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Mine Health and Safety Council

Presentation to PPC: Mineral Resources
9 October 2018

Mr. Thabo Dube MHSC CEO

CONTENTS

- Introduction of MHSC Team
- Legislated MHSC Mandate & Supporting Structures
- Performance Overview
- Performance Against Strategic Objectives
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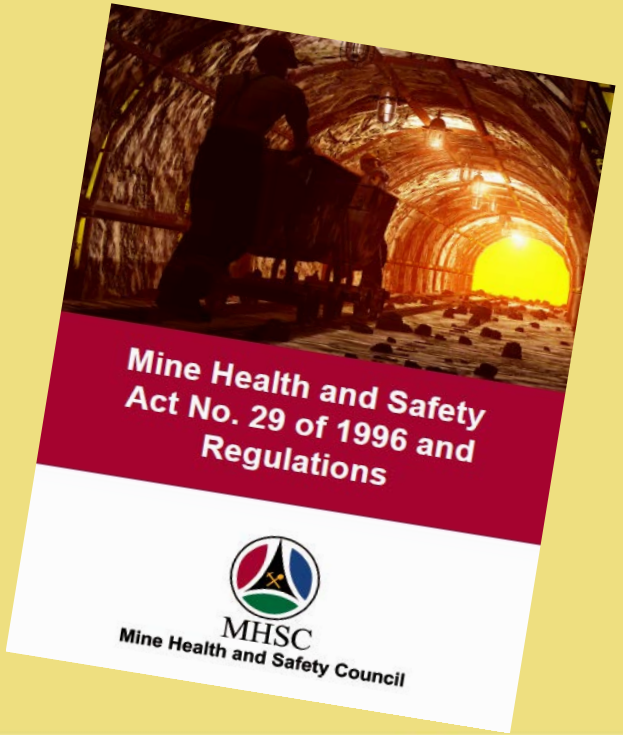
LEGISLATED MHSC MANDATE

- Advise the Minister on all occupational health and safety issues in the mining industry including legislation, research and promotion.
- Review and develop legislation for recommendation to the Minister (Focus on Regulations).
- Oversee research in relation to health and safety in the mining industry.
- Liaise with other bodies concerned with health and safety issues (MQA, State Departments and various Stakeholders).
- Promote health and safety culture in the mining industry.



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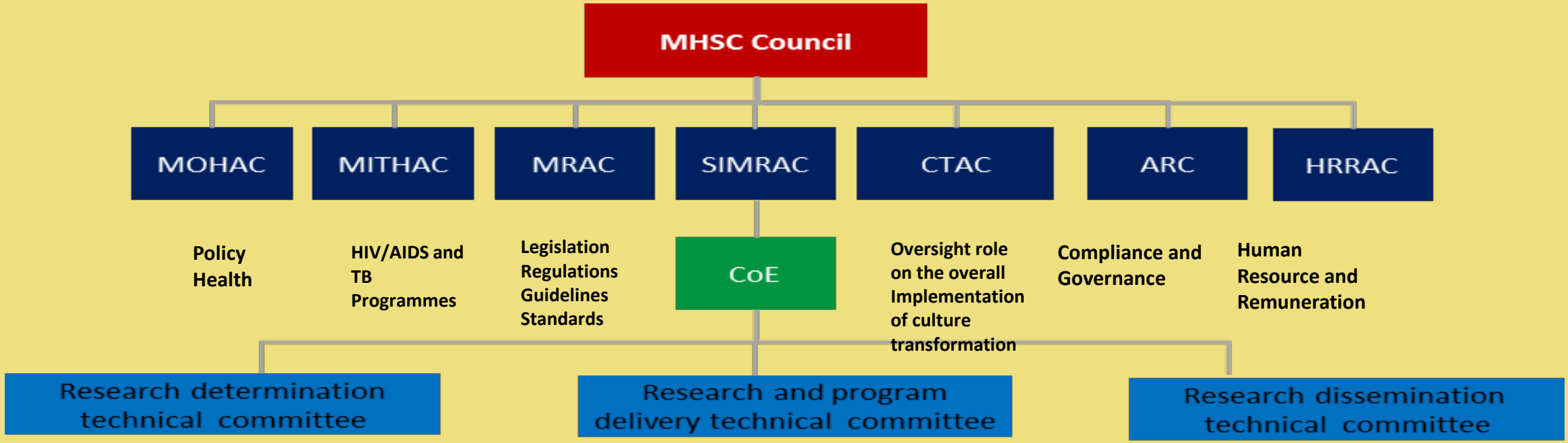
MHSC STRUCTURE



Operational Technical Committees

Strategic Oversight

CoE functional body

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GENERAL PERFORMANCE OVERVIEW

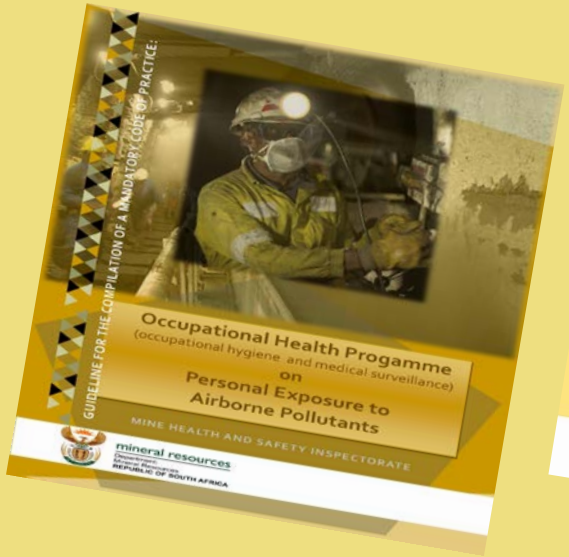
- **Most of the Strategic Objectives Have been Achieved**
- **The following Strategic Objectives were not fully Implemented:**
  - **Promote Culture of Health and Safety in the Mining Industry**
  - **Implementing of Centre of Excellence**

