



**MANDELA MINING PRECINCT**  
**MINDS FOR MINES**

# Guideline:

## DIGITAL LEADERSHIP COMPETENCY ASSESSMENT TOOL

**SATCAP 2022- WP 2.2**

# About the Mandela Mining Precinct

The Mandela Mining Precinct is a Public-Private Partnership between the Department of Science and Innovation and the Minerals Council South Africa. The Precinct is jointly hosted by the Council for Scientific and Industrial Research and the Minerals Council. The Mandela Mining Precinct is an initiative aimed at revitalising mining research, development, and Innovation in South Africa to ensure the sustainability of the industry. This is achieved through the South African Mining Extraction, Research, Development, and Innovation (SAMERDI) strategy.

The strategy comprises six research programmes:

1. Longevity of Current Mining
2. Mechanised Mining Systems
3. Advanced Orebody Knowledge
4. Real-Time Information Management Systems
5. **Successful Application of Technologies Centred Around People**
6. Test Mine

This guideline was developed under the Successful Application of Technologies Centred Around People (SATCAP) research programme. The programme is aimed at understanding the effects, impacts and challenges of mining modernisation on people in the minerals sector.

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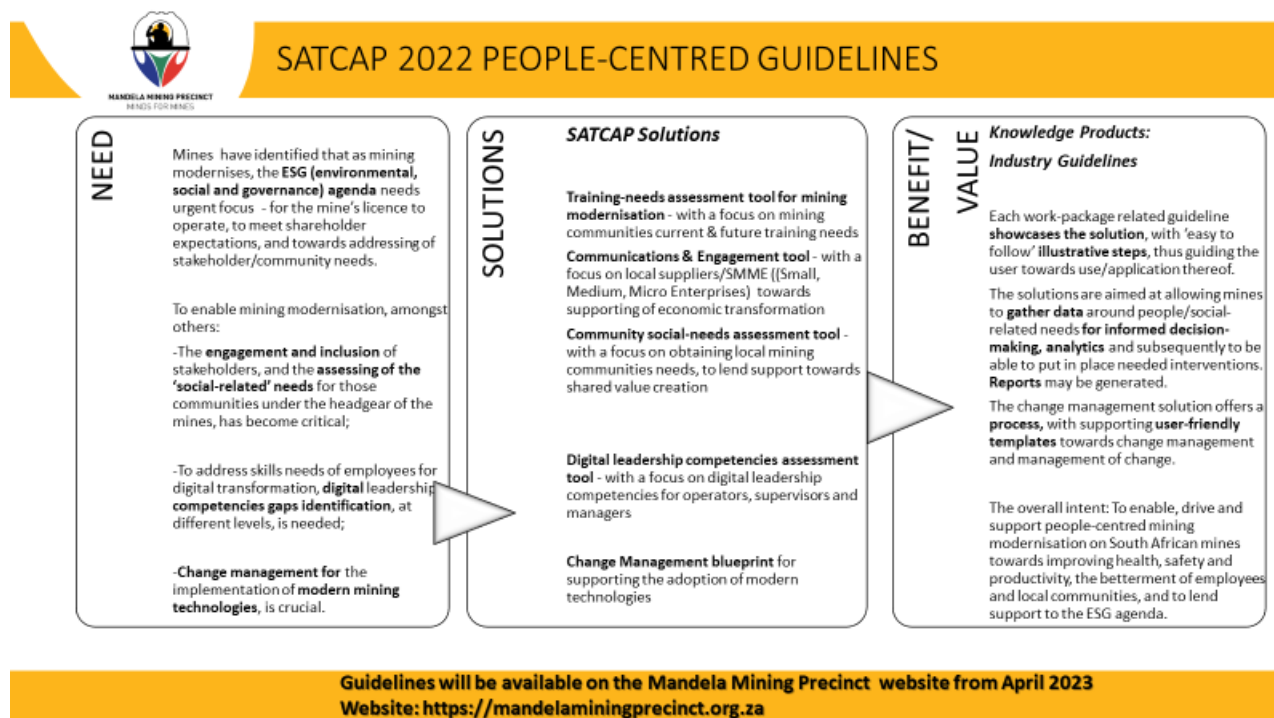
# SECTION 1

## Introduction and Project Overview

# 1. INTRODUCTION AND PROJECT OVERVIEW

This project has been commissioned by the Mandela Mining Precinct's SAMERDI SATCAP programme. The SATCAP programme aims to understand how effects, impacts and challenges relating to people in the mining modernisation process, as can be understood from all stakeholder perspectives, and further lends support to the environmental, social and governance (ESG) agenda.

For FY2022, SATCAP has focused on the Environmental, **Social** and Governance (ESG) agenda, with guidelines developed, in collaboration with research partners, to support industry identified needs. The figure below highlights the needs identified, the recommended solutions, within the synergized overall outputs for FY2022, and includes the benefits for the industry.



This **Work Package 2.2** looked at providing *Digital Leadership Competency Assessment Tool* for Au and PGM mines potential use - for supervisors, managers and operators, with key outputs including (1) literature review and tool design, (2) tool refinement, pilot, and validation, and (3) tool finalisation, development of a guideline, and transfer to project mine partners.

The project is a collaborative project. The Lead research partner for this project is The Research Institute for Innovation and Sustainability (RIIS). Other key collaboration partners included Win Win Consulting International (WWI), Enterprises University of Pretoria (EUP), Council for Scientific and Industrial Research (CSIR), SML4Change, The Impact Catalyst and Mining Dialogues 360 (MD360). The mine partner included a PGM mining company.

## Context

As mines modernise, digital leadership acumen and competence therein becomes more critical for leaders at all levels. Developing leaders with digital mindsets and required digital acumen is key for an organisation's digital transformation.

To address skills needs of employees for digital transformation, digital leadership competency gaps identification, at different levels, is required. Hence, this project considered the delivery of a digital leadership competency assessment tool - towards supporting of mining modernisation digital competency development needs.

The tool/project aims to assess the digital transformation skills needs and then identify the gaps at different levels. Mining modernisation has given rise to many questions about whether the workforce is appropriately skilled for the future. It has highlighted a gap, the fact that there is limited understanding of the concept of “digital leadership” across the organizational hierarchy, including the supervisor and operator bands.

As such, this tool attempts to close this gap. The final outcome of the project is a digital leadership competence assessment which, when applied will support competency development in the mining modernisation sphere as we drive towards the implementation of the Fourth Industrial Revolution and a “just” transition (i.e. green/low carbon technologies for healthy and safe production).

