



MPONENG OPERATIONS

General Manager – Ronald Mulaudzi



**JOURNEY TO A
SAFER WORKFACE**

PERMANENT WORKFACE
NETTING & IMPROVED
VISIBILITY

**MINING WITH
PURPOSE**

CONTENT OVERVIEW

INTRODUCTION TO MPONENG

THE HARMONY SAFETY JOURNEY

FOG HAZARD AT DEPTH

PERMANENT WORKFACE MESH

IMPROVED WORKFACE VISIBILITY

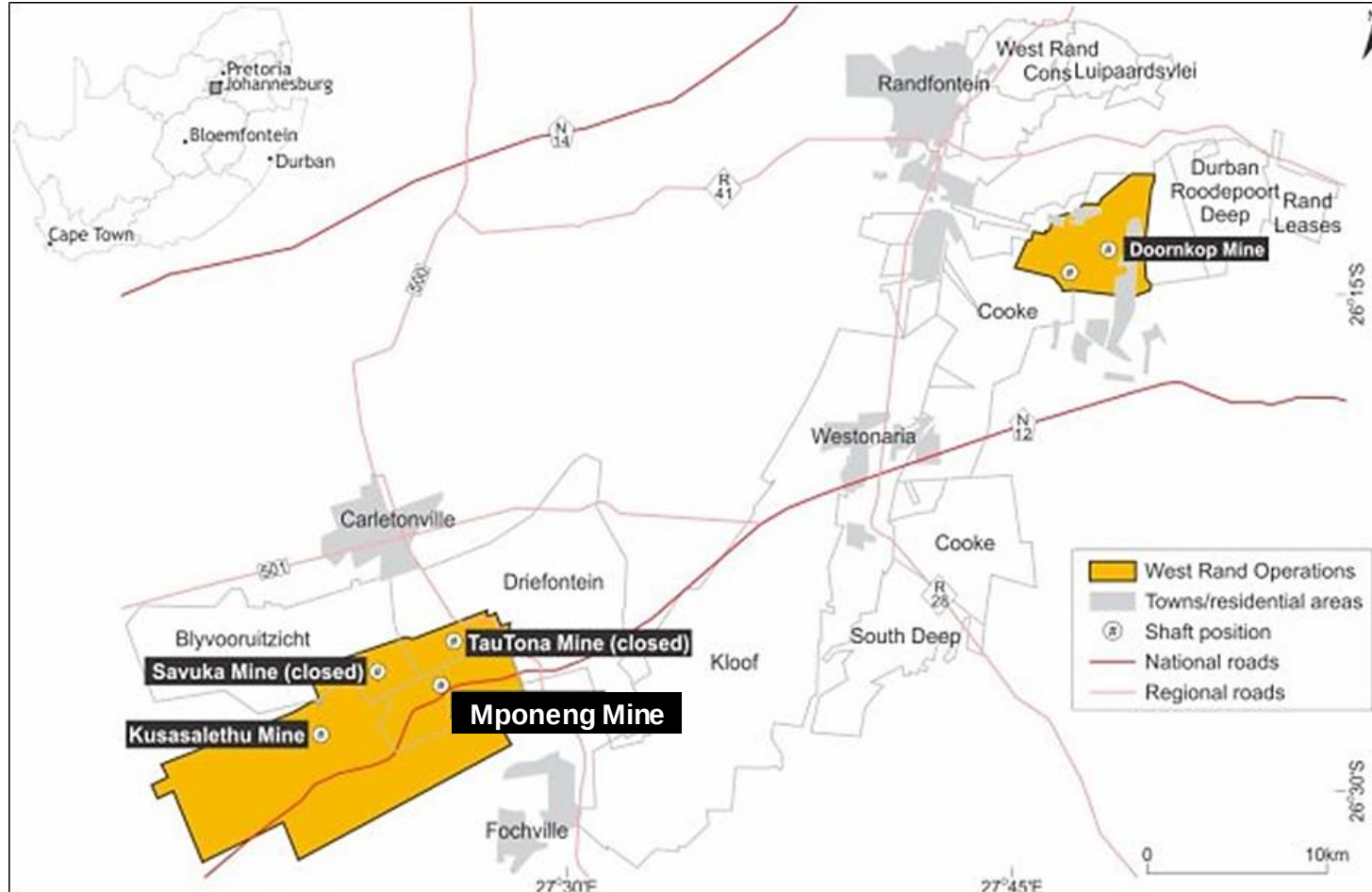
CULTURE TRANSFORMATION

CONCLUSION

QUESTION & ANSWER



INTRODUCTION TO MPONENG



Beginnings

- Shaft sinking in 1981
- Commissioned in 1986
- Operational for 38 years

Economics

- Gold producer
- VCR & CLR
- 429 tonne Au to date

Employment

- ± 4200 perm. employees
- ± 800 contactors

Mining Method

- Conventional narrow reef stoping

Mining Depth

- Worlds deepest
- >3, 800 mbd

Seismicity

- ± 800 events/day
- ± 200 magnitude 1.0 events and larger/annum

Future

- Current LOM 2030/31
- LOM extension recently approved
- + 15-years (2045)

