



**NORTHAM PLATINUM SUSTAINABLE DEVELOPMENT (SD) DATA
REPORTING GUIDELINE DOCUMENT**

CHANGE HISTORY

Version	Date	Name	Revision Description
1	May 2010	Rene Rautenbach	First Draft
2	January 2011	Rene Rautenbach	<p>The following sections were updated:</p> <ul style="list-style-type: none">• Definition of Shifts Lost• Definition of Land Use• Definition of Training and Education• Procedure for data collection for Potable Water• Definition and procedure for data collection for Recycled Water <p>The following new KPIs were added:</p> <ul style="list-style-type: none">○ HDSAs in management○ HDSA Procurement○ Women in Mining○ Adult Basic Education and Training

CONTENTS

CHANGE HISTORY		2
1	INTRODUCTION	5
1.1	PURPOSE	5
1.2	SCOPE	5
2	REPORTING REQUIREMENTS	6
2.1	ACCURACY AND COMPLETENESS OF DATA	6
2.2	RESPONSIBILITIES FOR DATA COLLECTION AND COLLATION	6
2.3	REPORTING	6
2.4	AUDIT TRAIL	6
3	SAFETY	7
3.1	FATALITY INJURY INCIDENCE RATE (FIIR)	7
3.2	LOST TIME INJURY INCIDENCE RATE (LTIIR)	10
3.3	REPORTABLE INJURY INCIDENCE RATE (RIIR)	13
3.4	TOTAL INJURY INCIDENCE RATE (TIIR)	16
3.5	SHIFTS LOST	19
3.6	STOPPAGES (54s)	20
3.7	MINE INSTIGATED STOPPAGES	21
3.8	HEAT STROKE	22
4	HEALTH	23
4.1	NOISE INDUCED HEARING LOSS (NIHL)	23
4.2	TUBERCULOSIS (TB)	25
4.3	MEDICAL SURVEILLANCE	26
4.4	VOLUNTARY COUNSELLING AND TESTING (VCT)	28
4.5	ANTI RETROVIRAL TREATMENT (ART)	30
5	LABOUR PRACTICES	32
5.1	TOTAL WORKFORCE (INCLUDING CONTRACTORS)	32
5.2	TURNOVER	34
5.3	WOMEN IN MINING	36
5.4	COLLECTIVE BARGAINING	37
5.5	TRAINING AND EDUCATION	38
5.6	ADULT BASIC EDUCATION AND TRAINING (ABET)	40
5.7	HISTORICALLY DISADVANTAGED SOUTH AFRICANS (HDSAs) IN MANAGEMENT	42
5.8	HDSA PROCUREMENT	43
6	ENVIRONMENT	44

6.1	TOTAL ENERGY USE	44
6.1.1	<i>Electricity Purchased</i>	44
6.1.2	<i>Coal</i>	45
6.1.3	<i>Petrol</i>	46
6.1.4	<i>Diesel</i>	47
6.1.5	<i>Paraffin</i>	48
6.1.6	<i>Jet fuel for helicopter</i>	49
6.2	ENERGY SAVED	50
6.3	WATER USE	51
6.3.1	<i>Municipal water (potable water)</i>	52
6.3.2	<i>Ground water (fissure water)</i>	53
6.3.3	<i>Water discharge</i>	54
6.3.4	<i>Recycled water</i>	55
6.4	MATERIALS USED	57
6.5	WASTE	59
6.5.1	<i>General waste to landfill</i>	59
6.5.2	<i>Hazardous Waste</i>	59
6.5.3	<i>Recycled Waste</i>	60
6.6	ENVIRONMENTAL INCIDENT REPORTING	62
6.7	LAND USE	63
6.7.1	<i>Land Under Management</i>	63
6.7.2	<i>Land utilised for mining and related activities</i>	63
6.7.3	<i>Rehabilitated Land</i>	63
6.7.4	<i>Land Protected</i>	63
6.8	CLOSURE AND REHABILITATION COSTS	65
6.9	SULPHUR DIOXIDE (SO₂) EMISSIONS	66
6.10	GREENHOUSE GAS (GHG) EMISSIONS	67

1 INTRODUCTION

1.1 PURPOSE

In order to ensure consistent, complete and accurate reporting of data throughout the organisation, Northam has compiled an SD Data Reporting Guideline document. This guideline document sets out the minimum reporting requirements for the annual SD report. It defines the scope of such reporting, the various data items involved, and the frequency of reporting.

Northam is supportive of the Global Reporting Initiative (GRI) G3 guidelines for its SD reporting, and the definitions and guidelines described are based on the requirements of the G3 guidelines, where applicable. The guidelines do not describe every indicator in the G3 guidelines, but describe those indicators which are material and significant to Northam's operations.

This guideline also provides for reporting compliance to elements of the revised Broad Based Socio Economic Empowerment Charter in accordance with the South African Mineral and Petroleum Resources Development Act, 2002 ("MPRDA").

In addition to this, an Excel based SD data handling tool has been developed in conjunction with this guideline document that is the default tool for collecting and managing SD data. The *SD Data Collection Sheet* allows for aggregation of data from site level to corporate head office.

1.2 SCOPE

The guidelines document currently applies to Northam's Zondereinde mine, and include the operations of the Mine, Concentrator, Smelter and Base Metal Refinery.

The elements of the data in the SD system may change in time to reflect new knowledge and challenges towards sustainable development.

2 *REPORTING REQUIREMENTS*

2.1 *ACCURACY AND COMPLETENESS OF DATA*

Data will be as accurate and complete as possible. Completeness requires that all sources of data within the scope of the parameter of the KPI data are included, and not left out based on insignificance. Accuracy is a function of the measurement or calculation protocols.

The operation must ensure that the reporting units of the identified KPI are appropriately recorded.

2.2 *RESPONSIBILITIES FOR DATA COLLECTION AND COLLATION*

The collection, processing and submission of data are the responsibility of staff at various levels within the organisation.

Before the data is submitted for annual reporting purposes, it will be internally checked for quality control purposes by the:

- Environmental Manager;
- Chief Safety Officer;
- Occupational Health Manager;
- Human Resources Manager;
- Financial manager; and
- Engineering, shafts and surface Environment Manager.

The mine manager and CEO will ultimately be responsible for sign off of the SD data at year end.

2.3 *REPORTING*

Monthly board reports are generated by the operations which include a selection of the indicators discussed.

2.4 *AUDIT TRAIL*

To ensure that reported data are complete, accurate and reliable, internal and external verifiers may pick on selected data items and the supporting text. The assurance process relies on examination of documents, testing of systems and data and interviews. The aim of the process is to provide assurance on:

- Conformance with the agreed scope and definition of each parameter;
- Completeness and accuracy of reporting; and
- Compliance with internal controls and systems for reinforcing data reliability.

The operation is required to keep an audit trail of definitions, calculations, assumptions, aggregation and references, as well as the internal systems followed for data quality control.

3.1 FATALITY INJURY INCIDENCE RATE (FIIR)

Definition:

Number of fatalities: The number of employee and contractor deaths resulting from an injury while working for the operation and confirmed to be the case by the Department of Mineral Resources (DMR).

Fatality Injury Incidence Rate: The number of employee and contractor fatalities multiplied by 200,000 and divided by the total number of contractor and employee hours worked.

Cause of fatalities: The cause / agency of the injury resulting in death, categorised based on accident categories relevant to the Zondereinde operation and given in Item 12 of the South African Mines Reportable Accidents Statistical System Codebook for Mines. The categories include the following:

- Fall of ground
- Slip and fall
- Machinery, tools and equipment (portable tools and equipment)
- Machinery, tools and equipment (power tools)
- Transportation / trackbound
- Loading equipment
- Scraper winch installations
- Mono rope / rail installations
- Mechanical loaders / trackless
- Lifting equipment
- Drilling equipment
- Other transportation
- Manual handling of material / minerals
- Burning and scalding
- Splinters
- Ignition, air pocket
- Inundation / drowning / water
- Conveyance (Cage)
- Electricity
- Heat/sickness / gassing / smoke
- Material cars
- Falling material / rolling rock
- Foreign body

Time of accident: The exact time (hours and minutes) of the accident causing the injury leading to death.

Accident shift: The number of fatal accident for each shift (i.e. morning, afternoon and night shifts).

Measurement unit:

Number of fatalities

Number of each cause of fatality

Fatality rate per 200,000 hours worked

Person/s responsible for data:

1. Shift Supervisor
2. Safety Officer
3. Safety Clerk
4. Chief Safety Officer

Overview of process:

The accident is recorded on the site's NPL027A Injury Incident Report. The accident is investigated and the details entered on the site's Accident / Incident Investigation NPL027B form. The accident is reported to the DMR on SAMRASS 4 forms on a monthly basis. The details of the accident including the date and time of the accident, the cause of the accident, and the nature of the accident are entered into the Safety Department's Daily Injury and Incident Report. On a monthly basis, the number of Lost time Injuries for the month as listed in the Daily Injury and Incident Report are transferred to the Accident Statistics spreadsheet (Mstats). Contractor and employee hours work data is obtained by running a query on the Thimas system and resultant output entered into the Month End Shift Calculations Spreadsheet. The resultant calculated hours worked are then transferred to the Accident Statistics spreadsheet (Mstats). The spreadsheet then calculates the LTIIR, which is then transferred to the *SD Data Collection Sheet*.

Procedure for data collection:

1. Print out the Safety Department's Daily Injury and Incident Report at the end of each month.
2. Sum the number of fatalities recorded for the month for underground operations and surface operations and enter the numbers into the "SURF" and "U/G" for Lost time Injuries in the "Mstats 2009 2010" worksheet of the Accident Statistics for the month, as well as the *SD Data Collection Sheet*.
3. At the end of the month, run a query on the Thimas system for monthly shifts worked using the "million shift calculation" tab. Dates selected for the query are to be inclusive of the first and last days of the month in question.
4. Cut and paste the row of data up to and including the 13th cell (Exposure Non-Clockers) and paste into the row for the month in question into the Month End Shift Calculations spreadsheet.
5. Transfer resultant calculated hours worked for the month from the Month End Shift Calculations spreadsheet and enter into the respective "Total Man Hours cells" (UG and SURF) of the "Mstats 2009 2010" worksheet in the Accident Statistics for the relevant month.
6. On a monthly basis transfer the total FIIR figure from the "Mstats 2009 2010" worksheet into the *SD Data Collection Sheet* for each month.

7. Repeat steps 3-5 on a quarterly basis to allow for revision of the hours worked statistics in Thimas, and update the figures in the "Mstats 2009 2010" worksheet and *SD Data Collection Sheet*.
8. At the end of the reporting year transfer the total FIIR figure into the *SD Data Collection Sheet*.
9. On a monthly basis, assign each fatality accident to one of the categories listed in the *Cause of fatalities* definition above and sum the number for each category. Transfer the number to the *SD Data Collection Sheet*.
10. On a monthly basis transfer the exact time of each accident causing the injury leading to death from the NPL027A form into *SD Data Collection Sheet*.
11. On a monthly basis, sum the number of fatal accidents occurring during each work shift period (morning, afternoon and evening) for the reporting period and transfer to the *SD Data Collection Sheet*.