In many instances, there is a limited understanding of the full digital competency of the mining workforce, including at the supervisory level throughout the organisational hierarchy. Furthermore, there exists no standard definition in the mining industry of the underlying concept of ‘digital skills’, which has made a singular assessment more challenging to develop.

The focus of the *Digital Leadership Competency Assessment Tool* illustrates digital leadership acumen for current versus future mining activities across the workforce – specifically across operators, supervisors, and managers. The objectives, for this project, included:

1. Create a commonly accepted understanding of digital leadership skills for the South African mining sector.
2. Design and pilot a *Digital Leadership Competency Assessment Tool* for the mining industry.

Thus, the project deliverable considered providing a comprehensive definition of what is the commonly accepted understanding of digital skills for the South African mining sector, and to develop a digital leadership competency assessment tool for Au/PGM mines, focused on operators, supervisors, and managers - to support the implementation of 4IR technologies/just transitions.

## 1.1 VALUE FOR THE MINING INDUSTRY

### Short-term output

The *Digital Leadership Competency Assessment Tool* enables the mines to address skills needs of employees for digital transformation, through digital leadership competency gap identification, at different levels. It further allows for empowering and capacity building of employees through professional and personal development. The intended short-term output is the potential to contribute to employee relations and development, specifically regarding responsible stewardship, operational excellence, and organisation effectiveness.

This tool allows mines to identify digital leadership competency gaps at the different employee levels, and then assist managers to put in place employee development plans and interventions - to support digital transformation on mines.

### Anticipated long-term outcome

Support the introduction of the Fourth Industrial Revolution and just transition (e.g. green, lower carbon technologies, mechanisation, or automation) technologies to enable healthier and safer mining extraction and production.

### Envisaged impact

Support the people aspect/ social element of the ESG agenda:

1. **Establish a digital leadership capability baseline for mines/ the South African mining industry.**
2. **Prompt skilling, upskilling or reskilling potential for the mining workforce to prepare for a more digitised mine.**
3. **Support job sustainability for the mining workforce.**
4. **Encourage capacity building and empowerment for digital transformation.**
5. **Support preparedness to drive and lead digital transformation.**
6. **Allow for inclusion of stakeholders in digital transformation.**

This supports the SATCAP's overall intent, which is to enable, drive and support people-centred mining modernisation on South African mines towards improving health, safety and productivity, the betterment of employees and local communities, and to lend support to the ESG agenda.

## **1.2 FEATURES OF THE ASSESSMENT**

Leaders at all levels will need digital leadership competence to drive digital transformation. Through this study, a digital leadership (DL) competencies assessment tool is available for Au/PGM mines potential use to support mining modernisation and enable digital transformation. Application of the assessment allows for mines to identify gaps in digital leadership competence and address these through development interventions. The DL competencies assessment application will allow for a better understanding of digital leadership competencies gaps for managers, supervisors and operators.

The assessment is made up of the following features:

- 65 questions for different roles in the organisation – operators, supervisors and managers;
- Questions consist of multiple choice, checkboxes, drop-downs, and open texts; and
- Resource-Library to act as a repository of useful information on digital constructs and digital leadership
- Is fully hosted by the mine with no hosting or subscription cost. As hosting of the application is in the mines IM environment, all data collected by the mine will be stored in the mines IM systems and managed internally by administrators
- Is a web-based tool available on a mobile device e.g., smart phone, tablet, or laptop.

The tool, together with this user-guideline and video are made available to mining companies for uptake through the Mandela Mining Precinct website.



## SECTION 2

### Digital Leadership Competency Assessment Tool

## 2. DIGITAL LEADERSHIP COMPETENCY ASSESSMENT

### 2.1 THE DIGITAL LEADER

It is evident that an effective **digital leader** will be aware of the business goals and knows how their job responsibilities support them. The digital leader will explore how technology can be used to help their business/jobs become much more responsive to the needs of their stakeholders and the ever-changing business requirements.

A successful digital leader understands the importance of inbound data and the processes within the business that supports it. The digital leader places high value on their communication, creativity, innovation, and willingness to explore the ways that new emerging mining technology and digital information/data can be used to help business modernisation projects and in their jobs.

Digital leadership competencies are critical for leaders at all levels. Developing leaders with digital mindsets can have an enormous impact on the success or failure of an organisation's digital transformation. Towards digital transformation, we look to mining leaders to:

- Encourage employees to harness technology;
- Innovate and collaborate in new ways, and empower others; and
- Act as agents of change – spark change across their areas of responsibility.

The focus of the *Digital Leadership Competency Assessment Tool* illuminates how digitisation will have an impact on current versus future mining activities across the workforce. Using research and stakeholder engagements, a digital construct spectrum was formed to define those digital constructs which are practical for the South African mining sector (**Figure 1**):

- **Digital skills:** The ability to use a digital asset to perform an activity; for example, using a cellular device to make a phone call, send a message, or look at the news. Digital skills are associated with the construct of digital literacy, which refers to the ability to navigate the digital world using reading, writing, technical skills, and critical thinking.
- **Digital proficiency:** This refers to the ability to understand, leverage, and integrate technology to increase personal and organisational efficiency. An example would be the storage of business contacts in a cellular device rather than having to commit each number to memory or place it in a Rolodex. Digital proficiency is associated with the construct of digital integration, which refers to the seamless utilisation of digital assets to increase the efficiency of a person's actions.
- **Digital competence:** This is the ability to use a digital skill to solve a problem or create value, and in being aware of which digital assets are ideal to perform a specific job function. An example would be using a laptop to communicate with and coordinate a team to perform an operational role. Digital competence is associated with the construct of digital leadership, which refers to the strategic ability to utilise a company's digital assets to achieve business goals.

**Digital leadership competence** is the strategic use of a company's digital assets to achieve business goals. In practice, the **digital leader** is aware of the organisation's strategic objectives and understands how their job function contributes to such. Furthermore, the digital leader can explore how technology can be used to help their business in becoming more responsive to the needs of their stakeholders and the ever-changing business requirements.