“Mponeng” in Sesotho translates to “look at me”

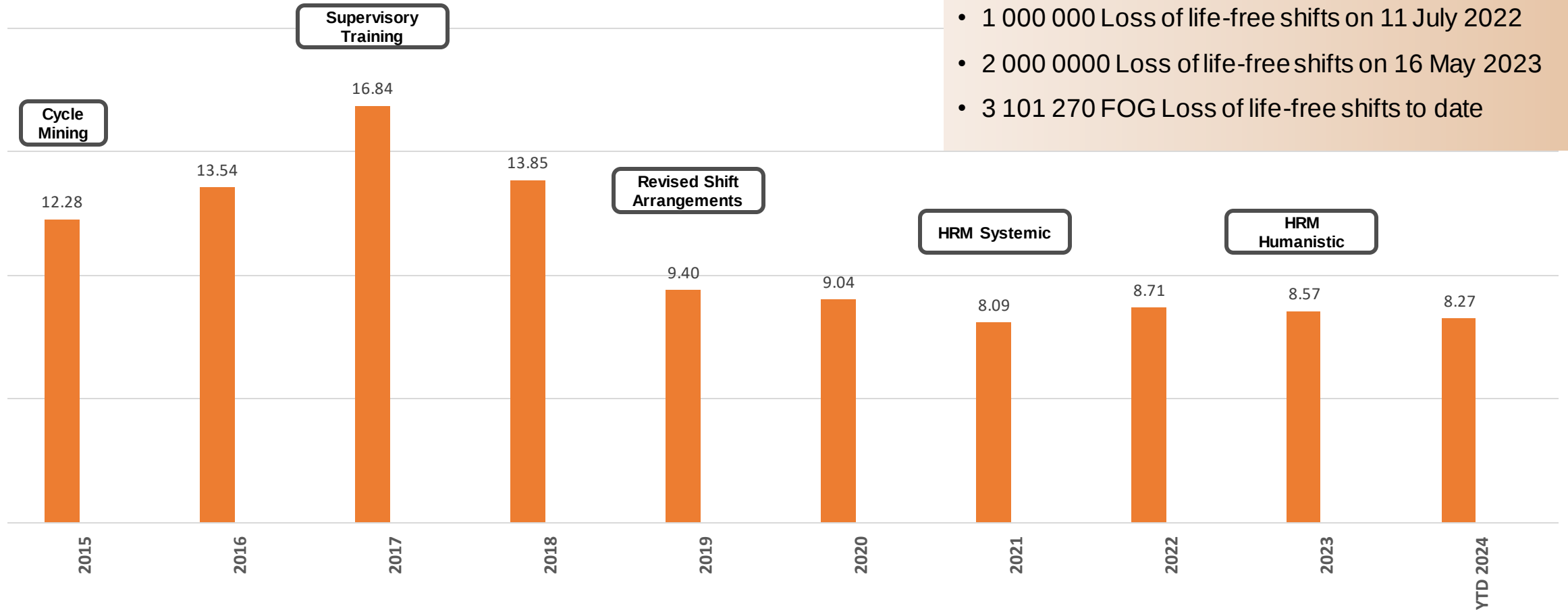
Mponeng Safety Journey

THE HARMONY SAFETY JOURNEY

Lost Time Injury Frequency Rate

Safety highlights

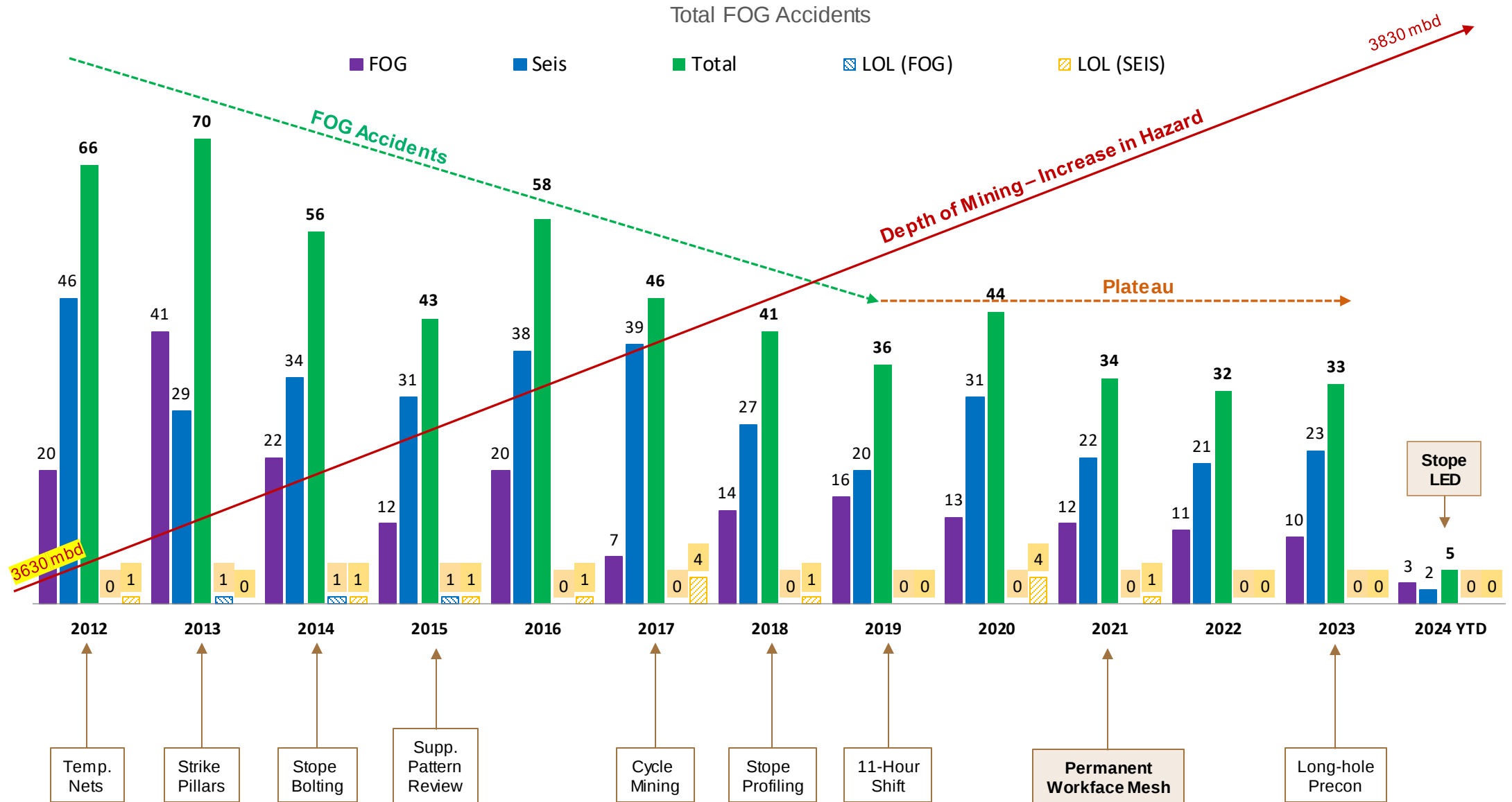
- 2 consecutive calendar year Loss of Life free on 31 Dec 2023
- 1 000 000 Loss of life-free shifts on 11 July 2022
- 2 000 0000 Loss of life-free shifts on 16 May 2023
- 3 101 270 FOG Loss of life-free shifts to date