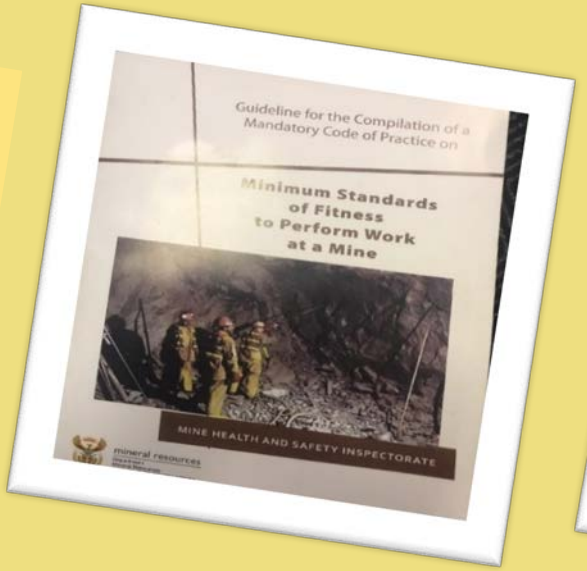
MHSC ADVISORY NOTES TO MINISTER

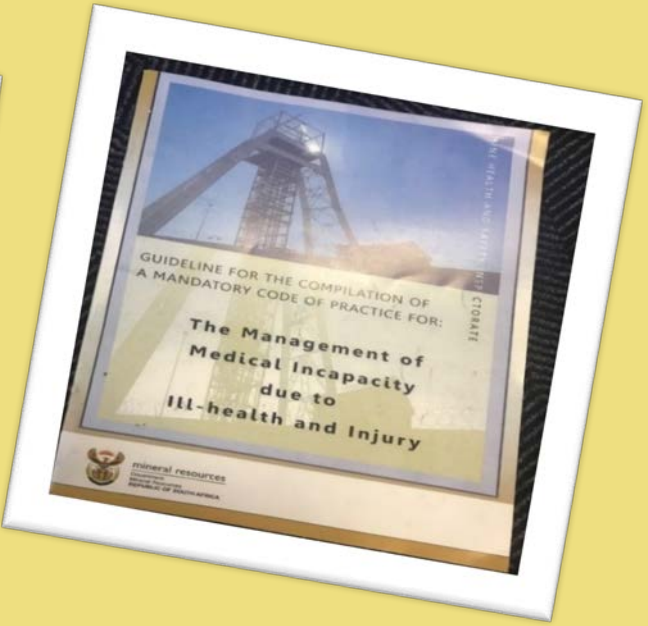
LEGISLATION/REGULATIONS	COE RESEARCH PROJECTS	SUMMIT ACTION PLAN PROJECTS
• Guideline for the COP for an Occupational Health Programme on Personal Exposure to Airborne Pollutants; • Guidance Note for the Management of Tuberculosis (TB) in the South African Mining Industry. • SAMRASS Codebook; • Explosives Regulations; and • Guideline for COP to Mitigate Geotechnical Risk in Mines.	• Minimizing seismic risks in the Bushveld Complex Platinum mines. • Develop Methodologies for Determining Maximum Bord Widths Applicable to Platinum and Chrome Mines in the Bush Veld Complex. • Development of a South African Minimum Standard on Ground Vibration, Noise, Air Blast and Fly Rock near Surface Structures to be Protected. • Revision of DMR 164 HIV and TB Reporting Form.	• Policy on the Integrated Management and Reporting for HIV, AIDS, TB and Occupational Lung Disease (HATOLD). • Development of a Comprehensive Compensation System for the South African Mining Industry. • Data Analysis on Extension of Mine Health Care Services. • Rehabilitation of Mine Workers Injured in the Line of Duty.

LEGISLATIVE/ REGULATIONS INITIATIVES

INDUSTRY MANDATORY GUIDELINES







Guideline for Occupational Health Programme on Personal Exposure to Airborne Pollutants; Guidance for Management of TB in the South African Mining Industry; Mandatory Code of Practice on Minimum Standards of Fitness to perform Work at Mine; Mandatory Code of Practice for the Management of Medical Incapacity due to ill-health and Injury

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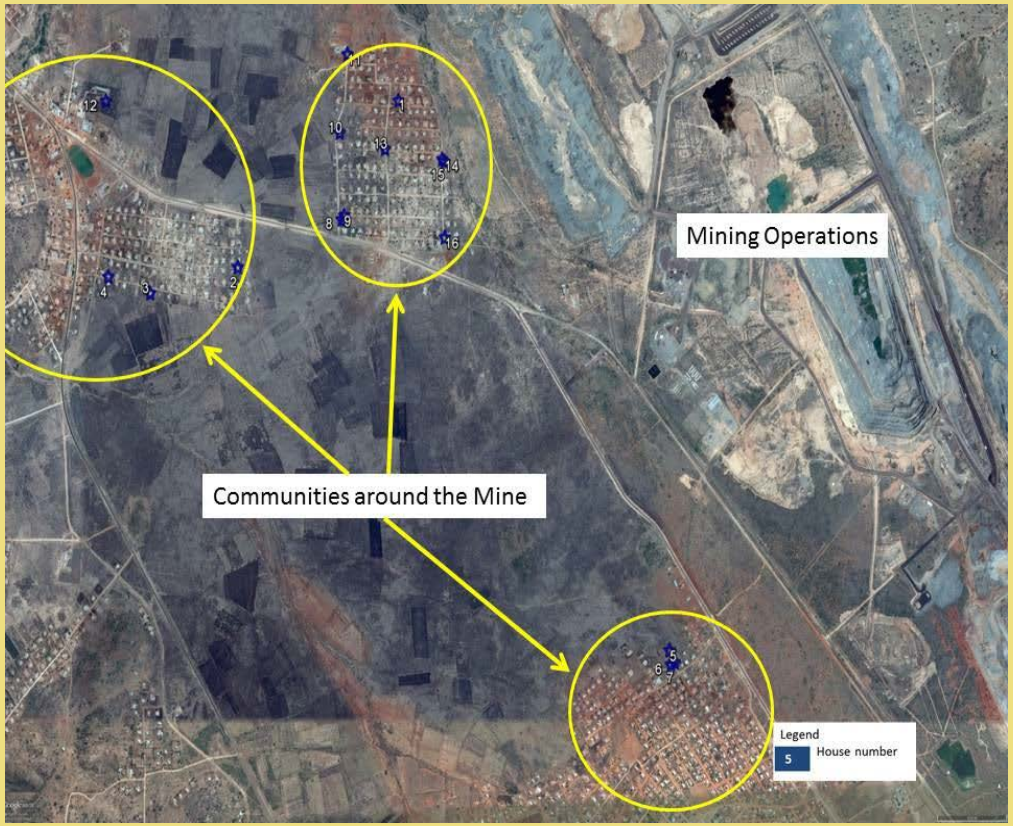
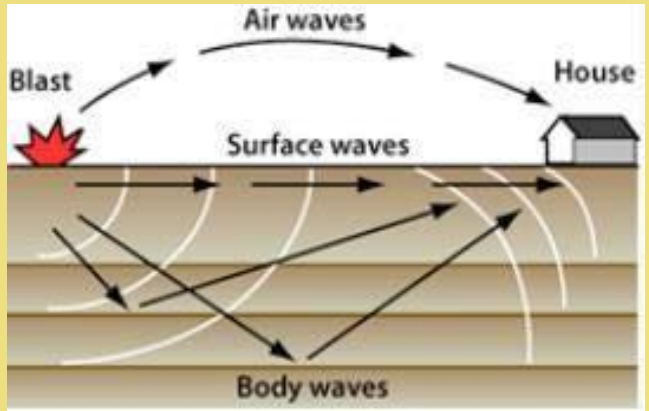
CoE RESEARCH PROJECTS