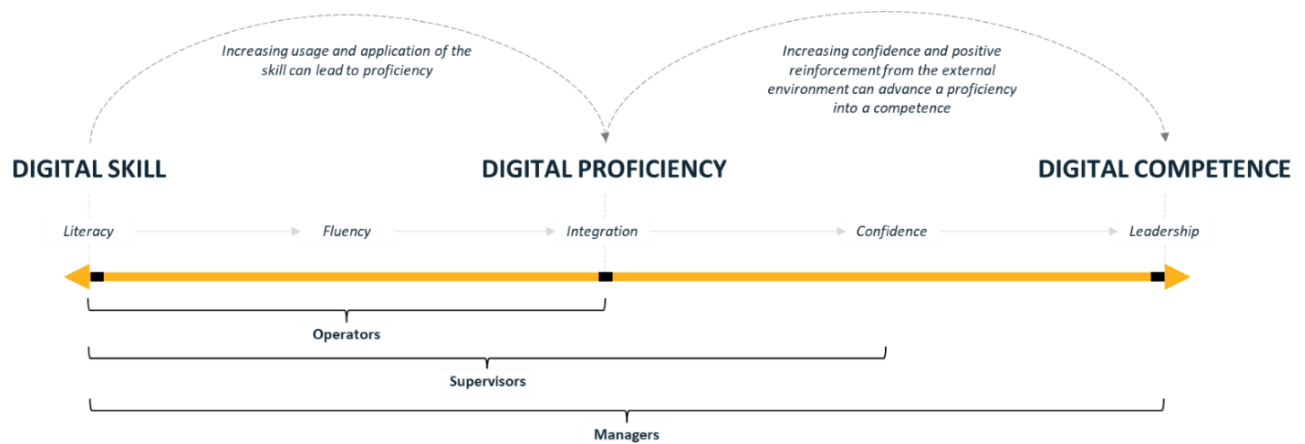


Figure 1: Digital construct spectrum

## 2.2 LINK FOR DIGITAL TOOL/DOWNLOAD

The assessment is housed on a **digital platform** with several other integrated SATCAP digital tools.

The responses per mining operation are **private** to that organisation, thus **no captured data will be shared with external parties**. The associated responses **will not impact the performance rating of employees** within the organisation.

The tool aims to understand the current digital capabilities of the workforce to provide an indication of potential future digital training. Housed on a digital online platform is the digital leadership competence gap assessment survey which users are required to complete. A resource and notice section contains useful literal pieces pertaining to future skills and digital transformations.

The digital tool permits actions from five types of users, which are as follows:

- **User/participant:** the operator, supervisor, or manager that is a representative of the mining workforce;
- **Super Administrator:** an individual with the application hosting department at the mine who manages the backend functions. These functions include assigning user admins, roles, and permissions, monitoring survey submissions, creating specific survey links, downloading reporting outputs, and uploading or removing resources. May be internal or external to the mine, depending on the integration of the SATCAP tool with the mine's respective systems;
- **Administrator:** possess the same functions as the Super Admin, minus the creation of new admin users. The administrator's primary function is to download the visualisations/reports for the manager to interpret;
- **Manager:** this role may be defined specifically by the human resource manager – i.e., the specific individual in the mine who is responsible for the learning and development of the mining workforce; and
- **IT/Platform owner:** responsible for incorporating the tool with the specific mining information management systems.

For more information contact the human resource manager or learning and development manager at the respective mine.

## 2.3 DIGITAL LEADERSHIP COMPETENCY ASSESSMENT TOOL CONTENT

| EMPLOYEE LEVEL | CONSTRUCT | GRADE | QUESTION REFERENCE ON DIGITAL TOOL | ASSESSMENT QUESTION                                         | METHOD OF CAPTURE EXAMPLE                                                                                                                                          | RESPONSE OUTPUT                     |
|----------------|-----------|-------|------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| All            |           |       | Question 1                         | Which age bracket do you fall into?                         | Multiple choice selection:<br>20 - 29;<br>30 - 39;<br>40 - 49;<br>50 - 59;<br>60 - 69;<br>More than 70+                                                            | Qualitative (information capturing) |
| All            |           |       | Question 2                         | Which option generally describes your current job function? | Multiple choice selection:<br>Operator<br>Supervisor<br>Manager                                                                                                    | Qualitative (information capturing) |
| All            |           |       | Question 3                         | How long have you been employed within that role?           | Multiple choice selection:<br>Less than 1 year<br>1 - 3 years<br>3 - 5 years<br>5 - 8 years<br>8 - 10 years<br>More than 10 years                                  | Qualitative (information capturing) |
| All            |           |       | Question 4                         | Please select which type of mine you believe you work in    | Multiple choice selection:<br>Traditional (not very modern)<br>Hybrid (mixture of modern technology)<br>Modern (highly integrated with modern technology)          | Qualitative (information capturing) |
| All            |           |       | Question 5                         | What is your highest level of education?                    | Multiple selection options:<br>Primary School<br>Highschool<br>Technical College<br>Vocational Training<br>Online Short Courses<br>University<br>None of the above | Qualitative (information capturing) |

|     |                  |    |             |                                                                     |                                                                                                                                         |                           |
|-----|------------------|----|-------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| All | DIGITAL LITERACY | A1 | Question 6a | Rate your level of comfort using a cell phone                       | Rate your level of comfort<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                       | Quantitative<br>(scoring) |
| All |                  |    | Question 6b | Rate your level of comfort using a desktop computer or laptop       | Rate your level of comfort<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                       | Quantitative<br>(scoring) |
| All |                  |    | Question 6c | Rate your level of comfort using a touchscreen device (e.g. tablet) | Rate your level of comfort<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                       | Quantitative<br>(scoring) |
| All |                  |    | Question 7a | Rate your ability to type on a cellphone                            | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                     | Quantitative<br>(scoring) |
| All |                  |    | Question 7b | Rate your ability to type on a desktop computer/laptop              | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                     | Quantitative<br>(scoring) |
| All |                  |    | Question 7c | Rate your ability to type on a touchscreen device (e.g. tablet)     | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                     | Quantitative<br>(scoring) |
| All |                  |    | Question 8a | How often do you use a cell phone for learning purposes?            | 1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative<br>(scoring) |