FOG Hazard at Depth

FOG HAZARD AT DEPTH

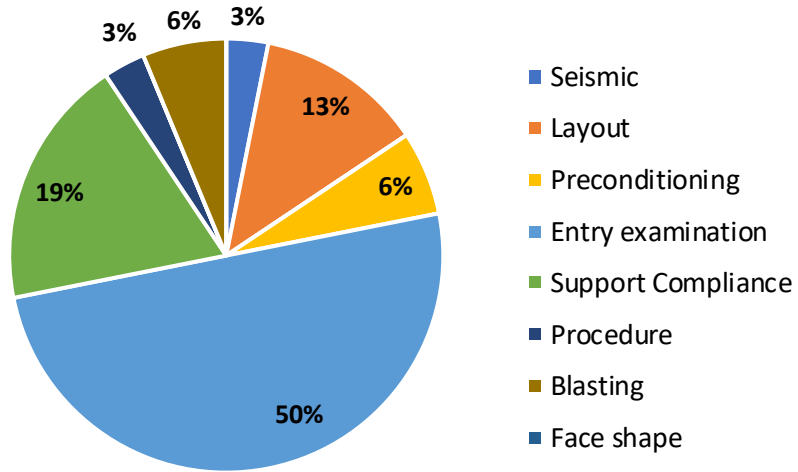
MINING WITH
PURPOSE



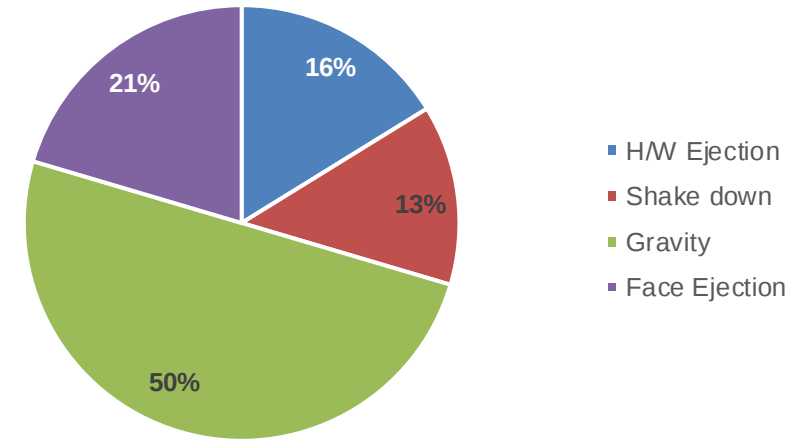
Permanent Workface Mesh

PERMANENT WORKFACE MESH BUSINESS CASE (2020)

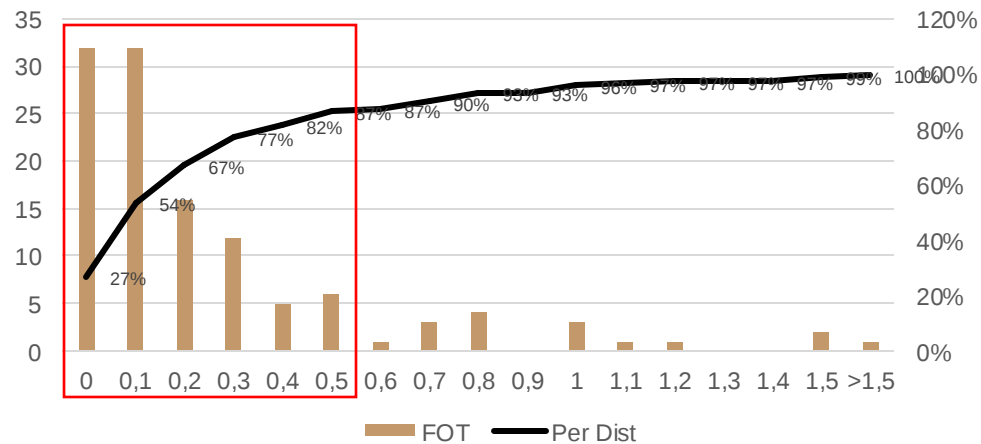
Contributing Factors to FOG accidents



FOG Causing Accident Rock Mass failure Mechanism



Accident Causing FOG Size Distribution



Opportunities

- 87% of FOG accident are 0.5 m and less in thickness
- Shake down FOG and loose rocks (63%)
- Entry examination and support compliance are the main failed controls
- Current areal support (nylon nets) are only installed on the face
- Gully shoulders do not have areal support

PERMANENT WORKFACE MESH IMPLEMENTATION (2021)



Testing

- Geobrugg mesh (based on seismic risk)
- Began January 2021
- Completed March 2021

Development

- Overhauled entire support system
- Integrated in-stope bolting to work with mesh