DEVELOP A SOUTH AFRICAN MINIMUM STANDARD ON GROUND VIBRATION, NOISE, AIR BLAST AND FLY ROCK NEAR SURFACE STRUCTURES TO BE PROTECTED





Standard Guidelines:

- **Ground Vibrations**
- **Noise**
- **Aiblast**
- **Flyrock**

Type of Structure	Type of Damage	PPV at which Damage starts (mm/s)
Rigidly mounted mercury switches	Trip-out	12.7
Concrete blocks (e.g. floor slabs)	Hairline cracks in concrete	203
Cased drill holes	Horizontal offset	381
Mechanical equipment (e.g. pumps and compressors)	Shaft misalignment	1016
Prefabricated metal buildings on concrete pads	Cracked floor, building twisted and distorted	1524

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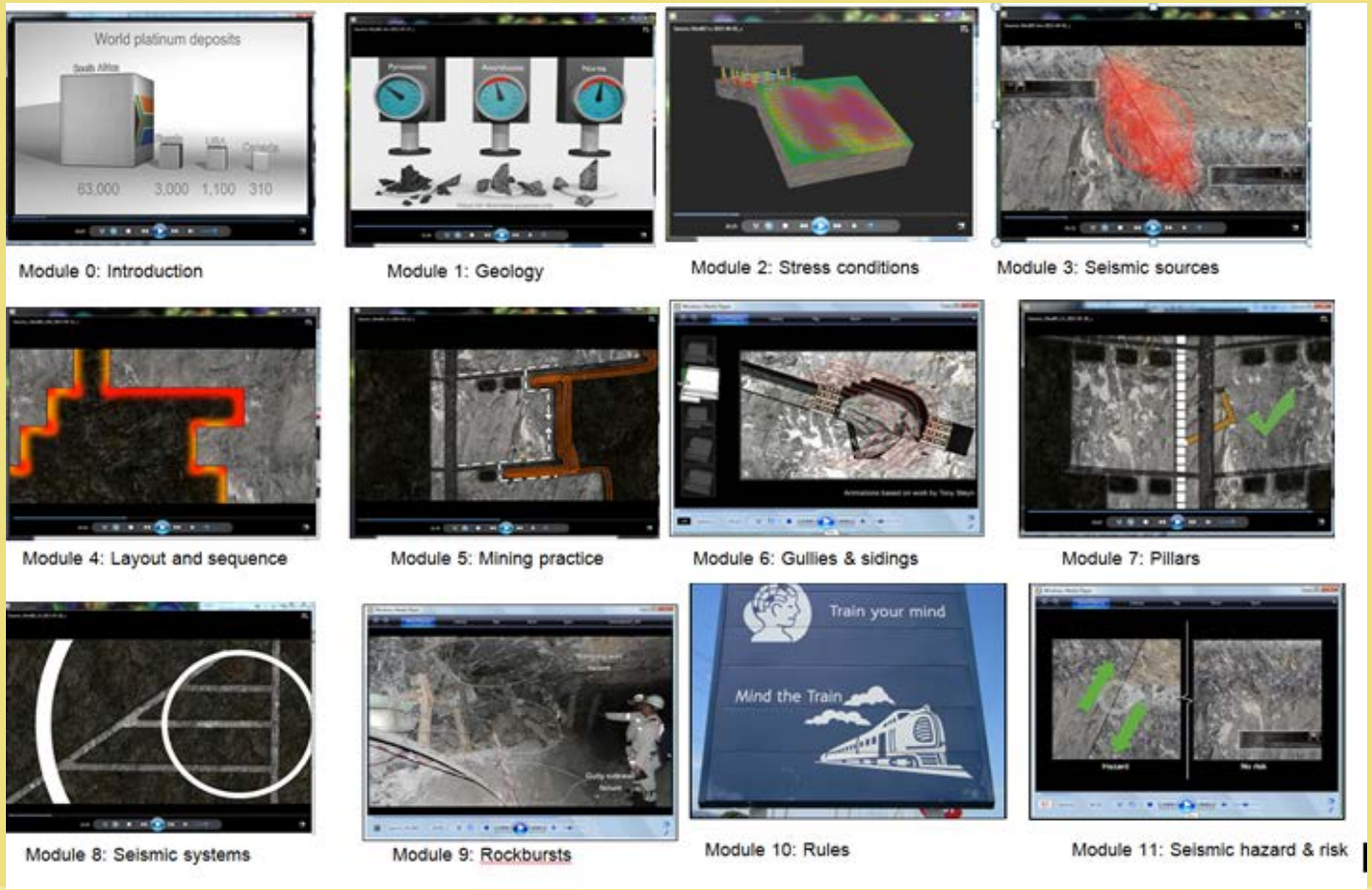
CoE RESEARCH PROJECTS