Verification documents:

- SAMRASS 1 and 2 forms
- NPL027A forms
- NPL027B forms
- DMR letter certifying fatality
- Thimas Hours Worked reports

Controls:

- Checking of Safety Clerk's and Safety Officer's data entry by Chief Safety Officer.
- Privilege protection of key documents.
- Quarterly Checks of data including updating of hours worked, cross checking of Daily Injury and Incident Report and Accident Statistics spreadsheet (Mstats) and NPL027B forms.

3.2 LOST TIME INJURY INCIDENCE RATE (LTIIR)

Definition:

Lost Time Injury: An injury resulting from working for the operation that incapacitates the injured person from performing that employee's normal duties on their next scheduled shift. This includes injuries defined as Reportable Injuries (see below).

Lost Time Injury Incidence Rate: The number of employee and contractor Lost Time Injuries multiplied by 200,000 and divided by the total number of contractor and employee hours worked.

Cause of injuries: The cause/ agency of the injury resulting in Loss Time Injury, categorised based on accident categories relevant to the Northam operation and given in Item 12 of the South African Mines Reportable Accidents Statistical System Codebook for Mines. The categories include the following:

- Fall of ground
- Slip and fall
- Machinery, tools and equipment (portable tools and equipment)
- Machinery, tools and equipment (power tools)
- Transportation / trackbound
- Loading equipment
- Scraper winch installations
- Mono rope / rail installations
- Mechanical loaders / trackless
- Lifting equipment
- Drilling equipment
- Other transportation
- Manual handling of material / minerals
- Burning and scalding
- Splinters
- Ignition, air pocket
- Inundation / drowning / water
- Conveyance (Cage)
- Electricity
- Heat/sickness / gassing / smoke
- Material cars
- Falling material / rolling rock
- Foreign body

Time of accident: The exact time (hours and minutes) of the accident causing the Loss Time Injury.

Accident shift: The number of LTI accidents for each shift (i.e. morning, afternoon and night shifts).

Measurement Units:

Lost Time Injury Incidence Rate per 200,000 hours worked

Person/s responsible for data:

1. Shift Supervisor
2. Safety Officer
3. Safety Clerk
4. Chief Safety Officer

Overview of process:

The accident is recorded on the site's NPL027A Injury Incident Report. The accident is investigated and the details entered on the site's Accident / Incident Investigation NPL027B form. The accident is reported to the DMR on SAMRASS 1 and 2 forms or SAMRASS 4 forms. The details of the accident including the date and time of the accident, the cause of the accident, and the nature of the accident are entered into the Safety Department's Daily Injury and Incident Report. On a monthly basis, the number of fatalities for the month as listed in the Daily Injury and Incident Report are transferred to the Accident Statistics spreadsheet (Mstats). Contractor and employee hours work data is obtained by running a query on the Thimas system and resultant output entered into the Month End Shift Calculations Spreadsheet. The resultant calculated hours worked are then transferred to the Accident Statistics spreadsheet (Mstats). The spreadsheet then calculates the LTIIR, which is then transferred to the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Print out the Safety Department's Daily Injury and Incident Report on at the end of each month.
2. Sum the number of Lost Time Injuries recorded for the month for underground operations and surface operations and enter the numbers into the "SURF" and "U/G" for Lost time Injuries in the "Mstats 2009 2010" worksheet of the Accident Statistics for the month, as well as the *SD Data Collection Sheet*.
3. At the end of the month, run a query on the Thimas system for monthly shifts worked using the "Million shift calculation" tab. Dates selected for the query are to be inclusive of the first and last days of the month in question.
4. Cut and paste the row of data up to and including the 13th cell (Exposure Non-Clockers) and paste into the row for the month in question into the Month End Shift Calculations spreadsheet.
5. Transfer resultant calculated hours worked for the month from the Month End Shift Calculations spreadsheet and enter into the respective "Total Man Hours cells" (UG and SURF) of the "Mstats 2009 2010" worksheet in the Accident Statistics for the relevant month.
6. On a monthly basis transfer the total LTIIR figure from the "Mstats 2009 2010" worksheet into the *SD Data Collection Sheet* for each month.
7. Repeat steps 3-5 on a quarterly basis to allow for revision of the hours worked statistics in Thimas.
8. At the end of the reporting year transfer the total LTIIR figure into the *SD Data Collection Sheet*.

9. On a monthly basis, assign each LTI accident to one of the categories listed in the *Cause of fatalities* definition above and sum the number for each category. Transfer the number to the *SD Data Collection Sheet*.
10. On a monthly basis, transfer the exact time of each accident causing the injury leading to LTI from the NPL027A form into *SD Data Collection Sheet*.
11. On a monthly basis, sum the number of LTI accidents occurring during each work shift period (morning, afternoon and evening) and transfer to the *SD Data Collection Sheet*.

Verification documents:

- SAMRASS 4 forms
- NPL027A forms
- NPL027B forms
- Thimas Hours Worked reports
- Medical centre records

Controls:

- Checking of Safety Clerk's and Safety Officer's data entry by Chief Safety Officer.
- Privilege protection of key documents.
- Quarterly Checks of data including updating of hours worked, cross checking of Daily Injury and Incident Report and Accident Statistics spreadsheet (Mstats) and NPL027B forms.

3.3 REPORTABLE INJURY INCIDENCE RATE (RIIR)

Definition:

Reportable Injury: An injury resulting from working for the operation which either incapacitates the injured employee from performing that person's normal or a similar occupation for a period totalling 14 days or more, or which causes the injured person to suffer the loss of a joint, or a part of a joint, or sustain a permanent disability.

Reportable Injury Incidence Rate: The number of employee and contractor Reportable Injuries multiplied by 200,000 and divided by the total number of contractor and employee hours worked.

Cause of injuries: The cause of the Reportable Injury categorised based on accident categories relevant to the Zondereinde operation and given in Item 12 of the South African Mines Reportable Accidents Statistical System Codebook for Mines. The categories include the following:

- Fall of ground
- Slip and fall
- Machinery, tools and equipment (portable tools and equipment)
- Machinery, tools and equipment (power tools)
- Transportation / trackbound
- Loading equipment
- Scraper winch installations
- Mono rope / rail installations
- Mechanical loaders / trackless
- Lifting equipment
- Drilling equipment
- Other transportation
- Manual handling of material / minerals
- Burning and scalding
- Splinters
- Ignition, air pocket
- Inundation / drowning / water
- Conveyance (Cage)
- Electricity
- Heat/sickness / gassing / smoke
- Material cars
- Falling material / rolling rock
- Foreign body.

Time of accident: The exact time (hours and minutes) of the accident causing the Reportable Injury.

Accident shift: The number of Reportable Injury accidents for each shift (i.e. morning, afternoon and night shifts).

Measurement Units:

Reportable Injury Incidence Rate per 200,000 hours worked

Person/s responsible for data:

1. Shift Supervisor
2. Safety Officer
3. Safety Clerk
4. Chief Safety Officer

Overview of process:

The accident is recorded on the site's NPL027A Injury Incident Report. The accident is investigated and the details entered on the site's Accident / Incident Investigation NPL027B form. The accident is reported to the DMR on SAMRASS 1 and 2 forms. The details of the accident including the date and time of the accident, the cause of the accident, and the nature of the accident are entered into the Safety Department's Daily Injury and Incident Report. On a monthly basis, the number of fatalities for the month as listed in the Daily Injury and Incident Report are transferred to the Accident Statistics spreadsheet (Mstats). Contractor and employee hours work data is obtained by running a query on the Thimas system and resultant output entered into the Month End Shift Calculations Spreadsheet. The resultant calculated hours worked are then transferred to the Accident Statistics spreadsheet (Mstats). The spreadsheet then calculates the RIIR, which is then transferred to the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Print out the Safety Department's Daily Injury and Incident Report on at the end of each month.
2. Sum the number of Reportable Injuries (excluding Lost Time Injuries) recorded for the month for underground operations and surface operations and enter the numbers into the "SURF" and "U/G" for Lost time Injuries in the "Mstats 2009 2010" worksheet of the Accident Statistics for the month, as well as the *SD Data Collection Sheet*.
3. At the end of the month, run a query on the Thimas system for monthly shifts worked using the "Million shift calculation" tab. Dates selected for the query are to be inclusive of the first and last days of the month in question.
4. Cut and paste the row of data up to and including the 13th cell (Exposure Non-Clockers) and paste into the row for the month in question into the Month End Shift Calculations spreadsheet.
5. Transfer resultant calculated hours worked for the month from the Month End Shift Calculations spreadsheet and enter into the respective "Total Man Hours cells" (UG and SURF) of the "Mstats 2009 2010" worksheet in the Accident Statistics for the relevant month.
6. On a monthly basis transfer the total RIIR figure from the "Mstats 2009 2010" worksheet into the *SD Data Collection Sheet* for each month.
7. Repeat steps 3-5 on a quarterly basis to allow for revision of the hours worked statistics in Thimas and update the figures in the "Mstats 2009 2010" worksheet and *SD Data Collection Sheet*.
8. At the end of the reporting year transfer the total RIIR figure into the *SD Data Collection Sheet*.

9. On a monthly basis, assign each RIIR to one of the categories listed in the *Cause of injuries* definition above and sum the number for each category. Transfer the number to the *SD Data Collection Sheet*.
10. On a monthly basis, transfer the exact time of each accident causing the injury leading to the *Reportable Injury* from the NPL027A form into *SD Data Collection Sheet*.
11. On a monthly basis, sum the number of *Reportable Injury* accidents occurring during each work shift period (morning, afternoon and evening) and transfer to the *SD Data Collection Sheet*.

Verification documents:

- SAMRASS 1 and 2 forms
- NPL027A forms
- NPL027B forms
- Thimas Hours Worked reports
- Medical centre records

Controls:

- Checking of Safety Clerk's and Safety Officer's data entry by Chief Safety Officer.
- Privilege protection of key documents.
- Quarterly Checks of data including updating of hours worked, cross checking of Daily Injury and Incident Report and Accident Statistics spreadsheet (Mstats) and NPL027B forms.

3.4 TOTAL INJURY INCIDENCE RATE (TIIR)

Definition:

Dressing Cases: An injury resulting from working for the operation that is such that the injured person is able to return to performing their normal duties on their next scheduled shift.

Total Injury Incidence Rate: The sum of employee and contractor Fatalities, Lost Time Injuries and Dressing Cases Injuries multiplied by 200,000 and divided by the total number of contractor and employee hours worked.

Cause of injuries: The cause/ agency of the injury based on accident categories relevant to the Northam operation and given in Item 12 of the South African Mines Reportable Accidents Statistical System Codebook for Mines. The categories include the following:

- Fall of ground
- Slip and fall
- Machinery, tools and equipment (portable tools and equipment)
- Machinery, tools and equipment (power tools)
- Transportation / trackbound
- Loading equipment
- Scraper winch installations
- Mono rope / rail installations
- Mechanical loaders / trackless
- Lifting equipment
- Drilling equipment
- Other transportation
- Manual handling of material / minerals
- Burning and scalding
- Splinters
- Ignition, air pocket
- Inundation / drowning / water
- Conveyance (Cage)
- Electricity
- Heat/sickness / gassing / smoke
- Material cars
- Falling material / rolling rock
- Foreign body

Time of accident: The exact time (hours and minutes) of the accident causing injury.