Rollout

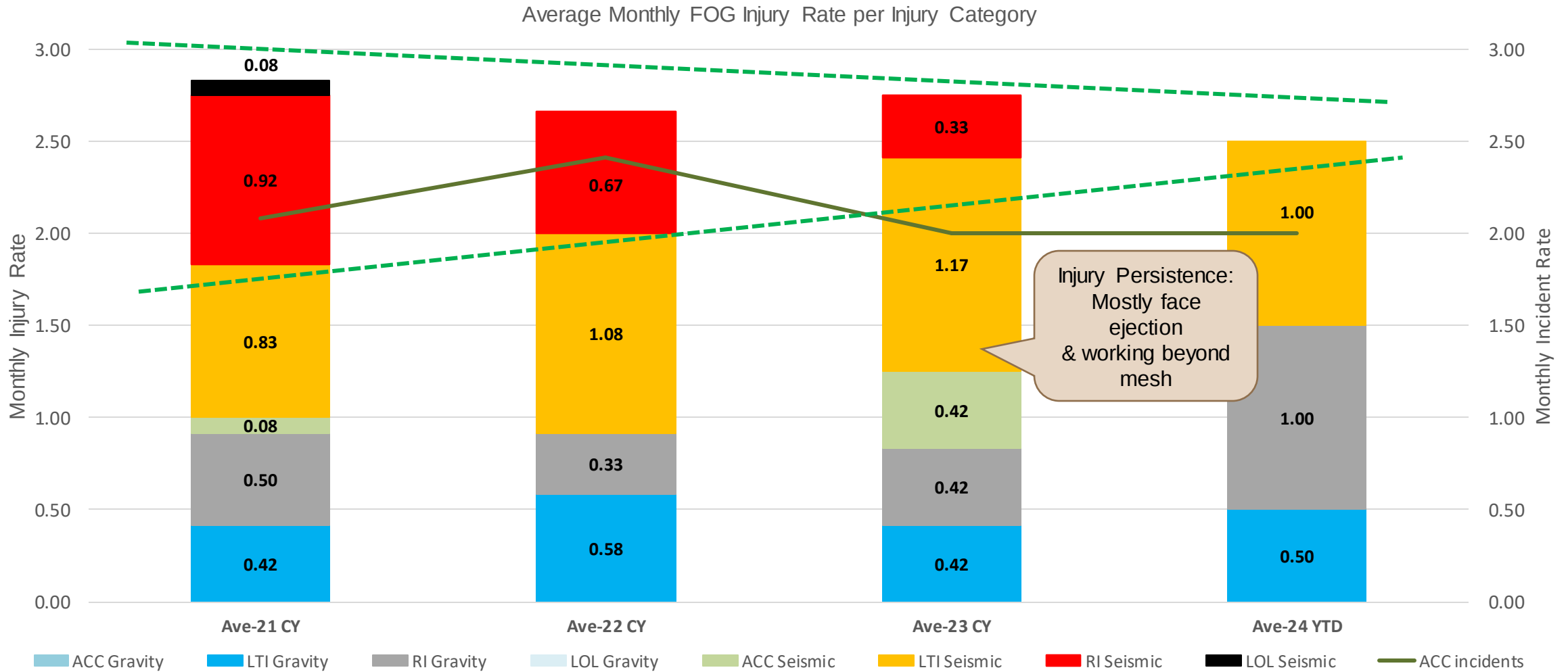
- Mine-wide rollout April-July 2021

Cost

- ± R 46 mil/annum
- Or R 324 /m² mined

Was it worth it?

PERMANENT WORKFACE MESH RESULTS (2024 YTD)



PERMANENT WORKFACE MESH LEARNINGS

Strengths

- Identify whether there is a need for permanent mesh (risk vs controls)
- Practicality of application (ergonomics, etc.)