TECHNOLOGY TRANSFER TO MINIMIZE SEISMICITY IN THE PLATINUM MINES

This project outcome was the development of innovative, animated learning and training material which addresses:

- **Seismicity Awareness**
- **Various Training Modules to Train both Production and Rock Engineering Personnel on Manage Seismic Risks**
- **How to avoid practices that are known to result in increased seismic hazard.**



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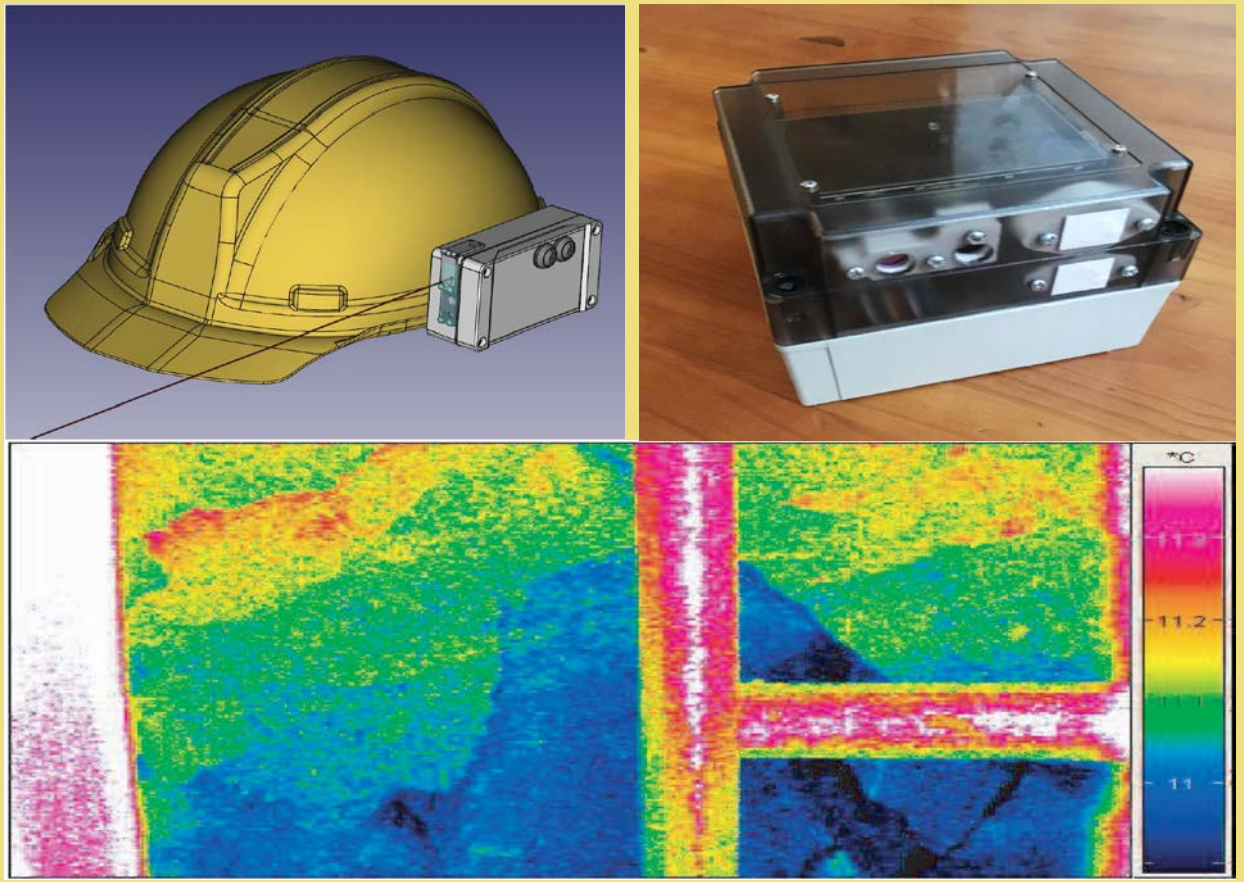
MHSC CoE RESEARCH – QUICK-WINS

ROCK MASS ASSESSMENT TOOLS

- The aim of the study was to lidentify & develop fit-for-purpose tools for efficient and accurate rockmass condition assessment.
- A prototype camera has been developed and can be utilised to assess rock mass condition.



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MHSC CoE RESEARCH – QUICK-WINS

ASSESS THE FEASIBILITY OF DEVELOPING COLLISION MANAGEMENT SYSTEMS FOR SOUTH AFRICAN MINES

The Project Outcome Included:

- **Establishment of Simulation Capability to Use Standard Verification Methods Framework to Evaluate Collision Management Systems Against Established System Performance Specifications**
- **Achieved through evaluation of avoidance technologies, analysis of different scenarios including warning, retarding and stopping technologies based on a combination of simulation and testing**

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MHSC CoE RESEARCH – QUICK-WINS

UNDERSTANDING THE IMPACT OF TECHNOLOGY ON PEOPLE

- The Project Aim was to Identify the likely Impacts of Introduction of New Technologies and Mechanisation in the Mining Industry.
- One of the project outcomes was the development of guidelines:
  - Effective Change Management
  - Reducing Negative Impacts Including Job-losses.

Change Management Methodology and Framework Guideline Booklet

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FALLS OF GROUND & SEISMICITY PREVENTION INITIATIVES

To address regression in safety performance by SAMI and particularly relating to FOGs and Rockbursts and Challenge of Shortage of Rock Engineers and Mine Seismologist

- **Collaboration of Universities, MINCOSA, SANIRE, DMR, CSIR and CGS, Various Mines**
- **Main Mandate: to develop mitigating strategies for rock related risks and provide recommendation to the Mine Health and Safety Council.**
- **Team divided into two subcommittees**
  - **Falls of Ground**
  - **Seismicity/ Rockburst**
- **Team meet monthly to collate and report back on progress**

FALLS OF GROUND & SEISMICITY PREVENTION INITIATIVES

SCOPE OF WORK

- **The Scope of Work of the two Subcommittees include the following:**
  - **Data collection:** DMR, CGS and Mining Houses submitted seismicity and FOG related incident data for the last 10 years.
  - **Data Analysis**: Team members identified to do data analysis
  - **Research determination and proposal considerations:** Previous research reports on FOG & Seismicity/ Rockburst to be used to recommend readily implementable quick wins projects or propose new research. MRAC currently in a processes identifying best practice, review regulations and policies on rock engineers and mine seismologists.
  - **Strategy Development from Research Outcomes:** Construct tab on MHSC website for progress monitoring of the Task Team and information repository