|     |  |           |             |                                                                                                                                                                                                                    |                                                                                                                                                                                          |                                     |
|-----|--|-----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| All |  |           | Question 8b | How often do you use a desktop computer or laptop for learning purposes?                                                                                                                                           | 1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily)                                                  | Quantitative (scoring)              |
| All |  |           | Question 8c | How often do you use a tablet for learning purposes?                                                                                                                                                               | 1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily)                                                  | Quantitative (scoring)              |
| All |  | <b>A2</b> | Question 9  | Which of the following is a digital literacy skill?<br>(1) Being able to find sources of electronic information<br>(2) Being able to take electronic photographs<br>(3) Being able to find paper-based information | Evaluation-type question (answer = 1)                                                                                                                                                    | Quantitative (scoring)              |
| All |  |           | Question 10 | What is the fraudulent attempt to acquire sensitive information such as passwords and credit card details in an electronic communication?<br>(1) Streaming<br>(2) Crowdsourcing<br>(3) Phishing                    | Evaluation-type question (answer = 3)                                                                                                                                                    | Quantitative (scoring)              |
| All |  |           | Question 11 | Which emotion do you feel when you think about changing how you perform your job?                                                                                                                                  | Multiple choice selection:<br>0 - Anger<br>3 - Anticipation<br>5 - Joy<br>4 - Trust<br>0 - Fear<br>2 - Surprise<br>1 - Sadness<br>0 - Disgust<br>0 - No comment<br>0 - None of the above | Qualitative (information capturing) |

|     |                 |    |             |                                                                                                                  |                                                                                                                                                          |                        |
|-----|-----------------|----|-------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| All | DIGITAL FLUENCY | B1 | Question 12 | Please indicate your level of frequency of using of the following:<br>- Microsoft (Word, Excel, PowerPoint etc.) | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| All |                 |    | Question 13 | Please indicate your level of frequency of using of the following:<br>- Email                                    | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| All |                 |    | Question 14 | Please indicate your level of frequency of using of the following:<br>- Internet                                 | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| All |                 |    | Question 15 | Please indicate your level of frequency of using of the following:<br>- Graphic Design Software                  | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| All |                 |    | Question 16 | Please indicate your level of frequency of using of the following:<br>- Spreadsheet (for data organization)      | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| All |                 |    | Question 17 | Please indicate your level of frequency of using of the following:<br>- Learning software                        | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |

|     |  |           |             |                                                                                                                           |                                                                                                                                                                                    |                        |
|-----|--|-----------|-------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| All |  |           | Question 18 | Please indicate your level of frequency of using of the following:<br>- Video conferencing                                | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily)                           | Quantitative (scoring) |
| All |  |           | Question 19 | How many hours a day do you spend using a digital device (e.g. smartphone, laptop, desktop computer, tablet etc.)?        | Likert Scale<br>1 - Not at all (zero)<br>2 - Less than one hour per day<br>3 - Between 1 and 5 hours per day<br>4 - Between 5 and 10 hours per day<br>5 - More than 10 hours a day | Quantitative (scoring) |
| All |  |           | Question 20 | How often do you check or link your schedule to an online calendar?                                                       | Likert Scale<br>1 - Not at all (zero)<br>2 - Less than one hour per day<br>3 - Between 1 and 5 hours per day<br>4 - Between 5 and 10 hours per day<br>5 - More than 10 hours a day | Quantitative (scoring) |
| All |  | <b>B2</b> | Question 21 | How often do you attend virtual meetings (via Zoom, Microsoft Teams, etc.)?                                               | Likert Scale<br>1 - Not at all (zero)<br>2 - Less than one hour per day<br>3 - Between 1 and 5 hours per day<br>4 - Between 5 and 10 hours per day<br>5 - More than 10 hours a day | Quantitative (scoring) |
| All |  |           | Question 22 | How many hours a day do you spend learning how to use the digital device/s that you personally own or have possession of? | Likert Scale<br>1 - Not at all (zero)<br>2 - Less than one hour per day<br>3 - Between 1 and 5 hours per day<br>4 - Between 5 and 10 hours per day<br>5 - More than 10 hours a day | Quantitative (scoring) |
| All |  |           | Question 23 | Rate your willingness to use digital assets to perform activities                                                         | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                                               | Quantitative (scoring) |

|     |                     |    |             |                                                                                                                                                                     |                                                                                         |                        |
|-----|---------------------|----|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------|
| All | DIGITAL PROFICIENCY | C1 | Question 24 | Rate your ability to use web and mobile apps?                                                                                                                       | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high    | Quantitative (scoring) |
| All |                     |    | Question 25 | Rate your ability to use online platforms (e.g. Facebook, WhatsApp, Instagram, Telegram, WeChat, TikTok) to communicate with others                                 | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high    | Quantitative (scoring) |
| All |                     |    | Question 26 | Rate your ability to use the internet to obtain information                                                                                                         | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high    | Quantitative (scoring) |
| All |                     | C2 | Question 27 | Rate your ability to use specialised computing software (e.g. Microsoft Teams, Adobe Acrobat Reader, Microsoft Office Suite) for your job activities                | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high    | Quantitative (scoring) |
| All |                     |    | Question 28 | Rate your ability to understand, interpret, analyse data obtained through digital assets (e.g. Microsoft Teams, Zoom, Microsoft Office Suite, Spreadsheet Software) | Likert Scale:<br>1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high    | Quantitative (scoring) |
| All |                     |    | Question 29 | I identify as an early adopter of new digital tools                                                                                                                 | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree | Quantitative (scoring) |
| All |                     |    | Inclusion   | Others rely on me to get the job done right                                                                                                                         | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree | Quantitative (scoring) |

|                       |                    |    |             |                                                                                                                 |                                                                                         |                        |
|-----------------------|--------------------|----|-------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------|
| All                   |                    |    | Inclusion   | I often provide support when others struggle performing a task                                                  | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree | Quantitative (scoring) |
| All                   |                    |    | Question 30 | I have the will to take responsibility for my actions                                                           | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree | Quantitative (scoring) |
| Supervisors, Managers | DIGITAL CONFIDENCE | D1 | Question 31 | How confident are you in the creation of:<br>- Creation of Word Documents                                       | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |
| Supervisors, Managers |                    |    | Question 32 | How confident are you in the creation of:<br>- Creation of Digital Presentations (e.g. PowerPoint Presentation) | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |
| Supervisors, Managers |                    |    | Question 33 | How confident are you when working with:<br>- Working with databases and spreadsheets (e.g. Access and Excel)   | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |
| Supervisors, Managers |                    |    | Question 34 | How confident are you in:<br>- Setting up a Wi-Fi Network                                                       | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |
| Supervisors, Managers |                    |    | Question 35 | How confident are you in:<br>- Using a Search Engine (e.g. Google)                                              | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |
| Supervisors, Managers |                    |    | Question 36 | How confident are you in:<br>- Using digital Communication (e.g. via email correspondence)                      | 1 - Hesitant<br>2 - Unconfident<br>3 - Neutral<br>4 - Confident<br>5 - Very confident   | Quantitative (scoring) |