- Stakeholder engagement and involvement
- Change management process (closing the loop)
- Support from senior management
- Communication of mesh success stories
- Develop key measurables (cost vs value)
- Engage the workers for input and participation

Threats

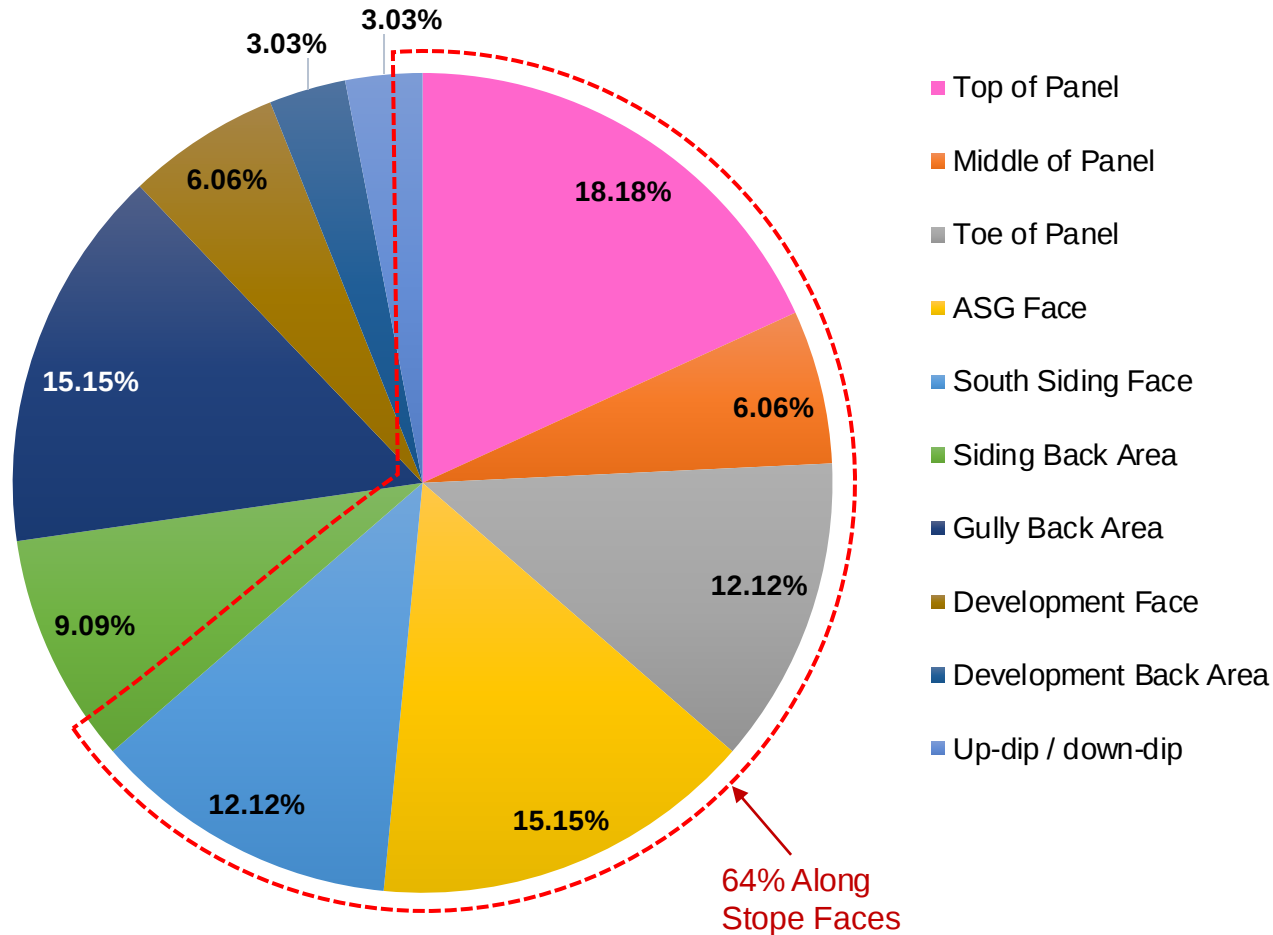
- Cost
- Complexity in ground support standards and procedure