Accident shift: The number of accidents for each shift (i.e. morning, afternoon and night shifts).

Measurement Units:

Reportable Injury Incidence Rate per 200,000 hours worked

Person/s responsible for data:

1. Shift Supervisor
2. Safety Officer
3. Safety Clerk
4. Chief Safety Officer

Overview of process:

The accident is recorded on the site's NPL027A Injury Incident Report. The accident is investigated and the details entered on the site's Accident / Incident Investigation NPL027B form. The accident is reported to the Department of Mineral Resources on SAMRASS 1 and 2 forms. The details of the accident including the date and time of the accident, the cause of the accident, and the nature of the accident are entered into the Safety Department's Daily Injury and Incident Report. On a monthly basis, the number of injuries for each injury category for the month as listed in the Daily Injury and Incident Report are transferred to the Accident Statistics spreadsheet (Mstats). Contractor and employee hours work data is obtained by running a query on the Thimas system and resultant output entered into the Month End Shift Calculations Spreadsheet. The resultant calculated hours worked are then transferred to the Accident Statistics spreadsheet (Mstats). The spreadsheet then calculates the RIIR, which is then transferred to the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Print out the Safety Department's Daily Injury and Incident Report on at the end of each month.
2. Sum the number of injuries for each injury category recorded for the month for underground operations and surface operations and enter the numbers into the "SURF" and "U/G" for the respective injury category in the "Mstats 2009 2010" worksheet of the Accident Statistics for the month, as well as the *SD Data Collection Sheet*.
3. At the end of the month, run a query on the Thimas system for monthly shifts worked using the "Million shift calculation" tab. Dates selected for the query are to be inclusive of the first and last days of the month in question.
4. Cut and paste the row of data up to and including the 13th cell (Exposure Non-Clockers) and paste into the row for the month in question into the Month End Shift Calculations spreadsheet.
5. Transfer resultant calculated hours worked for the month from the Month End Shift Calculations spreadsheet and enter into the respective "Total Man Hours cells" (UG and SURF) of the "Mstats 2009 2010" worksheet in the Accident Statistics for the relevant month.
6. On a monthly basis transfer the total TIIR figure from the "Mstats 2009 2010" worksheet into the *SD Data Collection Sheet* for each month.
7. Repeat steps 3-5 on a quarterly basis to allow for revision of the hours worked statistics in Thimas and update the figures in the "Mstats 2009 2010" worksheet and *SD Data Collection Sheet*.
8. At the end of the reporting year transfer the total TIIR figure into the *SD Data Collection Sheet*.

9. On a monthly basis, assign each accident to one of the categories listed in the *Cause of injuries* definition above and sum the number for each category. Transfer the number to the *SD Data Collection Sheet*.
10. On a monthly basis, transfer the exact time of each accident causing the injury from the NPL027A form into *SD Data Collection Sheet*.
11. On a monthly basis, sum the number of accidents occurring during each work shift period (morning, afternoon and evening) and transfer to the *SD Data Collection Sheet*.

Verification documents:

- SAMRASS 1, 2 and 4 forms
- NPL027A forms
- NPL027B forms
- Thimas Hours Worked reports
- Medical centre records

Controls:

- Checking of Safety Clerk's and Safety Officer's data entry by Chief Safety Officer.
- Privilege protection of key documents.
- Quarterly Checks of data including updating of hours worked, cross checking of Daily Injury and Incident Report and Accident Statistics spreadsheet (Mstats) and NPL027B forms.

3.5 SHIFTS LOST

Definition:

Total Number of Shifts Lost due to occupational injury and sickness: Total number of employee shifts lost as a result of occupational injury and sickness.

Reasons: Sick Leave, Accident Leave.

Measurement Units:

Total Number of Shifts Lost as a result of occupational injury and sickness

Person/s responsible for data:

1. Talent Management Coordinator
2. HR Manager

Overview of process:

Actual working hours are registered on the Thimas clocking system from card swiping clocking in and out, or (in the case of personnel without cards), a manual system which is subsequently loaded into Thimas. For absences including sick leave and accident leave, leave forms are filled out and signed by the supervisors for each section. Leave forms are reconciled with the person's absence/presence on site as recorded by the Thimas system. Subsequently, a query is run in the Symplexity system for all absenteeisms for a specified period and the Accident Leave and Sick Leave data added to the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Run query in Symplexity for shifts lost with a breakdown of absenteeism types (i.e. Non-Working Shifts).
2. Extract the shifts lost for Accident Leave and Sick Leave [if the data is extracted as hours, convert to shifts lost by dividing by 8.16].
3. Transfer the total values for each (Accident Leave and Sick Leave) into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Leave forms
- Safety department "Morning List" for shifts lost due to accidents
- Health clinic statistics for shifts lost due to sick leave

3.6 STOPPAGES (54s)

Definition:

Number Stoppages Directed By DMR: The total number of stoppages resulting from a mining inspector invoking Section 54 of the Mine Health and Safety Act 1996.

Reasons: Reasons given for stoppages (i.e. a narrative).

Number of Significant Stoppages: The number of stoppages for the reporting period in which either a stoping or development section was stopped for at least a full shift.

Measurement Units:

Number

Person/s responsible for data:

1. Chief Safety Officer

Overview of process:

All stoppages directed by the DMR inspectors are registered on the “DMR Visits Spreadsheet” and the “Stoppages document”, where the areas stopped, the date of the stoppage and the reason for the stoppage is recorded. When written notice is received from the DMR to re-open the total number of days the area or mine was stopped for is calculated and recorded.

Procedure for Data Collection:

1. Add up the number of entries in the DMR Visits spreadsheet and transfer this figure to the *SD Data Collection Sheet*.
2. Transfer the *Reasons for Stoppages* from “Reasons” column of the Stoppages spreadsheet into the *SD Data Collection Sheet*.
3. Sum the number of stoppages from the Stoppages spreadsheet with total days stopped greater than zero and add to the *SD Data Collection Sheet*.

Verification documents and controls in place:

DMR stoppage and re-opening notifications.

3.7 MINE INSTIGATED STOPPAGES

Definition:

Number Stoppages Directed Internally: The total number of stoppages directed by the mine management.

Reasons: Reasons given for stoppages (i.e. a narrative).

Number of Significant Stoppages: The number of stoppages for the reporting period in which in either a stopping or development section was stopped for at least a full shift.

Measurement Units:

Number

Person/s responsible for data:

1. Chief Safety Officer

Overview of process:

All internally directed stoppages are registered on the “Stoppages document”, where the areas stopped, the date of the stoppage and the reason for the stoppage is recorded.

Procedure for Data Collection:

1. Add up the number of entries for internally directed stoppages in the Stoppages document and transfer this figure to the *SD Data Collection Sheet*.
2. Transfer the *Reasons for Stoppages* from “Reasons” column of the Stoppages spreadsheet for all stoppages directed by the mine management into the *SD Data Collection Sheet*.
3. Sum the number of stoppages from the Stoppages spreadsheet for stoppages directed by the mine management with total days stopped greater than zero and add to the *SD Data Collection Sheet*.

Verification documents and controls in place:

Internal stoppage and re-opening notifications.

3.8 HEAT STROKE

Definition:

Heat Stroke: A heat related illness diagnosed by the occupational medical practitioner as being heat stroke.

Measurement Units:

Number of Cases of Heat Stroke for the reporting period

Person/s responsible for data:

1. Shift Supervisor
2. Safety Officer
3. Safety Clerk
4. Chief Safety Officer
5. Occupational Health Medical Practitioner

Overview of process:

The incident is recorded on the site's NPL027A Injury Incident Report. The incident is investigated and the details entered on the site's Accident / Incident Investigation NPL027B form. The incident is verified by the occupational medical practitioner as being a heat stroke case. The incident is reported to the DMRon SAMRASS 1 and 8 forms. The details of the incident are entered into the Safety Department's Daily Injury and Incident Report. On a monthly basis, the number of heat stroke occurrences for the month as listed in the Daily Injury and Incident Report are transferred to the Accident Statistics spreadsheet (Mstats) for that particular month. The total number of heat stroke cases is summed in the document and this number transferred to the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Print out the Safety Department's Daily Injury and Incident Report on at the end of each month.
2. Sum the number of heat stroke cases recorded for the month the correct HEAT SICKNESS/GASSING/SMOKE cell of the LTI/RI or Dres tabs of the Accident Statistics spreadsheet (Mstats).
3. On a monthly basis, transfer the total number of cases of heat stroke (HEAT SICKNESS line) given in the LTI & DC tab of the Accident Statistics spreadsheet (Mstats) into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- SAMRASS 1, and 8 forms
- NPL027A forms
- NPL027B forms
- Medical centre records

4.1 NOISE INDUCED HEARING LOSS (NIHL)**Definition:**

Incidence of NIHL Detected on Mine and Referred for Compensation: The number of cases of NIHL confirmed by an audiologist and referred for compensation in the reporting period.

Number of Cases in Which Compensations Has Been Received: The number of cases of NIHL confirmed by an audiologist and referred for compensation in the reporting period for which compensations has been paid.

Rates Per 1000 Employees: (i) Number of NIHL cases referred for compensation divided by the number of employees and multiplied by 1000; and (ii) Number of NIHL cases for which compensation has been received divided by the number of employees and multiplied by 1000.

Measurement Units:

- (i) NIHL referral rate per 1000 employees
- (ii) NIHL compensations received per 1000 employees

Person/s responsible for data:

1. Occupational Health Manager
2. Audiologist
3. Occupational Health Nurse
4. Safety Accident Clerk
5. Workforce Planning Coordinator

Overview of process:

All workers on the mine undergo a baseline audiogram prior to commencing work at the mine and have periodic audiograms to assess indications of NIHL. Should the periodic audiograms show a Percentage Hearing Loss (PHL) of greater than 10%, the individual is referred to an audiologist for confirmation of NIHL. If the audiologist confirms the hearing loss is noise induced, their report together with supporting information is sent to Rand Mutual for assessment for compensation. Subsequently, a letter is received back from Rand Mutual stating whether the claim has been upheld or not. Numbers of NIHL cases submitted and compensated for each month are entered into the NPC Monthly Report document (Medical Surveillance section). The number of employees is obtained from a query run on the Symplexity by the Workforce Planning Coordinator. Total NIHL cases submitted and compensated for the reporting period are calculated.

Procedure for Data Collection:

1. On a monthly basis, enter total cases from "NIHL submitted" and "NIHL Compensated" from the OHC Compensation/Referral spreadsheet into

the respective cells of the NPC Monthly Report document (Medical Surveillance section) and the *SD Data Collection Sheet*.

2. At the end of the reporting period, obtain the average employee numbers for the reporting period from the Workforce Planning Coordinator (obtaining by running a query in Symplexity) and use this figure to calculate the NIHL Submitted and Compensated rates as per the definition above. Add these figures to the *SD Data Collection Sheet*.