|                          |                           |           |             |                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                  |                                        |
|--------------------------|---------------------------|-----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Supervisors,<br>Managers |                           | <b>D2</b> | Question 37 | How proactively (i.e. without instruction from supervisors) do you find and collect information from the internet to apply to your job role? | Likert Scale<br>1 - Never<br>2 - Rarely<br>3 - Occasionally<br>4 - Frequently<br>5 - Very Frequently                                                                                                                                                                                                                                                                                                             | Quantitative<br>(scoring)              |
| Supervisors,<br>Managers |                           |           | Question 38 | Rate your interest in finding and applying new technologies and software to your job to make it easier                                       | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - Very high                                                                                                                                                                                                                                                                                                                                              | Quantitative<br>(scoring)              |
| Supervisors,<br>Managers |                           |           | Question 39 | How do you respond to change within your organisation? Select the hypothetical response that more closely aligns with your response.         | Multiple choice selection:<br>2 - "I'm not sure what to do"<br>1 - "It's fine the way it is"<br>2 - "No one is considering how this will impact me"<br>1 - "Haven't we tried this before and it didn't work"<br>4 - "I'm fine with it - but other people are not"<br>0 - "We don't have time for this"<br>0 - "This won't be permanent"<br>5 - "I'm willing to adapt"<br>0 - No comment<br>0 - None of the above | Qualitative<br>(information capturing) |
| Managers Only            | <b>DIGITAL LEADERSHIP</b> | <b>E1</b> | Question 40 | Describe your level of understanding of the impact of digital transformation within your organisation                                        | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                                                                                                                                                                                                                                                                                              | Quantitative<br>(scoring)              |
| Managers Only            |                           |           | Question 41 | Would you say that you are capable of sound judgement through analysis of digital and non-digital information?                               | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                                                                                                                                                                                                                                                                          | Quantitative<br>(scoring)              |
| Managers Only            |                           |           | Question 42 | How often do you solve problems using the digital assets at your disposal?                                                                   | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know                                                                                                                                                                                                                                                                                              | Quantitative<br>(scoring)              |

|               |  |  |             |                                                                                                                                                    |                                                                                                                                                          |                        |
|---------------|--|--|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|               |  |  |             |                                                                                                                                                    | (weekly)<br>5 - All the time (daily)                                                                                                                     |                        |
| Managers Only |  |  | Question 43 | I use digital information to monitor new developments in my industry                                                                               | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |
| Managers Only |  |  | Question 44 | I am aware of the security risks involved with the use of digital assets                                                                           | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |
| Managers Only |  |  | Question 45 | How often do you use digital assets (e.g. Microsoft Teams, Zoom, Microsoft Office Suit, Spreadsheet Software) for innovation within your job role? | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| Managers Only |  |  | Question 46 | How often do you set targets for your team with monitoring and evaluating metrics using digital assets?                                            | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| Managers Only |  |  | Question 47 | I understand my organisation's business model                                                                                                      | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |
| Managers Only |  |  | Question 48 | I am aware of the strategic direction, objectives, and Key Performance Indicators (KPIs) of the organisation                                       | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |

|               |  |           |             |                                                                                                                                                  |                                                                                                                                                          |                        |
|---------------|--|-----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Managers Only |  | <b>E2</b> | Question 49 | How often do you collaborate using a digital asset?                                                                                              | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| Managers Only |  |           | Question 50 | How often do you identify talent in the workforce and encourage personal development?                                                            | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |
| Managers Only |  |           | Question 51 | Rate your ability to act-on/implement/execute on the strategic intent of the organisation?                                                       | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                                      | Quantitative (scoring) |
| Managers Only |  |           | Question 52 | Rate your ability to influence others through digital channels                                                                                   | 1 - very low<br>2 - low<br>3 - neutral<br>4 - high<br>5 - very high                                                                                      | Quantitative (scoring) |
| Managers Only |  |           | Question 53 | I am a mentor/coach to others for the adoption and use of digital assets                                                                         | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |
| Managers Only |  |           | Question 54 | I have an understanding of some of the measures that need to be put in place to ensure that digital transformation is encouraged in your company | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                  | Quantitative (scoring) |
| Managers Only |  |           | Question 55 | How often do you use digital tools to reach consensus, find alignment, or promote decision making?                                               | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily) | Quantitative (scoring) |

|               |               |  |             |                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |
|---------------|---------------|--|-------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Managers Only |               |  | Question 56 | How often to you encourage the use of digital assets within your organisation?                                   | Likert Scale:<br>1 - Not at all<br>2 - Sometimes (bi-monthly)<br>3 - Often (monthly)<br>4 - More than others I know (weekly)<br>5 - All the time (daily)                                                                                                                                                                                                                                                         | Quantitative (scoring) |
| Managers Only |               |  | Question 57 | I am curious about alternative digital assets that can improve my ability to lead                                | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                                                                                                                                                                                                                                                                          | Quantitative (scoring) |
|               |               |  | Question 58 | I consider myself as someone who has the desire to constantly be right                                           | 1 - Strongly Disagree<br>2 - Disagree<br>3 - Neutral<br>4 - Agree<br>5 - Strongly Agree                                                                                                                                                                                                                                                                                                                          | Quantitative (scoring) |
|               |               |  | Question 59 | What do you think about pivoting from legacy technology that cannot meet the current needs of your organisation? | Multiple choice selection:<br>2 - "I'm not sure what to do"<br>1 - "It's fine the way it is"<br>2 - "No one is considering how this will impact me"<br>1 - "Haven't we tried this before and it didn't work"<br>4 - "I'm fine with it - but other people are not"<br>0 - "We don't have time for this"<br>0 - "This won't be permanent"<br>5 - "I'm willing to adapt"<br>0 - No comment<br>0 - None of the above | Quantitative (scoring) |
|               | <b>COUNT:</b> |  | <b>65</b>   |                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |



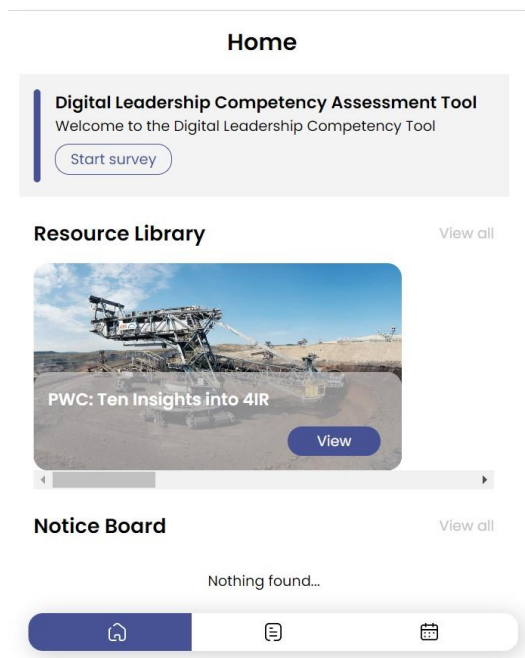
## SECTION 3

User-Guide and  
FAQs

## 3. 'HOW TO?' USER-GUIDE AND FAQs

### 3.1 INTERNAL USER

The following steps are required for the user to complete the *Digital Leadership Competency Assessment Tool*. The survey can be accessed using the URL link provided by the *Survey administrator*, click *Start Survey* to begin the *Digital Leadership Competency Assessment Tool*.



**STEP 1:** Access the digital leadership survey by using the link sent by the administration.

**STEP 2:** Click *start survey* to begin the *Digital Leadership Competency Assessment Tool*.

### Digital Leadership Competency Assessment Tool

Figure 2: Survey welcome page

Thank you for taking the time to complete this assessment.

The focus of the digital leadership competency gap assessment illuminates how digitisation will have an impact on current versus future mining activities across the workforce. In doing so, the assessment acts as a mechanism to understand the current digital capabilities of the workforce vs. the future digital capabilities.

The assessment should take approximately 30 minutes to complete.

Enjoy!

#### Consent for participation

3

► Click here to see what you're consenting to

☐ I understand and consent to the above

Start survey

**STEP 3:** Acknowledge the terms and conditions for completing the assessment (refer to icon 2 in *Figure 3*).

Figure 3: Consent page

## Digital Leadership Competency Assessment Tool

Question 1

Which age bracket do you fall into?

Select an option

Question 2

Which option generally describes your current job function?

☐ Operator

☐ Supervisor

☐ Manager

Question 3

How long have you been employed within that role?

☐ Less than 1 year

☐ 1 – 3 years

☐ 3 – 5 years

☐ 5 – 8 years

☐ 8 – 10 years

*Operators are required to respond to questions 1 – 39.  
Supervisors: 1 – 45. And managers 1 – 65.*

**STEP 5:** Respond to all the multiple-choice questions in the survey (*Figure 4*).

**Note:** you may only click submit if all questions are answered.

Figure 4: Survey homepage

## Digital Leadership Competency Assessment Tool

Question 27

I am trusted by others whilst performing my job function

1

2

3

4

5

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Question 27.1

Others rely on me to get the job done right

1

2

3

4

5

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Question 27.2

I often provide support when others struggle performing a task

1

2

3

4

5

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Question 28

I have the will to take responsibility for my actions

1

2

3

4

5

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

Submit

**STEP 6:** Submit responses by clicking the *submit* button once complete. Note this button will appear blue if all questions have been responded to (refer to *Figure 5*).

Figure 5: Survey submission view

## 3.2 SUPER ADMINISTRATOR AND ADMINISTRATOR

The following steps are required to sign into the administration portal, manage and add users, download the reporting outputs, create new resources, and create new survey links. An administrator is able to create a new survey for defined groups based on a manager's request - e.g. for a different operational site and/or for different teams.

### 3.2.1 SIGN IN

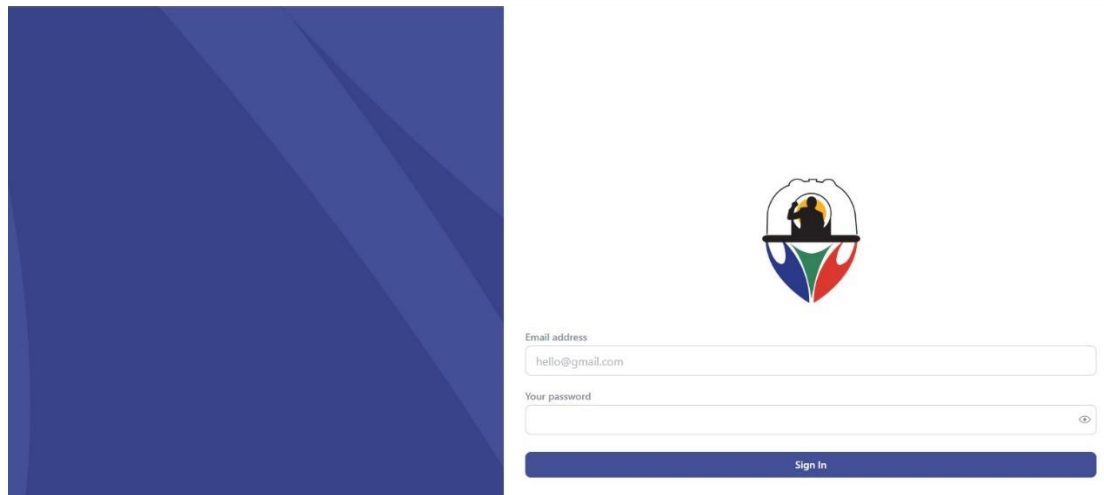
The image shows the admin login page. On the left is a large blue abstract graphic. On the right is a white login form. At the top of the form is a logo featuring a person silhouette inside a shield with red, green, and blue elements. Below the logo are two input fields: 'Email address' with the text 'hello@gmail.com' and 'Your password' with a toggle icon. At the bottom of the form is a blue 'Sign in' button.

Figure 3: Admin login page

**STEP 1:** Access the administration portal as set up by the IT administrator. The IT administrator will provide the Super Admin access who can create accounts for Admin users and also create survey links. (refer to *Figure 6*).

**STEP 2:** Enter the login email address that is provided by the super admin. Enter the associated password linked to the email address (refer to *Figure 6*).