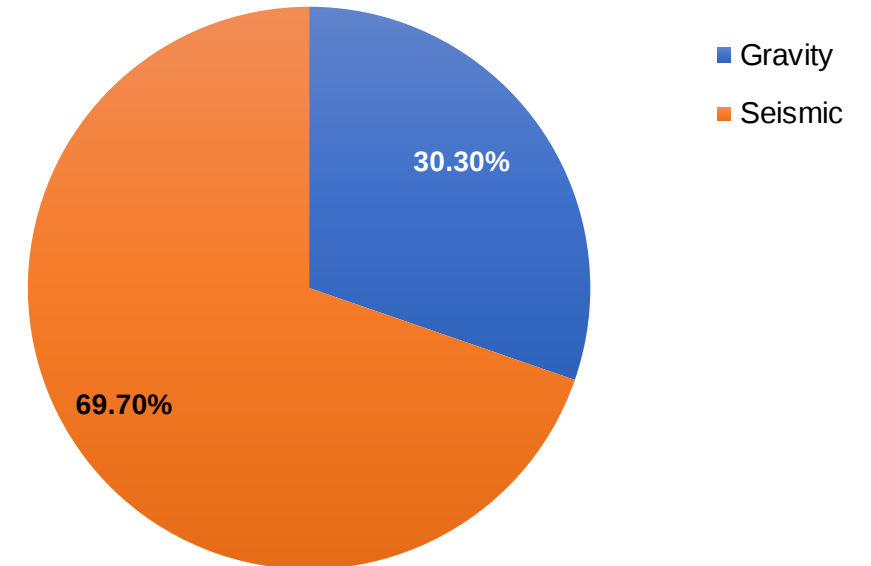
Improved Workface Visibility

IMPROVED WORKFACE VISIBILITY BUSINESS CASE (2023)