FALLS OF GROUND & SEISMICITY PREVENTION INITIATIVES

Training of Rock Engineers and Seismologi*sts: Capacity Building*

MHSC in conjunction with MQA and DMR a Capacity Building Programme for Rock Engineers and Mine Seismologist:

Rock Engineers Programme

- **Intake 40 Mining Graduates (mostly unemployed), Wits University and University of Pretoria**
- **Commenced studies towards Strata Control Certificate (theoretical exams 09 Oct), Prerequisite for Rock Engineering Training Programme to Start Early 2019.**

Mine Seismologists Programme

- **Screening Process Completed to Identify at Least 20 Potential Candidates, Study Mine Seismology, Commence in 2019, WITS University**
- **Arrangements are being made to facilitate the absorption of these candidates into the industry for practical and on-the-job training and ultimate absorption in permanent employment by the industry or relevant public entities and Inspectorate to address the identified skill shortage.**

WOMEN IN MINING (WIM) INITIATIVES

WOMEN IN MINING (WIM)

Campaigns to Promote Awareness on Impacting on WIM Undertaken through the Regional Tripartite Forums (RTFs) and Establishment of MHSC Women Structures

- Illustrative handbook to Create Health, Safety and Security Challenges impacting WIM in the SAMI .
- A WIM Workshop was recently held in Gauteng, Identify Challenges Still Faced and Research Needs, Key Topics Identified:
  - Impact of Mining, Machinery, Equipment on Women Reproductive Health, Impact of Chemical in Ablution Facilities Underground
  - Risk Assessment Study on health and safety of women in the South African Mining Industry

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WOMEN IN MINING (WIM) INITIATIVES

ASSESSMENT OF THE ERGONOMIC DESIGN OF SELF-CONTAINED SELF-RESCUER (SCSR) DEVICES FOR USE BY WOMEN IN MINING

- Various types of belts that will address different occupations. The main am being to reduce obstruction and discomfort. Recommendation for various positions which include the hips, back and on the chest, utilising appropriate belts.
- Types of material used for the casing to reduce the weight and also provide for shapes will accommodate for women's contours . Includes casing material to reducing the size to be more manageable by women.
- The reduction of the size of the casing may affect the duration of the unit may require review refuge bays layout underground

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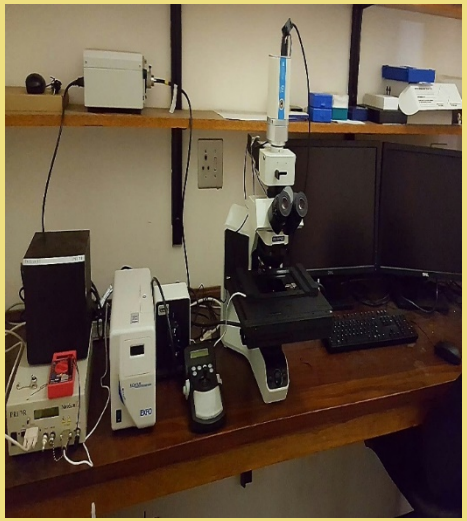
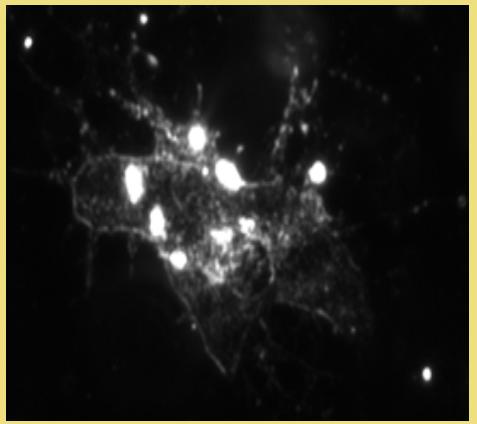
CoE SEED-FUNDING INITIATIVE: 3D UPGRADE OF CYTOVIVO SYSTEM (NIOH)

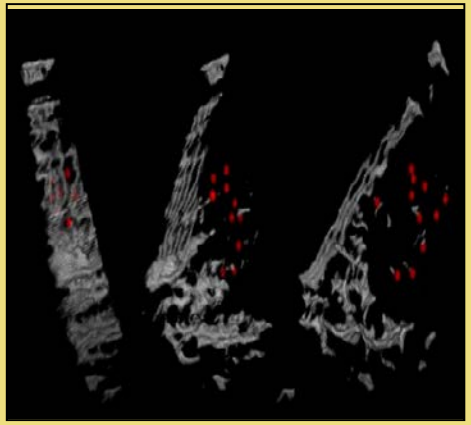
- Dark-field **microscope,** with hyperspectral and fluorescent capabilities, was upgraded to enable **three dimensional representations** of nano-scale objects, in order to determine the exact location of particles within a cell. The upgrade was limited to the lenses only.



- Applications relevant to pathologists, occupational medicine practitioners, occupational hygienists and researchers are:
  - Confirm the presence of particles within cells
  - Investigation of the link between exposure and disease



Darkfield “2D” image of cells treated with particles.