Verification documents and controls in place:

- COID forms
- Letters from Rand Mutual

4.2 TUBERCULOSIS (TB)

Definition:

Incidence of TB Detected on Mine: The number of employees confirmed as having TB by the occupational health practitioners, during the reporting period.

Rate of the Above Per 1000 Employees: Number of TB cases identified divided by the number of employees and multiplied by 1000.

Measurement Units:

- (i) TB rate per 1000 employees

Person/s responsible for data:

1. Occupational Health Manager
2. Occupational Health Nurse
3. Workforce Planning Coordinator

Overview of process:

TB cases are detected clinically via complaints or periodic medical surveillance. Confirmation of TB infection is obtained by radiography (lung x-rays) and sputum testing. When diagnosed with TB, the individual is added to the TB treatment program and the TB submissions spreadsheet is updated on a daily basis to include the new TB infection. On a monthly basis the total number of persons receiving treatment for TB (equivalent to number on TB program) is added into the NPC Monthly Report document (Medical Surveillance section). The number of employees is obtained from a query run on the Symplexity by the Workforce Planning Coordinator.

Procedure for Data Collection:

1. At the end of the reporting period, add the total number of employees having been diagnosed with TB during the reporting period (includes new TB cases, those previously diagnosed and still receiving treatment, those which have been cured during the course of the reporting period and those which have defaulted, left employment or deceased during the reporting period), and input into the *SD Data Collection Sheet*.
2. At the end of the reporting period, obtain the average employee numbers for the reporting period from the Workforce Planning Coordinator (obtained by running a query in Symplexity) and use this figure to calculate the TB rates as per the definition above. Add these figures to the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Medical results

4.3 MEDICAL SURVEILLANCE

Definition:

Number of Annual Medical Surveillance Examinations Performed: Total number of employees and contractors presenting to the Medical Centre for Entry, Periodic, Transfer and Exit Medical Examinations for the reporting period.

Number of Entry Medical Surveillance Examinations Performed: Number of employees and contractors presenting to the Medical Centre for Entry Medical Examinations for the reporting period.

Number of Exit Medical Surveillance Examinations Performed: Number of employees and contractors presenting to the Medical Centre for Exit Medical Examinations for the reporting period.

Number of Transfer Medical Surveillance Examinations Performed: Number of employees and contractors presenting to the Medical Centre for Entry Medical Examinations for the reporting period.

Number of People Eligible for Medical Surveillance Examinations: The total number of employees and contractors employed less contractors who work less than five shifts on the surface and three shifts underground.

Measurement Units:

Number of persons

Person/s responsible for data:

1. Occupational Health Nurses
2. Nursing Manager
3. Occupational Health Manager

Overview of process:

Employees and contractor staff with accompanying paperwork (Medical Examination Forms) present themselves at the Health clinic for entry, exit, transfer or periodic medical surveillance examinations. The details of the individuals are manually entered into a daily "Occupational Health Sheet". The information from this form is (on a daily basis) added to the "Occupational Health Visits" spreadsheet which records the medicals performed for each medical surveillance type for a particular month. On a monthly basis, the total values for each medical surveillance type from the Occupational Health Visits spreadsheet are transferred into the respective cells of the NPC Monthly Report document (Medical Surveillance section). At the end of the reporting period the data is uploaded into the *SD Data Collection Sheet*. The total number of employees and contractors eligible for medical surveillance examinations is obtained from the intranet in the Competency Expiry Forecast file.

Procedure for Data Collection:

1. On a monthly basis, transfer the numbers in the Total row for Pre Employment (i.e. Entry), Periodic, Transfer¹, Exit and Total Medical Surveillance for Mine employees and Contractors from the Occupational Health Visits spreadsheet, into the respective cells of the NPC Monthly Report document (Medical Surveillance section) and the *SD Data Collection Sheet*.
2. On a monthly basis, obtain the total number of employees and contractors eligible for medical surveillance examinations from the intranet in the Competency Expiry Forecast file and transfer this number to the *SD Data Collection Sheet*.

Verification documents and controls in place:

Periodic Medical Examination form.

Occupational health visits spreadsheet

(medical surveillance section of the NPC Monthly report

(1) The site is not currently capturing Transfer medicals in the Occupational Health Visits spreadsheet. The site should add additional columns for Transfer medicals for mine employees and contractor into this spreadsheet for transfer into the NPC Monthly Report document.

4.4 VOLUNTARY COUNSELLING AND TESTING (VCT)

Definition:

Number of VCT Encounters: Number of employees electing to participate in the VCT programme.

Measurement Units:

Number of persons (VCT encounters)

Person/s responsible for data:

Occupational Health Medical Practitioner

Wellness Nurse

Overview of process:

On the basis of a consultation with the medical practitioner (either as part of scheduled medical surveillance, or specific consultations), employees are recommended to undergo VCT. Individuals electing to be tested undergo a screening test (RAPID) for HIV. If the screening test is positive, a blood sample is taken and a confirmatory test is carried out at Lancet by performing ELISA and Western Blot tests. The details of the VCT are entered onto the "Daily Control Sheet of VCT". HIV positive individuals are added to the Wellness program, with details recorded in the NPC Wellness 3 spreadsheet. HIV positive individuals who default from the Wellness program, commence ART, default from ART and who cease treatment or employment at the site are also recorded in this document. The data is recorded in the NPC Wellness 3 spreadsheet as such:

- ART Active tab: People on HIV/AIDS treatment that come to collect their treatment every month;
- ART Defaulters tab: People on treatment but are not coming every month to collect their treatment;
- Wellness Active tab: People not on HIV/AIDS treatment but on prophylaxis (INH) for TB; and
- Practice Tablet tab: People not on HIV/AIDS treatment but awaiting to decide on taking HIV treatment and currently taking cozole prophylaxis.

On a monthly basis the NPC Wellness 3 spreadsheet is emailed to the Occupational Health Medical Practitioner who transfers the data to the respective cells of the NPC Monthly Report document. At the end of the reporting period the data is uploaded into the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. On a monthly basis, sum the number of VCT encounters from the Daily Control Sheet of VCT spreadsheets compiled for the reporting period and transfer this number into the *SD Data Collection Sheet*.
2. On a monthly basis sum the total number of entries listed in the ART Active, ART Defaulters, Wellness Active and Practice Tablet tabs in the Wellness 3 spreadsheet. Express this number as a percentage of the total number of employees [obtain the average employee numbers for the reporting period from the Workforce Planning Coordinator (obtained by

running a query in Symplexity)], and transfer this number to the *SD Data Collection Sheet*.

Verification documents and controls in place:

Laboratory results.

4.5 ANTI RETROVIRAL TREATMENT (ART)

Definition:

Number of Individuals Who Are Participating in the Wellness Programme: The number of employees who are HIV positive and are receiving treatment under the site's Wellness programme during the reporting period.

Number of Individuals Who Have Left the Wellness Programme: The number of employees who were HIV positive and are receiving treatment under the site's Wellness program as at the beginning of the reporting period and who withdrew from the programme during the course of the reporting year.

Number of People Receiving ART: The number of employees who are HIV positive and are receiving ART under the site's Wellness programme as at the end of the reporting period.

Number of People No Longer Receiving ART: The number of employees who are HIV positive and have withdrawn from ART as at the end of the reporting period.

Reason for People No Longer Receiving ART: Reasons for withdrawal from ART, including refusal of treatment, deceased, discharged, and exit (departure from employment at Northam).

Cost of ART Per individual: The cost of ART medication prescribed for the reporting period, divided by the number of persons receiving ART treatment for the reporting period.

Measurement Units:

Numbers

Costs: R/persons treated

Person/s responsible for data:

Occupational Health Medical Practitioner

Wellness Nurse

Overview of process:

On the basis of a consultation with the medical practitioner (either as part of scheduled medical surveillance, or specific consultations), employees are recommended to undergo VCT. Individuals electing to be tested undergo a screening test (RAPID). If the screening test is positive, a blood sample is taken and a confirmatory test is carried out at Lancet by performing ELISA and Western Blot tests. HIV positive individuals are added to the Wellness program, with details recorded in the "NPC Wellness 3" spreadsheet. Individuals with a CD4 count of less than 400 undergo ART, with these details also entered in the NPC Wellness spreadsheet, as well as the details of any persons withdrawing from the programme. The NPC Wellness spreadsheet is then emailed to the Occupational Health Medical Practitioner who collates and calculates the data for the different the parameters. The cost

of ART medication is obtained from the Medical Centre dispensary. The cost of ART treatment per person is calculated by dividing the cost of ART medication prescribed for the reporting period divided by the total number of employees receiving ART for that year.

Procedure for Data Collection:

1. At the end of the reporting period, from the NPC Wellness spreadsheet, sum the number of persons listed in the Wellness Active tab on the document to obtain the Number of Individuals Who Have Joined the Wellness Programme and transfer this number to the *SD Data Collection Sheet*.
2. At the end of the reporting period, from the NPC Wellness spreadsheet, sum the number of persons listed in the Wellness Defaulter, Deceased/Left Employment and ART Defaulter tabs to obtain the Number of Individuals Who Have Left the Wellness Programme and transfer this number to the *SD Data Collection Sheet*.
3. At the end of the reporting period, from the NPC Wellness spreadsheet, sum the number of person listed in the ART Active tab on the document to obtain the Number of Persons Receiving ART and transfer this number to the *SD Data Collection Sheet*.
4. At the end of the reporting period, from the NPC Wellness spreadsheet, sum the number of persons listed in the “Deceased, Left Employment etc.” and “ART Defaulter” tabs on the document to obtain the Number of Persons No longer Receiving ART and transfer this number to the *SD Data Collection Sheet*.
5. Count the number of persons for each of the following categories: refusal of treatment, deceased, discharged, exit; as listed in the Deceased, Left Employment etc.” and “ART Defaulter” tabs in the NPC Wellness document to obtain the Reasons for People No Longer Receiving ART data for each category, and transfer these numbers to the *SD Data Collection Sheet*.
6. Obtain the total value of ART medication prescribed by the Medical Clinic for the reporting period from the Medical Centre dispensary . Obtain the total number of persons who have received ART over the reporting period by adding the number of entries listed in the “Deceased, Left Employment etc.”, “ART active” and “ART Defaulters” tab of the NPC Wellness document. To obtain the Cost of ART Per Individual, divide the number calculated for number of persons who have received ART over the reporting period by the total value of ART medication prescribed by the Medical Clinic for the reporting period. Transfer this number to the *SD Data Collection Sheet*.

Verification documents and controls in place:

ART prescription data

Laboratory results (CD+4 count results)

5.1 TOTAL WORKFORCE (INCLUDING CONTRACTORS)

Definition:

Total Workforce (Including Contractors): Total average workforce numbers (employees plus contractors) working at the site for the reporting period.

Total Employee Workforce: Total average employee numbers working at the site for the reporting period.

Total Contractor Workforce: Total average contractors numbers working at the site for the reporting period.