2023 Location of FOG Accidents



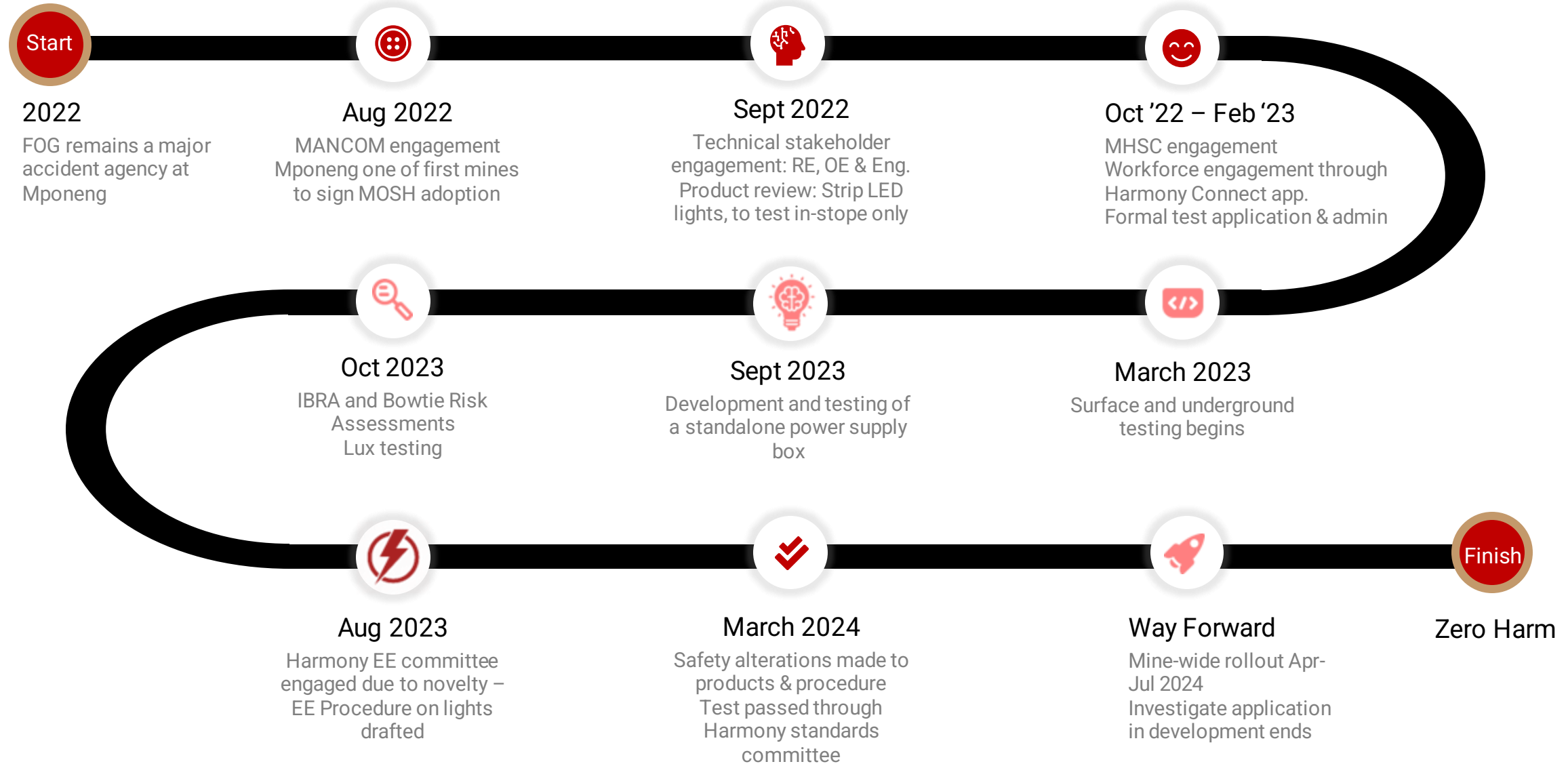
2023 FOG Accident Agency Split



Opportunities

- Improved hazard identification
- Improved hazard communication in the workplace
- Improved physical conditions
- I control performance (support)

IMPROVED WORKFACE VISIBILITY JOURNEY (2022-2024)



IMPROVED WORKFACE VISIBILITY FINDINGS

Specifics

- Rated IP68 ingress protection
- 36 Volt (very low electrocution potential)
- Heavy duty (armoured) extension cord
- 50 Lux at 1.0 m vs. 5-10 Lux for a cap lamp

Crew Satisfaction

- Huge moral boost
- Willingness to install
- Not blinding
- < 30 minutes to install
- Strata control compliance increased from 56% to 92% (test crew)

Cost

- Initial Cost:
 - ±R 1000/m face length, inc. spares and power supply box
 - Total: ±R 2.7 mil