Rotated “3D” image of cells treated with particles

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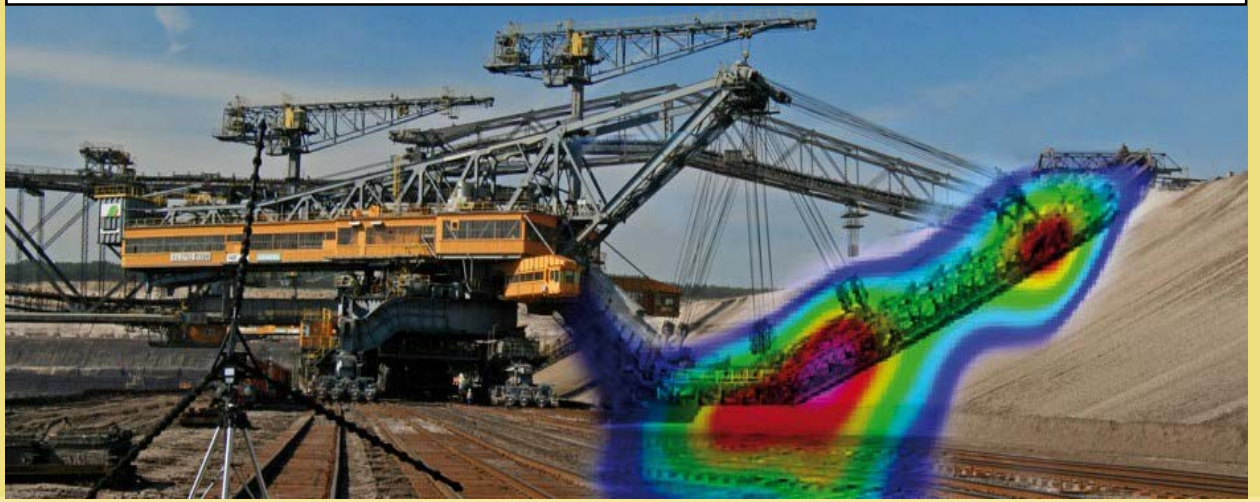
CoE SEED-FUNDING INITIATIVE: ACOUSTIC CAMERA **(UP)**

Camera Capable of Achieving the Following:

- **Reducing measurements and analysis time**
- **Enhanced Site Analysis**
- **Accurately discern moving noise source with closely spaced parts**
- **Isolation of noise coming from selected mechanical parts**
- **Easy raking of noise sources and identifications of worst offenders**



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CoE SEED-FUNDING INITIATIVE: U/G DRONE **(WITS)**

Wits University Digi-mine: Underground Development Tunnel and Stope (Mock Mine – Laboratory), Unmanned Arial Vehicle (Underground Drone) Various sensors, collision avoidance instruments.

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CoE SEED-FUNDING INITIATIVE : **VARIOUS EQUIPMENT (CSIR)**

1000 Tonne Compressor Testing of Underground Support Unit. Performance

Phot Self Contained Self Rescuer Simulator, Performance testing of Units Deployed on Mines

Rope Testing Facility,• Performance Testing of Rope Specimens used for Mining Conveyance

Currently Engaging CSIR on Finalisation of Seed-funding Contract

CoE SEED-FUNDING INITIATIVE : **CSIR KLOPPERBOS FACILITY**

200 m and 20 m Tunnels Explosion Suppression Testing Facility for Prevention of Methane and Coal Dust explosions at Mines

Coal Dust and Methane Explosion Awareness Simulation Unit

Coal Explosibility Analysis Laboratory, Determine Types of Coal, Pone to Coal Dust Explosions

Conveyor Belts Fire Resistance Testing Facility

<u>Currently Engaging with DMR and CSIR on the Transfer of the Facility to MHSC</u>

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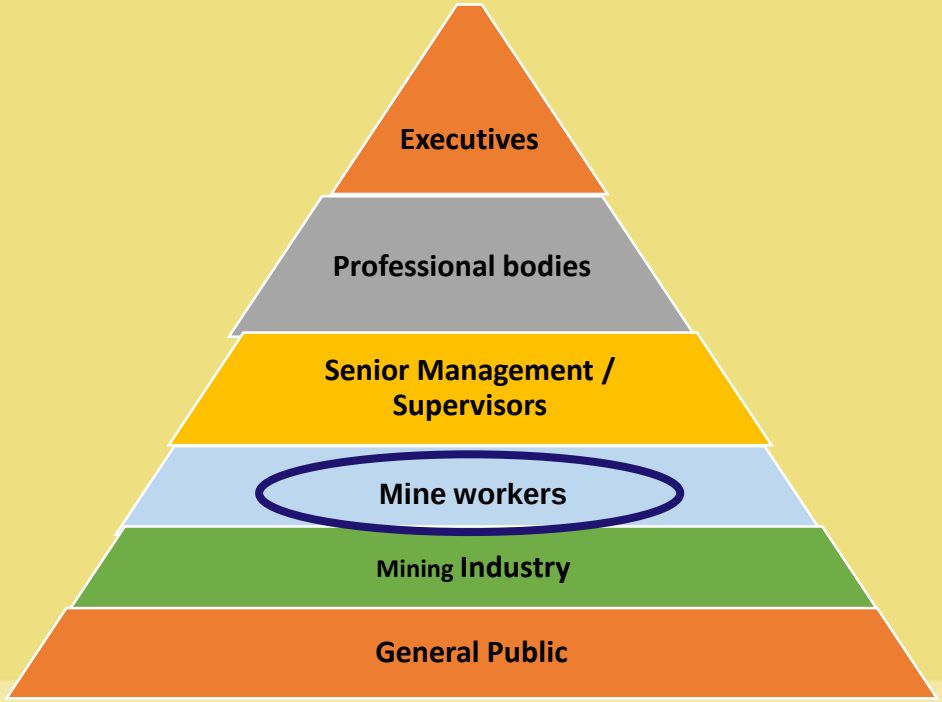
PROMOTING CULTURE OF HEALTH & SAFETY

HEALTH AND SAFETY AWARENESS CAMPAIGNS

The current strategy is deliberate focus on the Unionised members. Work has commenced including initiatives such as Safety Awareness Campaigns



2017/18 MARKETING AND PROMOTIONS ACTIVITIES	
Quarterly published Media Article **Quarterly Newsletter**	Stakeholder Engagements
Opinion Pieces	Occupational Health & Safety related
Industry related events	Mine Safe Conference Mining Indaba
MHSC social network posts	Events, OHS News, announcements
Hosting MHSC Events	• Women in Mining • Regional Tripartite Engagements • Launches • Commemoration of mining disasters in South Africa • TB Awareness Day &World Aids Day

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PROMOTING CULTURE OF HEALTH & SAFETY

HEALTH AND SAFETY AWARENESS CAMPAIGNS

The Health and Safety Awareness Campaign, Promotion, Communications initiatives include the following:

- The mine worker transport from hostel/home to the mine
- Mines, Lamp Rooms use of screens to put the message across to the mine workers
- Screens at the mines will be used to communicate the message of Zero Harm

Mine based communication is disseminated utilising the following platforms:

- Shafts
- Bus shelters at the bus stops
- Hostels
- Bathrooms
- Canteens
- Entrance billboards
- Waiting areas
- Refuge bases
- Hard hats

COMPLETED 2014 SUMMIT ACTION PLAN INITIATIVES

No.	Research Topic
1	Understanding the Impact of Technology on People in the South African Mining Industry
2	Missing Person Locator
3	Rockmass Condition Assessment Tools
4	Independent Support Equipment Testing Capability
5	Continuous Dust Monitoring and Suppression
6	Collision Management Systems
7	Statutory Equipment Database
8	Technology Transfer to minimize seismicity in the Platinum Mines
9	Technology Transfer to minimize seismicity in the Platinum Mines
10	A Risk Based Approach to Enhancing Support Design in Bushveld Underground Mines
11	Improve the safety of barring down
12	Develop a Guidance Note on Measurement, Implementation and Management of Standard Threshold Shift (STS).
13	Timely adopt identified research outcomes in line with a guideline as per the Leading Practice Pillar of the CTF. (TB leading practices compendium).
14	Symptomatically screen (via a Cough questionnaire) of all employees for TB
15	Develop a common approach guideline on the adoption of leading practices and research outcomes
16	Develop and implement a Programme to deal with Right to Refuse Dangerous Work

COMPLETED 2014 SUMMIT ACTION PLAN INITIATIVES

No.	Research Topic
17	Develop a OHS ZERO HARM Performance Incentive and Bonus system for the mining industry
18	Develop a guideline on the Small-Scale Mines to comply with MHSA
19	Development of Methodologies for Determining Maximum Spans (bord widths) Applicable to Platinum and Chrome Mines using Bord and Pillar Mining Method in the Bushveld Complex
20	Designing a Feasible Methodology for Selecting Permanent Areal Support for Varying Environments in Underground Mines
21	Commission a Study on the Compensation System in the Mining Industry
22	Implementing Airborne Pollutants
23	Develop Fall of Grounds regulations
24	Conduct research on the elements of racism, genderism and elimination of all forms of discrimination
25	Conduct Leadership and Diversity Management Assessment Study in line with the CTF for the mining industry
26	Methodologies to Aid Escape in Poor Visibility Environments in Underground Mines
27	Review General Accidents
28	Commission a Study on the Current Rehabilitation System in the Mining Industry
29	Promote access to prevention services on TB and HIV& AIDS treatment to families and immediate communities of affected employees.
30	Develop a fully inclusive modern information system to monitor summit milestones, initiatives and targets (Milestones Reporting System)
31	Develop and implement a programme of campaigns to deal with Women in Mining
32	Assess the Feasibility of Reducing Diesel Particulate Matter (DPM) Exposure by replacing or converting Tier 0 with Tier 2 or Tier 3

2014 SUMMIT ACTION PLAN INITIATIVES IN PROGRESS

OHS SAP Projects to be Project Completed After the 31st of August 2018		%	Comment
Limit the Period of Exposure to Dust	MOHAC	20%	Project prioritised for completion by 2020. MHSC office in process of appointing service provider.
Quietening of Equipment	MOHAC	70%	Awareness sessions are scheduled in order to popularize the Noise Measurement Methodology Guidance Note as part of the MHSC dissemination strategy. MHSC supports the MOSH Industry Buy and Maintain Quiet Initiative, and will participate at the upcoming Noise workshop.
Implement the Department of Health IPT policy	MITHAC	90%	MHSC will disseminate the policy at the following outstanding RTF's by end of the 4th quarter of 2018/2019 financial period: Klerksdorp, Free State and Northern Cape.
Implement the Department of Health Antiretroviral Treatment (ART) Guideline	MITHAC	90%	MHSC will disseminate the guideline the following outstanding RTF's by end of the 3rd quarter of 2018/2019 reporting period: Gauteng Merafong, Gauteng Ukhozi and Mpumalanga.
CoE 150903 Underground Surface and Communication System	CoE	70%	System prototype demonstrated by service provider.

ENSURE FINANCIAL SUSTAINABILITY AND VIABILITY OF MHSC

- Ensure the collection of revenue to enable the MHSC to have adequate financial resources to deliver on its mandate.

- Target – 90% collection of revenue

ACTUAL COLLECTION

Financial Sustainability

- New Levy Model approved by Council
- Aligned to Goal of Zero Harm
- Risk based model
- High risk commodities pay high levies
- Reward for achievement of zero harm