Total Employee Workforce, by Contract: Total average employee numbers working at the site for the reporting period for each employee category (i.e. CAT 02-08; CAT 09, CAT 10, CAT 11, CAT 14 and CAT 15)

Total Employee Workforce by Region: Total average employee numbers working at the site for the reporting period with permanent home addresses for any of the geographical regions (in South Africa: Northern Cape, Limpopo, North West, Gauteng, Mpumalanga, Kwazulu Natal, Eastern Cape, Western Cape, Free State; Country other than South Africa: Botswana, Namibia, Zimbabwe, Angola, Lesotho, Swaziland, Mozambique).

Measurement Units:

Number

Person/s responsible for data:

1. Talent Management Coordinator
2. Time and Attendance Controller

Overview of process:

When new employees or contractors commence work at the site, they complete documentation including the NPL 063 "Engagement" form. Details from this form including whether they are an employee or a contractor, their job type and contract status, and their home address are logged on to the Symplexity database. At completion of their employment at the site, the Symplexity entry for that individual is removed after the HR Department has received a "Termination Form". To obtain data for each of the parameters, queries are run in Symplexity and the data obtained uploaded into the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Generate EEA2 report by running a query in Symplexity for the reporting period to obtain the total employee workforce.

2. Run additional query for contractors to obtain total contractor workforce for the reporting period.
3. Sum the two numbers obtained above and upload this and the total contractor and employee workforce numbers to the *SD Data Collection Sheet*.
4. Run queries for employees by contract type (CAT 02-08; CAT 09 etc) and geographic origin (i.e. home address) for the reporting period and add the totals to the respective fields in the *SD Data Collection Sheet*.

Verification documents and controls in place:

Engagement Forms

Termination Forms

5.2 **TURNOVER**

Definitions:

Total Number of Employee Turnover: Total number of employees who leave the organisation during the reporting period either voluntarily or due to dismissal, retirement, or death in service during the reporting period.

Total Employee Turnover Rate: Number of employees who leave the organisation during the reporting period either voluntarily or due to dismissal, retirement, or death in service, and expressed as a percentage of the entire employee force at the mine.

Female Employee Turnover Rate: As above for female employees

Male Employee Turnover Rate: As above for male employees

Age Group Turnover Rate: As above for the three age groups <30, 30-50 and >50.

Region Turnover Rate: As above the geographical regions in South Africa: Northern Cape, Limpopo, North West, Gauteng, Mpumalanga, Kwazulu Natal, Eastern Cape, Western Cape, Free State; Country other than South Africa: Botswana, Namibia, Zimbabwe, Angola, Lesotho, Swaziland, Mozambique).

Measurement Units:

Turnover rates (%)

Person/s responsible for data:

1. Talent Management Coordinator
2. Time and Attendance Controller

Overview of process:

When new employees or contractors commence work at the site, they complete documentation including the NPL 063 "Engagement" form. Details from this form including their gender and their home address are logged on to the Symplexity database. At completion of their employment at the site, the Symplexity entry for that individual is removed after the HR Department has received a "Termination Form". To obtain data for each of the parameters, queries are run in Symplexity and the data obtained uploaded into the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. Generate EEA2 report by running a query in Symplexity for the reporting period to obtain the total employee workforce.
2. From the Terminations page of the resultant report above, sum the Totals for each of the Males categories for the A, C, I, W and Foreign cells and express this figure as a percentage of the total employee workforce (as

obtained from the GRAND TOTAL figure in section 1.1 of the same report).

3. Repeat the same process as above for Females to obtain the Female Employee Turnover Rate.
4. Run queries as above for age groups (<30, 30-50 and >50) and geographic region (i.e. home address) and calculate turnover rates for each category as above.
5. Transfer each figure determined above into the respective fields in the *SD Data Collection Sheet*.

Verification documents and controls in place:

Engagement Forms

Termination Forms

5.3 WOMEN IN MINING

Definition:

The total number of women in mining as a percentage relative to the total number of employees.

Measurement units:

Total workforce (including contractors): As per definition 5.1 of the SD guidelines and definitions handbook.

Total number of women in mining (including contractors): Number of woman and contractor employees working at the site.

Person/s responsible for data:

1. Talent management coordinator
2. HR manager

Overview of process:

Statistics related to the gender, racial composition and occupation levels of staff are updated on a monthly basis as part of the payroll management system.

In May of each year, Zondereinde undertakes a complete Employment Equity Analysis of the workforce to ensure constant awareness of gender and race balances as well as to inform significant part of the skills audit and skills development plans that make up the company's Workplace Skills Plan towards enhancing skills and competency of selected employees.

Procedure for data collection:

1. Update information relating to gender, racial composition and occupation level at the end of every month.
2. Obtain total workforce (including contractors) as detailed in Section 5.1.
3. Run a query on Symplexity to obtain the number of women employees and contractors working at the site.
4. Calculate the percentage of women in mining using the figures from 2 and 3 above and enter this number into the Northam SD Data Collection Sheet.

Verification documents and controls in place

- Women in Mining Policy
- EEA1 declarations
- Employment Equity Report

5.4 COLLECTIVE BARGAINING

Definition:

Percentage of Employees Covered by Collective Bargaining Agreements: Proportion of employees at the operation covered by collective bargaining agreements as at the end of the reporting period, expressed as a percentage of the entire workforce.

Measurement Units:

% workers covered by collective bargaining agreements

Person/s responsible for data:

Employee Relations Superintendent

Overview of process:

When employees may apply for membership at one of the Unions with a presence on site, namely NUM, Solidarity or UASA. Upon acceptance of membership, the Union will submit a copy of the application form to the Northam Human Resources Department, whereupon the details are added to the Symplexity database for that employee. To obtain the numbers of workers with representation with the unions present on site a query is run in Symplexity and the data obtained uploaded into the *SD Data Collection Sheet*.

Procedure for Data Collection:

1. At the end of the reporting period, run query in Symplexity for numbers of workers covered by collective bargaining agreements with each of the three unions with a presence on site. Sum the numbers for the three unions.
2. Generate an EEA2 report by running a query in Symplexity for the reporting period to obtain the total employee workforce.
3. Calculate the percentage of workers covered by collective bargaining agreements using the members derived from 1 and 2 above and transfer this number to the *SD Data Collection Sheet*.

Verification documents and controls in place:

Approved Union membership application forms

Definition:

Average Hours of Training Per Employee (Total): The total number of hours of training directed by the Training Centre provided to employees divided by the average number of employees working at the site for the reporting period.

Average Hours of Training Per Employees By Employee Category: The number of hours of training directed by the Training Centre provided to each category of employees (SC 100, SC200, ...SC800) divided by the average number of employees working at the site in each category for the reporting period.

Monetary value of Training: The total cost of training for the reporting period including operating costs and expenses.

Number of Employees Receiving Training: The total number of persons receiving training as overseen by the training centre during the reporting period.

Measurement Units:

Average training in hours

Monetary value in Rands

Person/s responsible for data:

1. Systems Coordinator
2. Talent Management Coordinator

Overview of process:

New recruits complete a NPL063 on which training requirements are identified. On-going training is applied for on NPL177A (internal) and NPL177B (external) forms. The NPL177 forms are reconciled with the Thimas system and the time spent registered as training on the Symplexity system.

Subsequently, a query is run in the Symplexity system to obtain the amount of training provided (total amount and for the different employee categories), and the number of persons receiving training. The monetary value of training is determined from financial information managed by the Bann Financial Management System and includes employee and trainer labour costs, course fees, travel and accommodation expenses and other operating costs. The total number of employees working at the site in each category for the reporting period for the average hours of training calculations is determined by a query in Symplexity.

Procedure for Data Collection:

1. At the end of the reporting period, obtain the number of employees who carried out induction training, "NPL 177" training and external training and the corresponding days of training for each employee category by running a query in Symplexity.
2. Obtain the total number of employees employed at the site, as well as total number for each employment category by running a separate query in Symplexity.

3. At the end of the reporting period, determine the average hours of training per employee by multiplying the total number of days trained by 8 and dividing by the total number of employees employed at the site obtained in 2 above and transfer this number to the *SD Data Collection Sheet*.
4. Repeat 3 above for each employee category.
5. At the end of the reporting period, obtain the monetary value of training for the reporting period from the Project Accountant and transfer this number to the *SD Data Collection Sheet*.

Verification documents and controls in place:

NPL063 forms

NPL177A and B forms

5.6 ADULT BASIC EDUCATION AND TRAINING (ABET)

Definition:

ABET refers to Adult Basic Education and Training. ABET training has five levels, namely pre-ABET, and ABET Levels 1 to 4. A learner who completes all ABET levels can then proceed to take a further six relevant subjects, and after successful completion the learner will be issued with a General Education and Training Certificate (GETC). This certificate is an equivalent qualification to schooling grade 9 and sits at level 1 in terms of the National Qualification Framework (NQF). ABET is available to all employees on a part-time, voluntary basis.

KPIs to report:

Number of employees per ABET Level: The number of employees registered for ABET training for the reporting year for each ABET training level (i.e. Pre-ABET and Levels 1 to 4), and as a total number

Number of employees participating in ABET: The total number of persons registered for ABET training for the reporting year.

Pass rate: The number of employees (by ABET Level) that completed each level expressed as a percentage of the number of employees that commenced training for the respective level (i.e. Pre-ABET and Levels 1 to 4), as well as the total overall ABET pass rate, for the reporting year.

Total ABET Training Hours: The number of hours employees spent being trained in the ABET programme for all ABET levels for the reporting year.

Measurement units:

Current number of employees per ABET Level

Pass rate (%)

ABET Training Hours

Number of participants

Person/s responsible for data:

1. Talent Management Coordinator
2. Senior Training Officer - ABET

Overview of process:

Learners complete a Learner Registration form to register with the ABET training programme. ABET course facilitators submit a weekly report to the Senior Training Officer - ABET providing details of number of learners registered, number of learners dropping out of the training, number of learners sitting exams, number of learners competent (i.e. passed exams), number of learners not yet competent (i.e. failed exams) etc. The information is then collated and forwarded to the Talent Management Coordinator for SD reporting purposes.

Procedure for data collection:

1. On a weekly basis, obtain data the relevant data above from the ABET course facilitators;
2. Collate the data and calculate the pass rate for each ABET Level;
3. Forward data to the Talent Management Coordinator;
4. When the exam results for a training year have been finalised (typically early January), obtain the above data and transfer it to the *Northam SD Data Collection Sheet*.

Verification documents and controls in place:

ABET policy

Registers and assessment test reports

5.7 HISTORICALLY DISADVANTAGED SOUTH AFRICANS (HDSAs) IN MANAGEMENT

Definition:

Total workforce (including contractors): As per definition 5.1 of the SD guidelines and definitions handbook.

HDSAs in management: The total number of HDSA employees in management, including women (from junior management to top management), expressed as a percentage of total number of employees.

Measurement units:

The total number of HDSA employees in management, including women.

Person/s responsible for data:

1. Talent management coordinator
2. HR manager

Overview of process:

Statistics related to the gender, racial composition and occupation levels of staff are updated on a monthly basis as part of the payroll management system.

In May of each year, Zondereinde undertakes a complete Employment Equity Analysis of the workforce to ensure constant awareness of gender and race balances as well as to inform significant part of the skills audit and skills development plans that make up the company's Workplace Skills Plan towards enhancing skills and competency of selected employees.