IMPROVED WORKFACE VISIBILITY SETUP

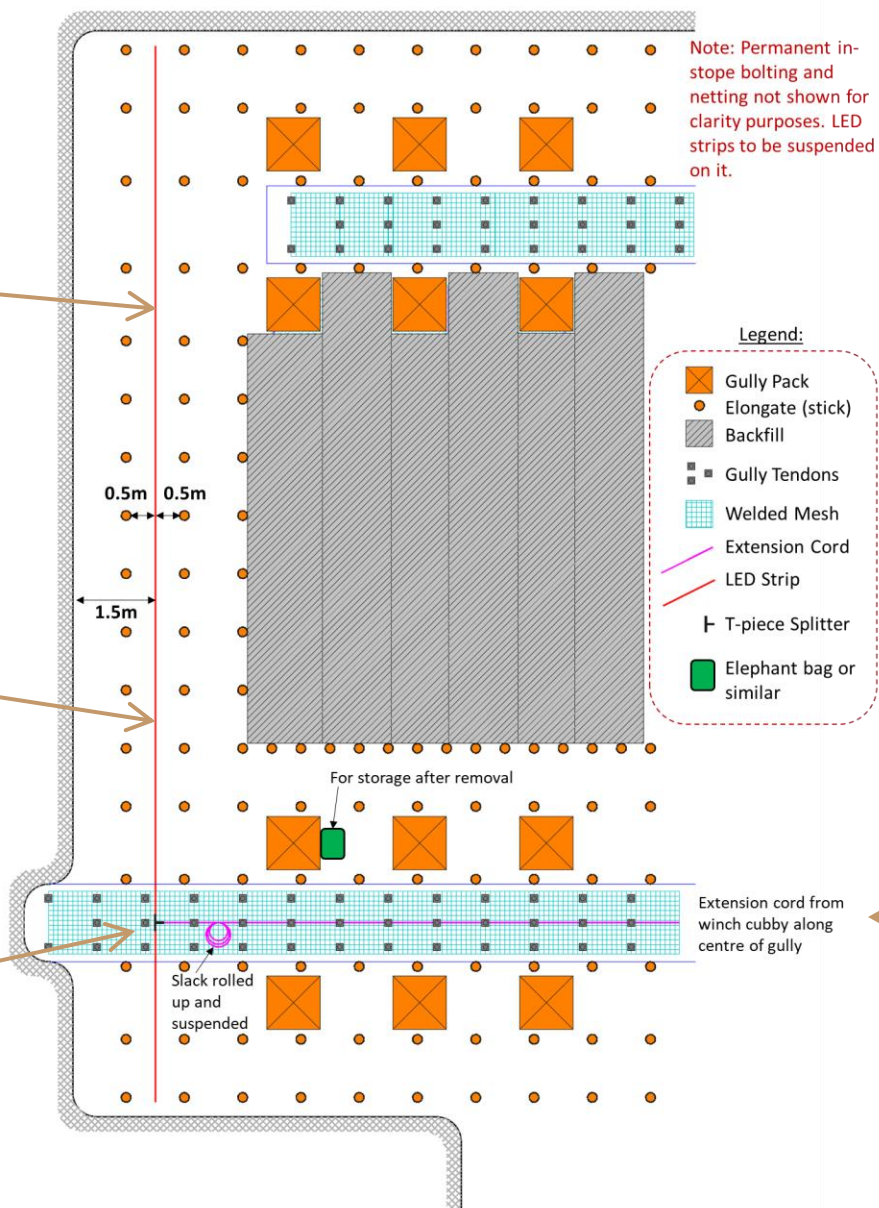
LED Light Strip
(daisy-chain plug
and play)
Note: Removed
prior to blast



Clip to suspend
LED strips



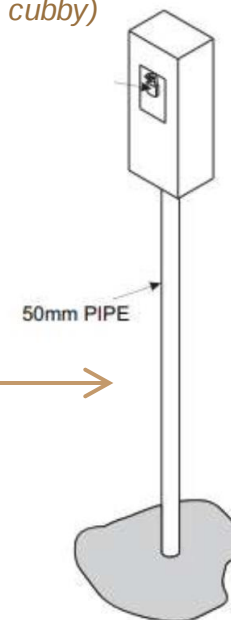
T-piece
Connector



Extension
Power Cord
(armoured)



Standalone Power
Supply Box (winch
cubby)



IMPROVED WORKFACE VISIBILITY PHOTOS

MINING WITH
PURPOSE



IMPROVED WORKFACE VISIBILITY

LEARNINGS

Strengths

- Develop a business case with clear measurables
- Identify a champion with vested interest for the practice
- Stakeholder engagement and involvement (multi-disciplinary approach)
- OEM participation
- Site specific development of the technology
- In-depth risk assessment for developing mine standards
- Engage the workers for input and participation

Threats

- Novelty of technology (for in-stope illumination)
- Limited product (OEM) choice
- Limited legislative guidance



Culture Transformation

MPONENG SAFETY AND CULTURE TRANSFORMATION JOURNEY

MINING WITH
PURPOSE

Mponeng Journey



'21
LTIFR: 8,06

VFL training



Thibakotsi Team
Training (Stoping)



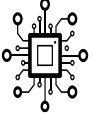
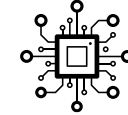
'23



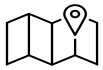
Thibakotsi Team
Training (rest of
production)



Systemic and
Humanistic
Integration



HRM Systems
implementation



Culture
Improvement
Plan



'22
LTIFR: 8,71



VRM Sport day
(Thibakotsi
launch)



Middle
Management and
supervisory
Empowerment



'24



Continuous
improvement
for sustainable
performance



Personal Ownership

Operational Stability

HARMONY

Conclusion

CONCLUSION

- Mponeng remains committed to safety
- Each new implementation of a leading practice brings us closer to our goal of Zero harm
- Permanent workface netting did not solve all our problems – but I have seen it save many lives
- We believe that improved workface visibility is the next step in our journey to being injury free
- We hope you “see” it in the same “light”



QUESTION & ANSWER