### 3.2.2 LANDING PAGE

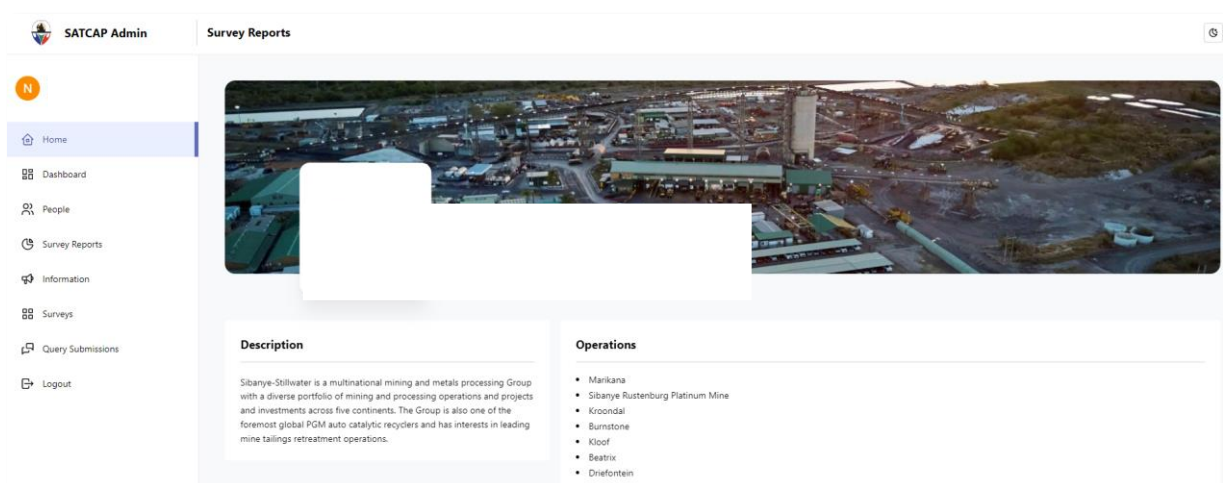


Figure 7: Administrator Landing Page

3.2.3 MENU STRUCTURE

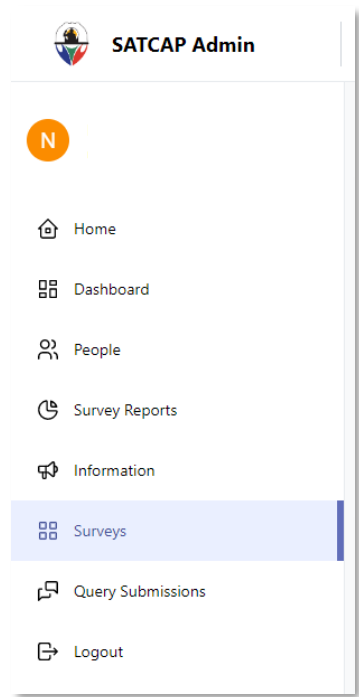


Figure 8: Various administrative functions

3.2.4 DASHBOARD

The dashboard section contains the interpretation tables for the results from each digital tool’s survey. The tables are a condensed summary of the results from the digital leadership competency assessment. The output is represented using a robot colouring system: green is above the baseline measurement, yellow aligns with the baseline, and red is below the mining industry baseline. Several development interventions are optional recommendations for the mine to encourage its workforce to improve overall digital capability. All development interventions are open-sourced and free to use.

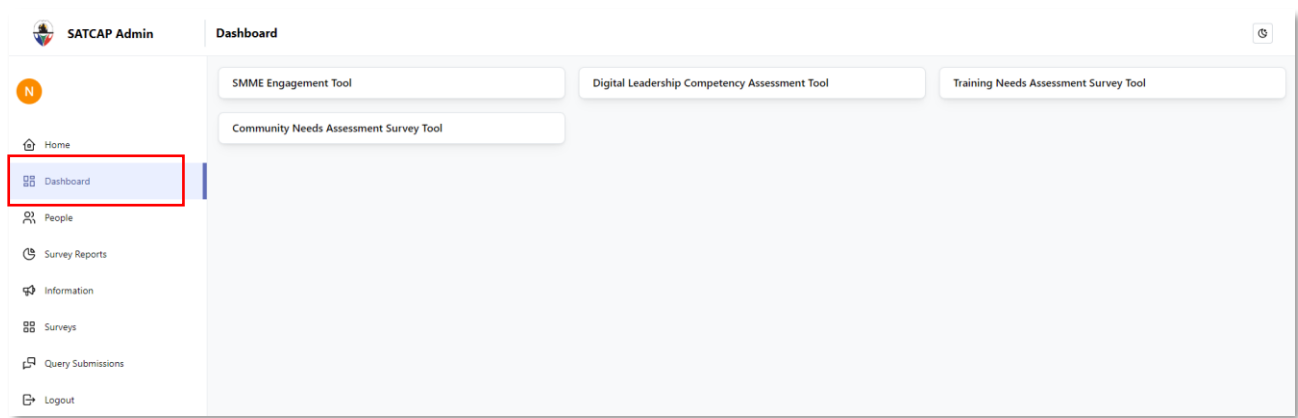


Figure 9: Dashboards per Checklist/Survey

### 3.2.5 MANAGING PEOPLE

In this section, the Super Administrator can add new administrative users by clicking the “Add new admin user” button. Once this button is clicked, the administrator will be required to fill in information on the new administrator and specify the operation(s) that that administrator will manage.