Procedure for data collection:

1. Update information relating to gender, racial composition and occupation level at the end of every month.
2. Obtain total workforce (including contractors) as detailed in Section 5.1.
3. Run a query on Symplexity to obtain the number of HDSAs in management positions for employees and contractors working at the site.
4. Calculate the percentage of HDSA in management positions using the figures from 2 and 3 above and enter this number into the Northam SD Data Collection Sheet.

Verification documents and controls in place:

Employment Equity Report

EEA1 declarations

Letters of Appointment confirming grade and occupational level

Employment Equity Policy/Plan

5.8 *HDSA PROCUREMENT*

Definition:

Percentage of total expenditure on capital goods, consumables and services provided by suppliers with BEE equity or BEE ownership, including joint ventures, of greater than 5%.

Measurement units:

Total expenditure in Rands on goods, consumables and services from companies with BEE equity or BEE ownership of greater than 5%

Person/s responsible for data:

1. Manager – financial services

Overview of process:

- To confirm whether the mine is procuring from suppliers with BEE equity of greater than 5% the mine employs a number of ways of obtaining this information. This will include questionnaires, phone calls and letters, as well as inspection of a variety of databases, such as the database from the South African procurement forum.
- The site also contracts an independent company to review the status of the procurement and update the site's procurement list where necessary.
- BEE companies which comply with the required criteria are placed on the vendor list.

Procedure for data collection:

At year end the financial manager collates the procurement list and reports the percentage of total expenditure on capital goods, consumables and services provided by suppliers with BEE equity or BEE ownership, including joint ventures, of greater than 5%.

Verification documents and controls in place:

- BBBEE certificates of suppliers
- Ledger reports

6 ENVIRONMENT

6.1 TOTAL ENERGY USE

Definition:

Total energy use is the sum of all energy inputs (e.g. self-generated and purchased). Energy inputs are comprised of:

- Electricity;
- Coal;
- Petrol;
- Diesel;
- Paraffin; and
- Jet fuel for helicopter.

Note:

Total energy use for Northam excludes fuel consumed by contractors. This, however, is included in the Greenhouse Gas emissions calculation as Scope 3 indirect emissions, and is subsequently described in *Section 5.10* and included in the *SD Data Collection Sheet*.

Measurement unit:

Megajoules (MJ)

Methods:

Energy input values are converted from the measurement unit described for each of the energy inputs into Megajoules. The conversion factors and calculations are provided in the *SD Data Collection Sheet*.

6.1.1 *Electricity Purchased*

Definition:

Electricity purchased for own use only from third-parties during the reporting period. It should exclude electricity generated by the operation itself.

Measurement unit:

Megawatt hours (MWh)

Person/s responsible for data:

1. Eskom representative
2. Finance Department
3. Electrician
4. Electrical foreman
5. Environmental Manager

Overview of process

Electricity is purchased through Eskom who bill the site on a monthly basis. The monthly bill splits the electricity use into that consumed by the plant and that consumed by the shafts. The site measures internal electricity use through

a number of submeters, which is used as a control to confirm the accuracy of the electricity paid for.

Procedure for data collection:

- Eskom sends a copy of the monthly electricity invoice to Finance and to the environmental manager.
- The environmental manager records the monthly electricity use from the Eskom invoice into the *SD Data Collection Sheet*.
- A comparison is then made by the environmental manager between the 'paid' electricity amount and the sub-metered amount (see below for description of this process).

Verification documents and controls in place:

- Northam has submeters measuring electricity use which is broadly split into use in the shafts and use in the plant.
- The electrician manually records the electricity submeter readings on site on a daily basis into a logbook.
- The electrical foreman records the data from the logbook into an Excel document, the daily submeter readings spreadsheet "*daily kWh readings*" located on the Northam server system at X: shared\Eng\.
- The electrical foreman enters the daily submeter readings into a monthly electricity use spreadsheet entitled "*Substation kWh readings*" available for viewing at X:\Public\Engineering.
- The environmental manager is responsible for cross checking the Eskom invoices and the submetered electricity data for any major differences.
- The electricians are responsible for the maintenance and calibration of the submeters.
- The logbook records are kept on site in the control room.

6.1.2 Coal

Definition:

Quantity of coal combusted in the smelter.

Measurement unit:

Tonnes

Person responsible for source data

1. The environmental manager
2. Inventory coordinator

Overview of process

Coal is consumed in the smelter but all coal purchases are directed and controlled by the Stores through the use of the Eproc procurement system. The Barnes database is the database which records all purchases made by the Eproc system.

Procedure for data collection:

- The environmental manager has been provided read access to the Barnes system through a user name and password.

- At the end of each month the environmental manager draws a Cognos report for the total amount of coal purchased from the Barnes system.
- The monthly coal use figures are then entered into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- The yearly consumption figures are sent to the Stores and signed off by them to confirm the total year-to-date figures for Northam.

6.1.3 *Petrol*

Definition:

Petrol consumed for processes and utilities during the reporting period, including electric power generated by the operation and on-site transportation.

Measurement unit:

Litres (L)

Person/s responsible for source data:

1. The environmental manager
2. Stores – Inventory Coordinator
3. Stores – Stores Supervisor
4. Stores- fuel attendant

Overview of process

- All petrol consumed is directed and controlled by the Stores through the use of the Eproc procurement system.
- Petrol use is dispensed from one site, the underground storage tanks, which are located adjacent to the Stores, and is controlled in the following manner:
 - For each vehicle fill-up a job card is completed by the fuel attendant. The job card contains the following information:
 - Car registration;
 - Driver's name; and
 - Pump readings before and after fill up.
 - Once the vehicle is filled the driver signs for the amount and keeps a duplicate copy of the job card.
 - The Stores Supervisor then records the use figures from the duplicate job cards held by the fuel attendant into the Barnes system on a daily basis.
 - The Stores Supervisor compiles a daily report comprising of all the entered job card fuel amounts, which the Inventory Coordinator checks and signs off.

Procedure for data collection:

- At the end of each month the environmental manager draws a Cognos report for the total amount of petrol purchased from the Barnes system.
- The monthly petrol use figures are then entered into the *SD Data Collection Sheet* by the environmental manager.

Verification documents and controls in place:

- The underground tanks are measured (dips) each morning and evening and reconciled with the total daily amount used as per the daily report compiled by the Stores Supervisor. This reconciliation is done by the Stores Supervisor, and is signed off by the Inventory Coordinator.
- The yearly consumption figures are sent to the Stores and signed off by them to confirm the total year-to-date figures for Northam.
- The Inventory Coordinator pulls off a monthly excel fuel use report which is saved on the Northam server.
- Yearly financial audit conducted.

6.1.4 Diesel**Definition:**

Diesel consumed for processes and utilities during the reporting period, including electric power generated by the operation and on-site transportation.

Measurement unit:

Litres (L)

Person/s responsible for source data:

1. The environmental manager
2. Stores – Inventory Coordinator
3. Stores – Stores Supervisor
4. Fuel attendant

Overview of process:

- All diesel consumed is directed and controlled by the Stores through the use of the Eproc procurement system.
- Diesel use is controlled by the Stores, and is dispensed from three different locations:
 - Bulk tanks found near the compressors;
 - Bulk tanks at the smelter; and
 - Underground storage tank at the Stores.
- Diesel use at the underground storage tanks is controlled in the following manner:
 - For each vehicle fill-up a job card is completed by the fuel attendant. The job card contains the following information:
 - Car registration;
 - Driver's name; and
 - Pump readings before and after fill up.
 - Once the vehicle is filled the driver signs for the amount and keeps a duplicate copy of the job card.
 - The Stores Supervisor then records the use figures from the duplicate job cards held by the fuel attendant into the Barnes system on a daily basis.

- The Stores Supervisor compiles a daily report comprising of all the entered job card fuel amounts, which the Inventory Coordinator checks and signs off.
- Diesel used at the smelter and diesel used at the compressors is controlled by the Stores through the Eproc system in the same manner that diesel use from the underground storage tanks is managed.

Procedure for data collection:

- At the end of each month the environmental manager draws a Cognos report for the total amount of diesel purchased from the Barnes system.
- The monthly diesel use figures are then entered into the *SD Data Collection Sheet* by the environmental manager.

Verification documents and controls in place:

- The underground tanks are measured (dips) each morning and evening and reconciled with the total daily amount used as per the job cards. This reconciliation is done by the Store Supervisor, and is signed off by the Inventory Coordinator.
- The Inventory Coordinator pulls off a monthly excel fuel use report entitled which is saved on the Northam server.
- The yearly consumption figures are sent to the Stores and signed off by them to confirm the total year-to-date figures for Northam.

6.1.5 Paraffin

Definition:

Paraffin consumed for processes and utilities during the reporting period.

Measurement unit:

Litres (L)

Person responsible for source data

1. The environmental manager
2. Stores – Inventory Coordinator

Overview of process:

All paraffin use is directed and controlled by the Stores through the use of the Eproc procurement system.

Procedure for data collection:

- At the end of each month the environmental manager draws a Cognos report for the total amount of paraffin purchased from the Barnes system.
- The monthly paraffin use figures are then entered into the *SD Data Collection Sheet* by the environmental manager.

Verification documents and controls in place:

- The yearly consumption figures are sent to the Stores and signed off by them to confirm the total year-to-date figures for Northam.

6.1.6 *Jet fuel for helicopter*

Definition:

Jet A1 fuel consumed in the Northam helicopter. Fuel use excludes fuel that is used by third parties that Northam rents the helicopter to.

Measurement unit:

Litres (L)

Person responsible for source data

1. The environmental manager
2. Finance

Overview of process:

The Northam helicopter is used to transport Northam staff and product to and from the mining sites. The fuel used is calculated using the hours flown, a standard rate of fuel use per hour and fuel density. The hours flown in the helicopter are recorded by finance, and the fuel use calculation is undertaken by the environmental manager.

Procedure for data collection:

- At month end the environmental manager obtains the helicopter hourly-use summary from finance.
- The environmental manager obtains the fuel use per hour (kg/hour) and fuel density (kg/l), and calculates total litres of jet fuel used:

$$\text{Fuel use (litres)} = (\text{Fuel use (kg/hr)} * \text{Total flight hours}) / \text{Fuel density (kg/l)}$$

- The fuel used by third parties is then deducted from the total fuel use to obtain the Northam jet fuel use.
- The monthly jet fuel use figures are then entered into the *SD Data Collection Sheet* by the environmental manager.

Verification documents and controls in place:

- Flight hour records.

6.2 ENERGY SAVED

Definition:

Measure of energy use at Northam Platinum versus the energy allocation prescribed by Eskom for Northam Platinum (Energy conservation scheme). The list of energy savings projects undertaken to obtain this measure is also recorded.

Measurement unit:

- Megawatt hours (MWh) allocated vs. Megawatt hours (MWh) used.
- Number, description and estimated savings from individual projects.

