormal levels of gold and platinum group metals by comparing initial body scans to current body scans

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JIG Joint Investigative Group

Metal-free area An area where no metal is allowed to move in or out. Metal free clothing provided by the company

Non-ferrous Not containing iron (gold, silver, copper, etc.)

Offenders Persons who committed a crime, violated a law or transgressed a code of conduct

PGM Platinum group metal – precious, silvery-white metallic element, highly malleable and ductile; highly resistant to chemicals and heat; used in jewellery and chemically as a catalyst and used in electroplating; PGM consists of the following group of metals: platinum (Pt), rhodium (Rh), iridium (Ir), palladium (Pd), ruthenium (Ru) and osmium (Os). Also referred to as 4E PGM (platinum + palladium + rhodium + gold)

Recoveries Stolen product that was detected and repossessed

Refined gold Gold made pure by an industrial refining process

SADC Southern African Development Community

SAPS South African Police Service

SARS South African Revenue Service

Smelt Melting ore in order to get metal from it, or produce metal in this way

Smelters A place where smelting is carried out, or an apparatus used for smelting

Unrefined ore Naturally occurring mineral from which particular constituents, especially metals, can be extracted profitably

List of tables and figures

Endnotes

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18 Interviews with mine employees and police officials.
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20 Ankia Swart, National Investigation Team, AngloGold Ashanti Protection Services and Hannes Nel, Harmony Protection Services.
21 This is the opinion of the heads of asset protection of the mining houses and the refinery that participated in the study. They are cognisant of the threat posed by the recruitment of their own personnel by criminal organisations. They also acknowledge that, in some cases, the recruited personnel were not lured by money but motivated by fear for their families' safety. Criminal organisations active in the mining industry do not hesitate to eliminate any threats to their existence.
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South Africa has the world's largest known gold and platinum group metal reserves and the mining industry is the second largest employer making this sector of strategic importance for the development and sustained growth of the country. As such, the loss of precious metals from South African mines and refineries should be of concern to all South Africans. This report is the outcome of an independent study, on behalf of the Chamber of Mines of South Africa, to add to the knowledge and understanding of precious metal theft from mines and refineries in South Africa. It follows a similar study undertaken some five years ago and also published by the Institute for Security Studies.

Both the mining industry and the South African Police Service (SAPS) have addressed many of the shortcomings identified by the previous study with respect to policies and procedures to prevent theft and other forms of losses. There is nevertheless a need for enhanced support from the state if the precious metal mining industry is to continue to address product theft. Other challenges also remain, including the need to standardise reporting methods and legal definitions, before a comprehensive comparative analysis of theft across the sector can be undertaken.