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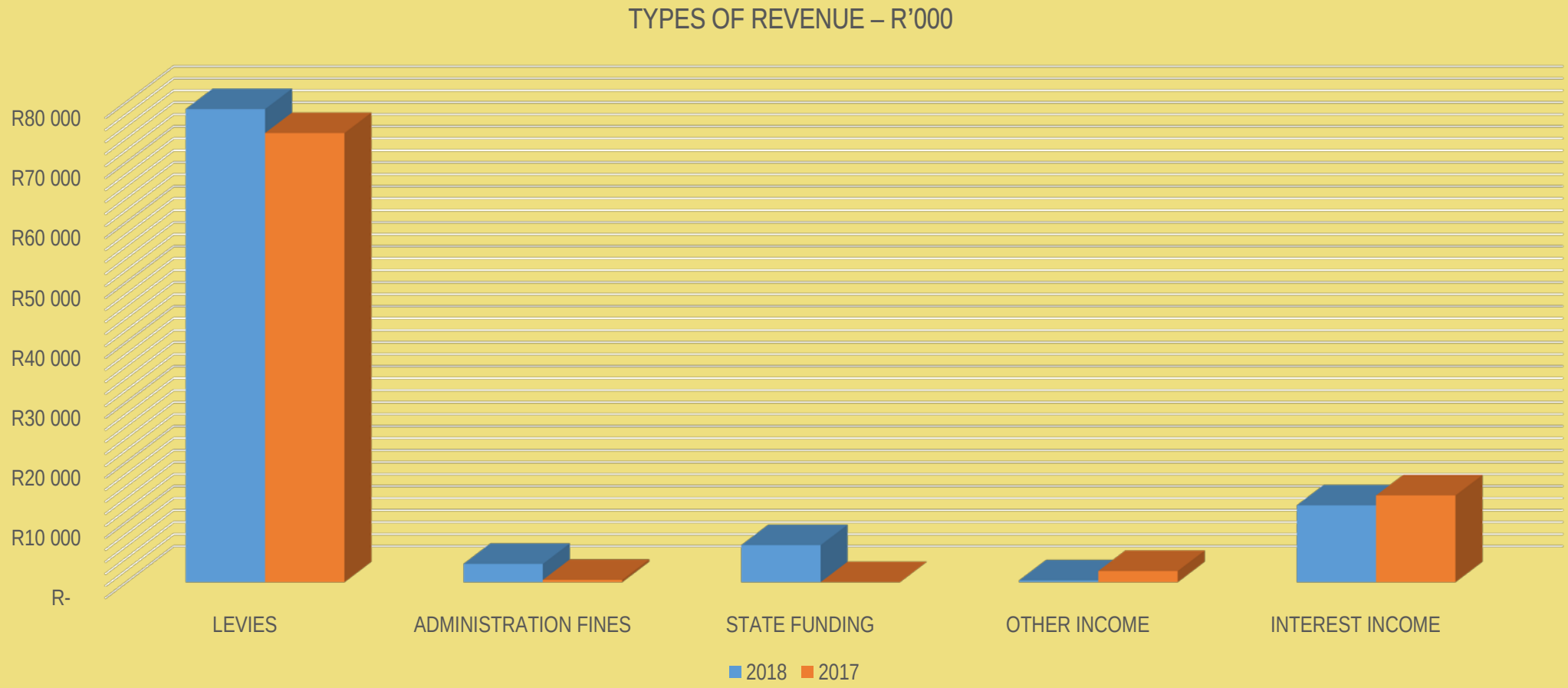
FINANCIAL PERFORMANCE OVERVIEW - 31 MARCH 2018

REVENUE



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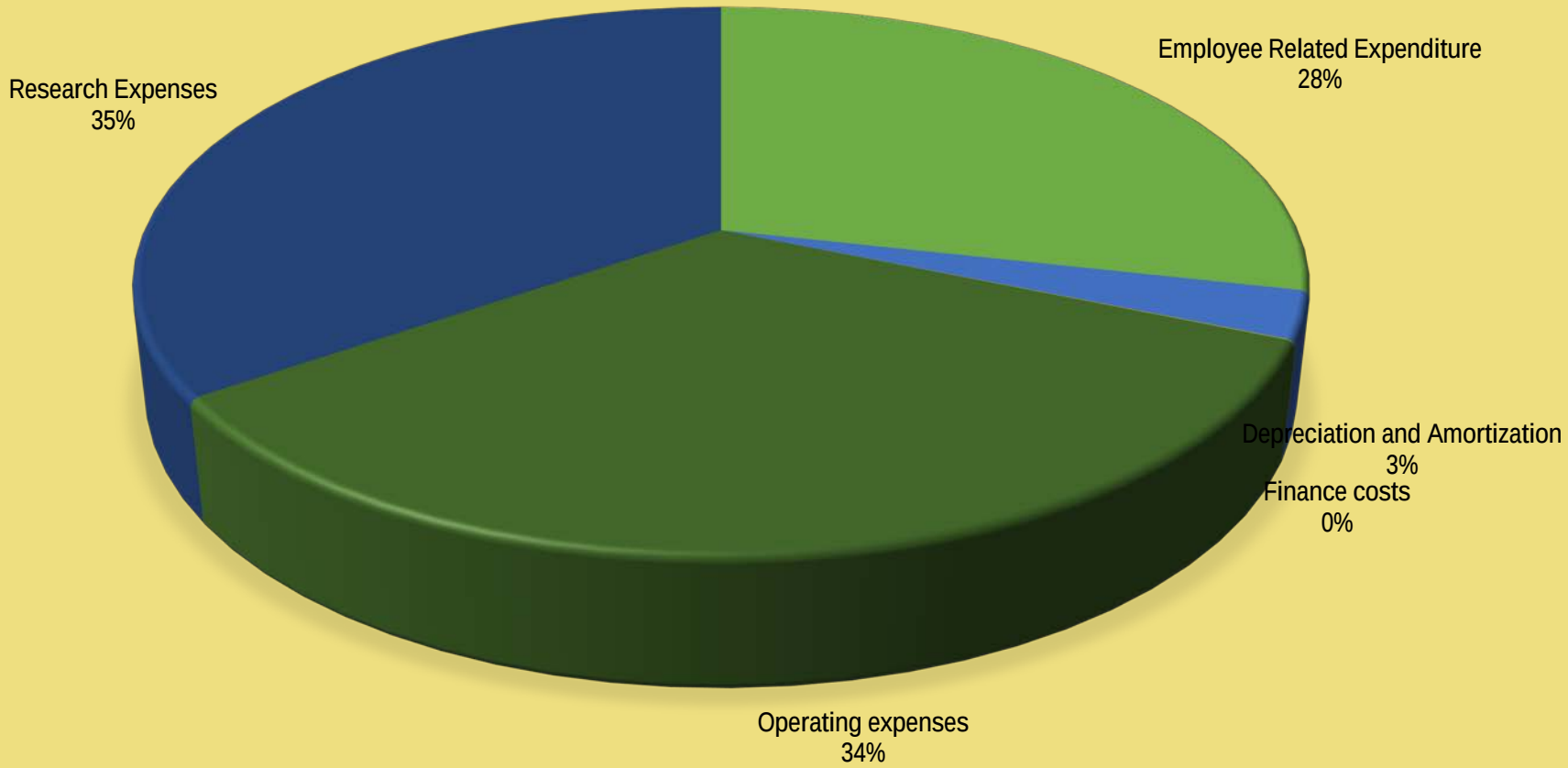
FINANCIAL PERFORMANCE OVERVIEW - 31 MARCH 2018

EXPENDITURE



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AUDITOR GENERAL REPORT

- **Unqualified Audit Opinion**
- **Clean audit – two consecutive financial years**

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STRIVING FOR ZERO HARM

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