Person/s responsible for data:

1. The environmental manager
2. Engineering, shafts and surface environment manager

Overview of process:

The environmental manager compares the monthly electricity use against the prescribed Eskom energy allocation. These figures, in the form of a graph are used for the Engineering Monthly Report, presented by the Engineering, shafts and surface environment manager to the Board.

Guidelines to data collection:

- The environmental manager obtains the monthly electricity use data, and the monthly energy allocation from Eskom and enters these values into the *SD Data Collection Sheet*.
- The environmental manager discusses the number, description and estimated savings from the individual energy projects with the engineering manager on a monthly basis, and records these values in the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Monthly Board Report.

6.3 WATER USE

Definition:

Reporting the total volume of water withdrawn by source, contributes to an understanding of the overall scale of potential impacts and risks associated with Northam's water use.

Water use is the sum of all quantities of water inputs. It is not the water consumption defined as the net difference between water intake and outputs. In Northam's case this will involve water from:

- Municipal water supplied by Magalies Water;
- Ground water (fissure water); and
- Rainwater collected directly and stored by Northam.

A large percentage of this water is reused in the system and is recorded under recycled water defined below.

Measurement unit:

Cubic metres (m³)

Person/s responsible for source data:

1. The environmental manager
2. Finance
3. Control room

Overview of process:

There are four process water circuits associated with the Mine site which can be summarised as follows:

- Potable water (Magalies water) circuit;
- Underground mining operation water circuit;
- Concentrator water circuit; and
- Smelter/BMR water circuit.

The circuits are linked and water is transferred between the circuits. In addition to the above closed process water circuits, two water pollution control circuits are also present on the Mine system. The water treatment facility on site is responsible for treating contaminated water.

Potable water is used in all of these circuits as well as for drinking water underground.

The majority of the fissure water is used in the refrigeration plant. This water is cooled above ground and reused underground for cooling purposes.

Procedure for data collection:

Refer to individual sections below.

6.3.1 *Municipal water (potable water)*

Definition:

The volume of water consumed on site purchased from public authorities.

Measurement unit:

Cubic metres (m³)

Person/s responsible for source data relating to all water use:

1. Finance
2. The environmental manager
3. Fitters responsible for reading submeters
4. Fitter Foreman

Overview of process:

Potable water is provided to the site via a single inlet from Magalies Water (municipality). Magalies Water invoices the site on a monthly basis, based on water consumption taken from a meter reading from this inlet. The site manages their internal potable water use through a number of submeters, which is used as the source of data for reporting purposes

Procedure for data collection:

- Magalies Water reads the reservoir meter electronically on a monthly basis and provides Finance with an invoice for water use.
- Finance sends the invoice to the environmental manager, who transfers the consumption figure into the *SD Data Collection Sheet*.
- Water use is also submetered on the mine site. Fitters are tasked with taking weekly readings of these submeters, and recording the consumption figures in a logbook, which is kept in the control room.
- The fitter foreman transfers the weekly submeter readings from the fitter's logbook into an excel spreadsheet entitled *Weekly Water Meter Readings Spreadsheet*.
- The excel spreadsheet *Weekly Water Meter Readings Spreadsheet* is emailed to the environmental manager by the fitter foreman on a weekly basis.
- The environmental manager uses the figures recorded in the *Weekly Water Meter Readings Spreadsheet* to compile a consolidated water use spreadsheet (*EMP.xls*).
- The environmental manager compares the Magalies Water invoice and the weekly submetered water data.
- The figures from the water use spreadsheet (*EMP.xls*) are then manually transferred to the *SD Data Collection sheet*.

Verification documents and controls in place:

- Comparison of submetered water consumption in the *Weekly Water Meter Readings Spreadsheet* spreadsheet against the invoices provided by Magalies Water.
- Water balance.

6.3.2 Ground water (*fissure water*)

Definition:

Water abstracted/collected by the operation from ground water sources, e.g. from boreholes, underground aquifers etc., and which is used by the operation.

Measurement unit:

Cubic metres (m³)

Person/s responsible for source data relating to all water use:

1. Senior Technician at control room;
2. Environmental manager.

Overview of process:

Fissure water is pumped from the underground shafts into the refrigeration plant, where it is cooled. Once cooled, the water is pumped back underground where it is used for positional cooling in the areas of work. Once used, the water is then pumped back to the refrigeration plant and re-cooled, effectively creating a closed loop system. No abstraction takes place from boreholes on the property.

Procedure for data collection:

- Water pumped up and down the shafts is accurately measured through the use of an online metering system (ABB Control Builder). The live real time water use is continuously monitored in the control room.
- The Senior Technician in the control room pulls a *pump report* off the electronic system and emails the report to the environmental manager on a monthly basis.
- The water use for the day (both pumped up and down the shafts) is recorded in a report produced by the control called the *Hydropower daily logsheet*.
- On a daily basis the environmental manager obtains a copy of the *Hydropower daily logsheet* from the control room.
- The environmental manager manually transfers the daily water use figures into an excel document, the *Shaft Water Balance*.
- The *Shaft Water Balance* represents the water balance for the site.
- On a monthly basis the ground water consumption figures are manually transferred to the *SD Data Collection Sheet* from the *Shaft Water Balance*.

Verification documents and controls in place:

- Comparison made by the environmental manager between the figures manually recorded in the *Shaft Water Balance* and those recorded in the *pump report*.
- Water meters are calibrated every Tuesday, and records maintained in the control room.
- Pump hours for water pumped **out** the shafts to the refrigeration plant are manually recorded by a pump operator on a daily basis. The pump hours are then used to manually calculate the volume of water pumped out of the mine on a daily basis by the clerk, and recorded in the *Water Balance*

Book (a manual document maintained by the clerk). The Sectional Engineer then checks the calculations done by the clerk. The clerk then manually transfers the figures in the *Water Balance Book* to an Excel document, the *Daily Report*. These figures can then be used to check against the electronic reading of the pump hours done by the electronic system which is maintained by the control room.

- Water balance.

6.3.3 *Water discharge*

Definition:

The amount and quality of water that is released into the environment, e.g. rivers.

Measurement unit:

Cubic metres (m³) and water quality measured by *Chemical Oxygen Demand* (COD) in milligrams per litre (mg/l) and *Total Dissolved Solids* (TDS) in milligrams per litre (mg/l), and *Nitrates* in the water (mg/l).

Person/s responsible for source data:

1. Technician at control room
2. Fitter foreman
3. Environmental manager

Overview of process:

Northam operates a closed loop system but in certain instances there is overflow of water into the environment, usually during times of heavy rainfall. There are four possible points of overflow water, which ultimately discharge into the Bierspruit:

- The evaporation dam;
- Dam 5;
- Settling Pond; and
- Border of Northam's property.

All four of these sites are measured by means of an open channel where the flow rate is electronically measured by a V-notch and sensor. The electronic system automatically records any flow rate from these four points in the event of a discharge, and records it in the daily report, the *hydropower daily logsheet*. If a discharge occurs, the fitters responsible for undertaking the meter readings will go to the point of discharge and take a water sample which is sent to the laboratory.

Procedure for data collection:

- On a daily basis the environmental manager obtains a copy of the *Hydropower daily logsheet* from the control room.
- Any water that is released to the environment through the channel is recorded on the *Hydropower daily logsheet*.
- The water quality results for the discharge (in mg/l for COD and for TDS) will then be sent to the environmental manager by the laboratory.

- The environmental manager manually transfers the discharge volume from the *Hydropower daily logsheet* and the discharge quality from the laboratory results into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Calibration of water sensor.
- Laboratory results reflecting actual analysis.

6.3.4 Recycled water

Definition:

The amount of water that is used for a second or more time in an operation, process or activity. Recycled water must be reported separately to avoid double counting. For Northam, the five important streams of recycled water are:

- Water recycled back in the refrigeration cooling process;
- Industrial wastewater recycled through the sewage treatment facility;
- Water recycled through the evaporation dam circuit;
- Water recycled in the return water dam circuit; and
- Water recycled in the refrigeration BAC.

Measurement unit:

Cubic metres (m³) and % of total consumption.

Person/s responsible for source data:

1. Senior Technician at control room
2. Sectional engineer
3. Environmental manager
4. Fitters

Overview of process:

- Refer to *Section 5.3.2 Underground water* for the water recycled in the refrigeration cooling process.
- The volume of treated sewage water released, water recycled in the evaporation dam and water recycled in the return water dam is metered, and manually recorded by the fitters on a weekly basis in the same logbook where the potable water figures are recorded.
- The water recycled in the refrigeration BAC is calculated based on pump hours.

Procedure for data collection:

- On a daily basis the environmental manager obtains a copy of the *Hydropower daily logsheet* from the control room.
- Any water that is recycled **in the fridge plant process** is recorded on the *Hydropower daily logsheet*.
- Water use from the sewage plant (**representing recycled process water**), the **evaporation dam circuit** and **return water dam circuit** is submetered on the mine site. Fitters are tasked with taking weekly readings of these submeters, and recording the consumption figures in a logbook, which is kept in the control room.

- **Water recycled in the refrigeration BAC** is calculated based on pump hours.
- The fitter foreman transfers the weekly submeter readings from the fitter's logbook into an excel spreadsheet entitled *Water Readings*.
- The excel spreadsheet *Water Readings* is emailed to the environmental manager by the fitter foreman on a weekly basis.
- The environmental manager manually transfers:
 - The recycled water from the fridge plant process recorded on the *Hydropower daily logsheet* spreadsheet into the *SD Data Collection Sheet*;
 - The sewage plant water, the evaporation dam circuit and return water dam circuit recorded in the *Water Readings* spreadsheet into the *SD Data Collection Sheet*.
 - The water recycled in the refrigeration BAC into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Calibration of meters.

6.4 MATERIALS USED

Definition:

Material use refers to total materials used, including materials purchased from external suppliers and those obtained from internal sources. This can include:

- Raw materials (i.e., natural resources used for conversion to products or services such as ores, minerals, wood, etc.);
- Associated process materials (i.e., materials that are needed for the manufacturing process but are not part of the final product, such as lubricants for manufacturing machinery);
- Semi-manufactured goods or parts, including all forms of materials and components other than raw materials that are part of the final product; and
- Materials for packaging purposes.

The most significant materials for Northam have been defined as:

- Diesel;
- Petrol;
- Coal;
- Timber;
- Explosives;
- Chemicals (Oxygen, sulphuric acid and sulphur dioxide);
- Grease; and
- Lubricating and hydraulic oils.

The data collection process of diesel, petrol and coal is described in *Section 5.1: Energy Use* above.

Measurement unit:

Litres / tonnes / cubic metres (m³)

Person/s responsible for source data:

1. Environmental manager
2. Finance
3. Stores

Overview of process:

The process for obtaining the volumes of timber, explosives, grease and lubricating and hydraulic oils is the same.

The purchase of materials for use in the mine is controlled through the stores and the eProc system.

Procedure for data collection:

- On a monthly basis the environmental manager pulls a Cognos report off the Barnes system for the amount of that specific material consumed.
- The monthly values are then manually entered by the environmental manager into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- A stock list with a corresponding list of codes of all materials is maintained by finance. The environmental manager checks the stock list to ensure that the report drawn is accurate and complete.

6.5 WASTE

6.5.1 General waste to landfill

Definition:

The amount of general waste that is sent to a general waste landfill site. General waste excludes hazardous waste, medical waste and liquid waste water effluent.

Measurement unit:

Cubic meters (m³).

Person/s responsible for source data:

1. Security at landfill;
2. Subcontractor in charge of transporting domestic waste;
3. Environmental manager.

Overview of process:

The site operates its own general waste landfill site. A single subcontractor is in charge of transporting all domestic waste to the landfill site and maintains daily records of what enters the landfill area. The volumes of waste disposed of are calculated based on the size of the truck disposing of waste.

Guidelines to data collection:

- A security guard at the entrance to the general landfill site is responsible for recording the time, registration and load of the truck entering the landfill site into a logbook on a daily basis.
- The load is either general waste or soil (which is used to cover the domestic waste).
- On a monthly basis the environmental manager obtains the daily figures from the security's logbook and consolidates the information into an Excel spreadsheet.
- The general waste figures are then entered into the *SD Data Collection Sheet* by the environmental manager on a monthly basis.

Verification documents and controls in place:

- Logbook of waste figures.

6.5.2 Hazardous Waste

Definition:

Hazardous waste is waste which:

- Needs to be disposed of in a licensed hazardous waste landfill site;
- Needs to be incinerated;
- Needs to be transported to a licensed hazardous waste treatment, storage or disposal facility.

This should include the following as a minimum: heavy metal contaminated sludges; contaminated containers (reagent containers, oil/grease containers,

anti-freeze drums, etc); medical waste; fluorescent tubes; vehicle batteries, asbestos containing material and oil contaminated material (gaskets, filters, soaking agents, rags, etc).

Measurement unit:

Litres / barrels / m³ (as stated on the disposal slip)

Person/s responsible for source data:

1. EnviroServ
2. Oilkol
3. Environmental Manager

Overview of process:

Hazardous waste on site is collected and disposed of by OilKol (contaminated oil) and EnviroServ (all other hazardous waste). The specific operation on the mine makes a request through the eProc system for the disposal of hazardous waste. The requested supplier (EnviroServ or Oilkol) are then called to site where they collect the hazardous waste and dispose of it in a registered hazardous waste landfill site.

Guidelines to data collection:

- All hazardous waste disposed of is directed and controlled through the use of the Eproc procurement system.
- At the end of each month the environmental manager draws a Cognos report from the Barnes system for the total amount of hazardous waste disposed of.
- The monthly hazardous waste figures are then entered into the *SD Data Collection Sheet* by the environmental manager on a monthly basis.

Verification documents and controls in place:

- Copies of all weigh bills/collection notes as well as final safe deposition notes.

6.5.3 *Recycled Waste*

Definition:

The amount of scrap material that is recycled through the salvage yard at Northam Platinum that is not sent to a hazardous or general landfill site and.

Measurement unit:

Timber – Cubic metres (m³)

Steel – Tonnes (t)

Plastic – Tonnes (t)

Rubber – Tonnes (t)

Person/s responsible for source data:

1. Subcontractor responsible for all materials that enter and exit the salvage yard
2. Finance
3. The environmental manager

Overview of process:

A single subcontractor is responsible for managing all scrap materials. These materials are brought to the salvage yard on a daily basis. The subcontractor sorts all the materials in the salvage yard and then transports the materials off site for reuse and recycling. All trucks containing material to be reused or recycled is sent over the weighbridge. A copy of the weighbill is then sent to finance and a copy goes to the subcontractor. The subcontractor compile a monthly report of all materials reused or recycled which is sent to the environmental manager.

Guidelines to data collection:

- The subcontractor sends a consolidated monthly spreadsheet to Finance and to the environmental manager.
- The environmental manager records the monthly amounts of each material type into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Copies of weigh bills kept by finance.
- Calibration of weighbridge.

6.6 ENVIRONMENTAL INCIDENT REPORTING

Definition:

Defined as per the Northam ISO14001 Environmental Management System procedure: Environmental emergency preparedness and response procedure.

Measurement unit:

The number of incidents occurring and the remedial actions taken.

Person/s responsible for source data:

1. Person/s reporting incident
2. Health and Safety Representatives
3. Environmental Manager

Overview of process:

Environmental incidents are captured and recorded as per the requirements of the ISO14001 EMS. An Environmental Incident Form is used to capture incidents which are available to all employees on the public X: drive.

Guidelines to data collection:

- The completed Incident Form is to be emailed to the environmental manager who adds the particular incident to the *Environmental Incidents tracking spreadsheet*.
- The environmental manager tracks all environmental incidents to ensure the incident is appropriately addressed and closed out.
- The environmental manager enters the number of environmental incidents, including the remedial action taken, into the *SD Data Collection Sheet* on a monthly basis.

Verification documents and controls in place:

- Certified ISO14001 EMS.
- Daily/weekly/monthly site visits by the Health and Safety (H&S) representatives, who include environment as part of their inspections.
- A monthly HOD Health and Safety meeting where Environmental Incidents are discussed.

6.7 *LAND USE*

6.7.1 *Land Under Management*

Definition:

Land falling under the direct management of Northam Platinum (including land covered by surface rights, or occupied by third parties), but excluding all land leased and undeveloped projects/prospects where the land does not yet fall under the direct management of Northam Platinum.

Measurement unit:

Hectares (Ha)

6.7.2 *Land utilised for mining and related activities*

Definition:

Land that has been disturbed due to mining and related activities, including the shaft complex, concentrators, smelter complex, waste dump, rock dumps, tailings disposal facility and water return dams, hostels, Setaria village and sewage works.

Measurement unit:

Hectares (Ha)

6.7.3 *Rehabilitated Land*

Definition:

Land that has been rehabilitated to a natural land use type or land use type that occurred prior to mining activities started. This could also include land that has been restored to an agreed (with DMR and stakeholders) post-mine closure land use i.e. recreational use, industrial use etc.

Measurement unit:

Hectares (Ha)

6.7.4 *Land Protected*

Definition:

Land under management that is currently protected, including land leased and land owned.

Measurement unit:

Hectares (Ha)

Person/s responsible for source data:

1. Chief surveyor
2. Environmental Manager

Overview of process:

The chief surveyor is responsible for obtaining all land use records.

Guidelines to data collection:

At year end the environmental manager obtains the *land under management*, the *land utilised for mining and related activities* and the *rehabilitated land* from the chief surveyor and enters this data into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Chief surveyor records and maps.

6.8 CLOSURE AND REHABILITATION COSTS

Definition:

Environmental liabilities and provisions post mine closure.

Overview of process:

The rehabilitation and closure liability fund is updated yearly as per the requirements of the Department of Mineral Resources.

Measurement unit:

South African Rands (ZAR)

Person/s responsible for source data:

1. Finance
2. Environmental manager

Guidelines to data collection:

- Finance updates the rehabilitation and closure costs for Northam Platinum on a yearly basis in order to take account of inflation and any changes that may have occurred during the year.
- The environmental manager is tasked with obtaining the details of the closure and rehabilitation costs from finance on a yearly basis, and entering these into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Detailed schedule of rehabilitation and closure costs.

6.9 SULPHUR DIOXIDE (SO₂) EMISSIONS

Definition:

Airborne emissions of sulphur and its compounds formed during combustion or production processes released to the atmosphere from Northam Platinum's smelting facility.

Measurement unit:

Tonnes (tons/t)

Person/s responsible for source data:

1. Plant superintendent at the smelting facility
2. Environmental manager

Overview of process:

The sulphur emissions in the smelter are calculated based on the sulphur content of the concentrator feed (matte) and the weight of matte processed. The sulphur content of the matte is measured and calculated by the laboratory based on a sample taken from each batch of matte. A composite of the batch readings for the day is then averaged out by the laboratory and sent to the plant superintendent. The weight of each batch of matte is taken at the Base Metal Refinery and sent to the plant superintendent. The plant superintendent then calculates the daily SO₂ emissions based on the % sulphur of the matte and the weight of the matte processed in the smelter. This calculation is done in an Excel spreadsheet and can be found on the Northam server. Only the plant superintendent has read and write access to this file to prevent unauthorised access.

Guidelines to data collection:

- The environmental manager obtains "read only" access to the plant superintendent's SO₂ emissions calculation spreadsheet.
- The environmental manager transfers the monthly SO₂ emissions into the *SD Data Collection Sheet*.

Verification documents and controls in place:

- Internal audit report by Metallurgy.
- Calibration of scale at Base Metal Refinery.
- ISO9001 audits at laboratory.
- Quarterly report on SO₂ emissions to DMR.

6.10 GREENHOUSE GAS (GHG) EMISSIONS

Definition:

Greenhouse gas emissions are the main cause of climate change. GHG emissions include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), CFC's, HFC's and sulphur hexafluoride (SF₆).

For reporting purposes, GHG emissions are broken into direct and indirect emissions:

- **Direct emissions**
Emissions from sources that are owned or controlled by Northam e.g. direct emissions related to combustion would arise from burning fuel for energy within Northam's operational boundaries.
- **Indirect emissions**
Emissions that result from the activities of Northam but are generated at sources owned or controlled by another organization. In the context of this indicator, indirect emissions refer to GHG emissions from the generation of electricity, imported and consumed by Northam.

Measurement unit:

Tonnes of carbon dioxide equivalent (CO₂e).

CO₂ equivalent is the measure used to compare the emissions from various greenhouse gases based on their global warming potential (GWP). The CO₂ equivalent for a gas is derived by multiplying the tonnes of the gas by the associated GWP.

Overview of process:

The calculation of greenhouse gas emissions is based on the conversion of activity data into a carbon dioxide equivalent figure:

$$\text{Carbon footprint emissions} = \text{activity data} \times \text{emissions factor} \times \text{global warming potential}$$

Emission factors convert the activity data collected and consolidated by Northam into tonnes of the relevant greenhouse gas. Emission factors are presented in specific units, for example:

- Kilograms of CO₂ per kilowatt hour of electricity; and
- Kilograms of CO₂ per litre of petrol/gasoline.

Global warming potentials are applied to non-CO₂ greenhouse gases to convert the result to carbon dioxide equivalent (tCO₂e).

Emission factors and global warming potentials are presented in the accompanying *SD Data Collection Sheet*. The relevant activity data for the carbon footprint calculation includes the following:

Scope 1 emission sources:

- Coal

- Petrol
- Diesel
- Paraffin
- Grease
- Lubricating and hydraulic oils
- Explosives
- Jet fuel for the helicopter
- Methane emissions from waste water treatment

Scope 2 emissions source:

- Electricity use

The process for collecting this activity data is presented in *Section 5.1* of this guidance document.

The data for GHG emissions also includes the following Scope 3 emission sources:

- Transport of waste rock by the subcontractor; and
- Transport of reused and recycled material by the subcontractor responsible for waste at the salvage yard.

GHG Emissions calculation

The SD Data Collection Sheet provides the portal for entering all the data relating to their SD indicators. This excel workbook will have an additional spreadsheet which will automatically calculate the GHG emissions for Northam Platinum from the data entered into the SD Data Collection Sheet, as per the emissions sources described above.