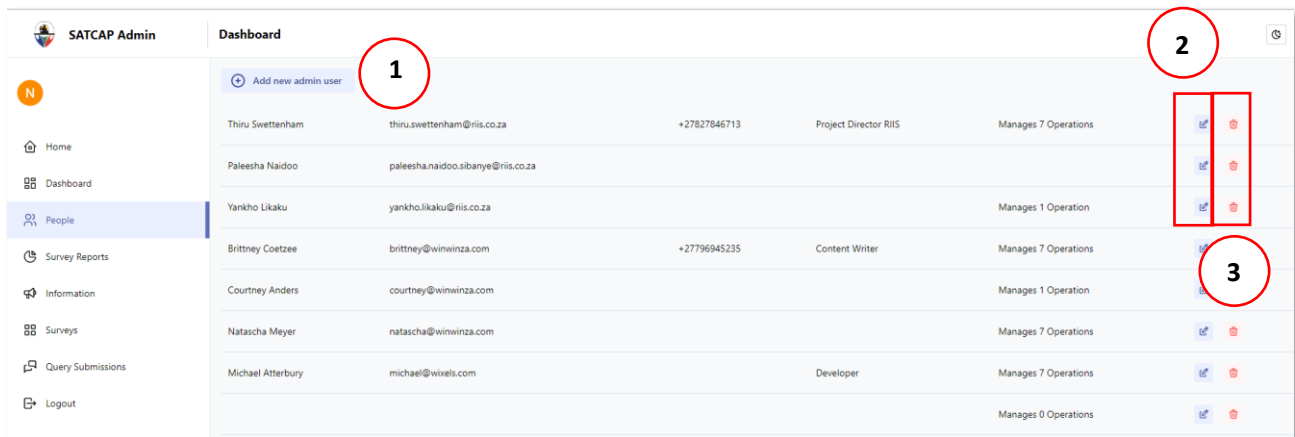


Figure 10: Manage people page

**STEP 1:** Click on the *People* section on the taskbar (on the left) as shown in *Figure 10*.

**STEP 2:** Create a new *Super Admin* and/or *Admin user* to access the Admin portal by clicking on *Add new Admin user* (labelled 1). A more detailed illustration is shown in *Figure 11* below.

**STEP 3:** Edit user details and revise the contact information of *Admin users* (labelled 2).

**STEP 4:** Delete an *Admin user* from the list (labelled 3).

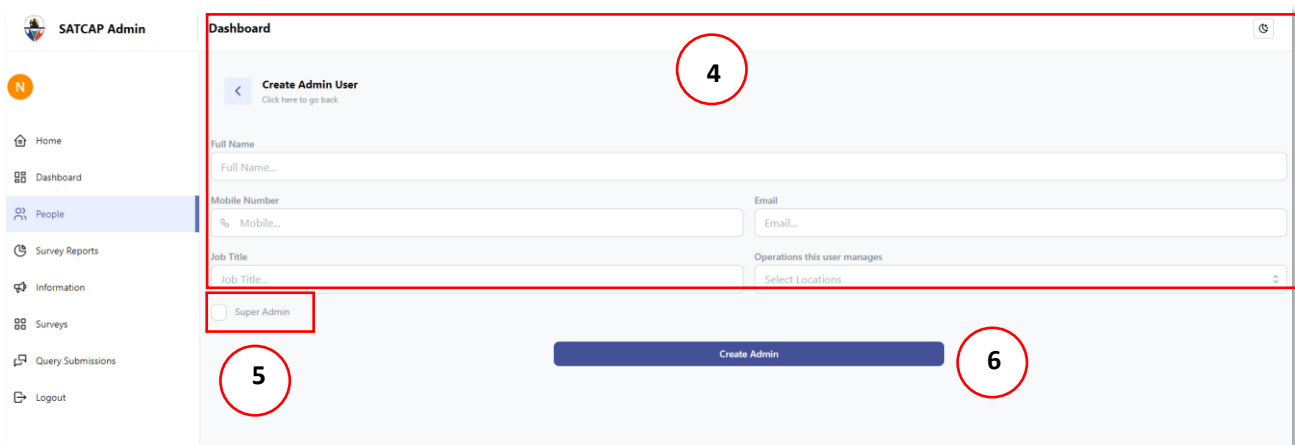


Figure 11: Adding a new Admin user

The following steps are part of step 2:

**STEP 1:** Enter the details of the new user in the fields represented (labelled 4 in *Figure 11*).

**STEP 2:** Tick the *Super Admin* box if the new user is classified as the primary administrator (labelled 5).

**STEP 3:** Click on *Create Admin* to create the new user (labelled 6).

### 3.2.6 DOWNLOAD REPORTS

The analytics on the dashboard will only be visible once new survey data has been submitted. The back end of the dashboard has been programmed to collate data and compute the analyses but needs input data to produce the reports. (Do not be concerned if you do not see analytic reports when setting up the survey.)

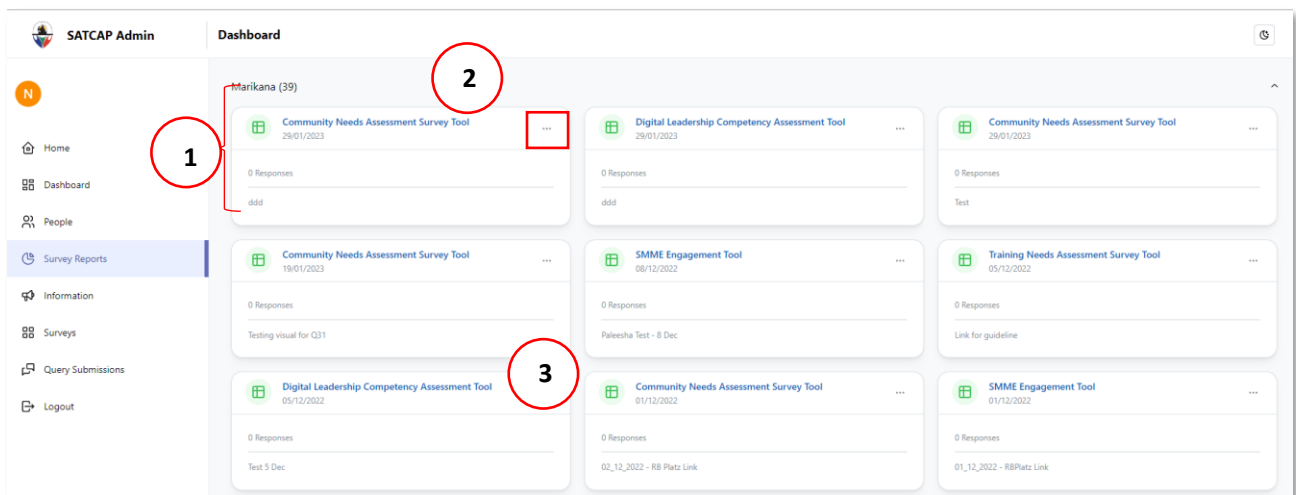


Figure 12: Survey reports

**STEP 1:** Click on the *Survey Reports* section on the taskbar (on the left) as shown in *Figure 12*

**STEP 2:** Locate the survey (labelled 1) and click on the three-dot icon (labelled 2) to download the raw .csv file of the survey data.

**STEP 3:** Click on *Download* to extract the visualisations (labelled 3)

### 3.2.7 MANAGING ONLINE RESOURCES AND NOTICES

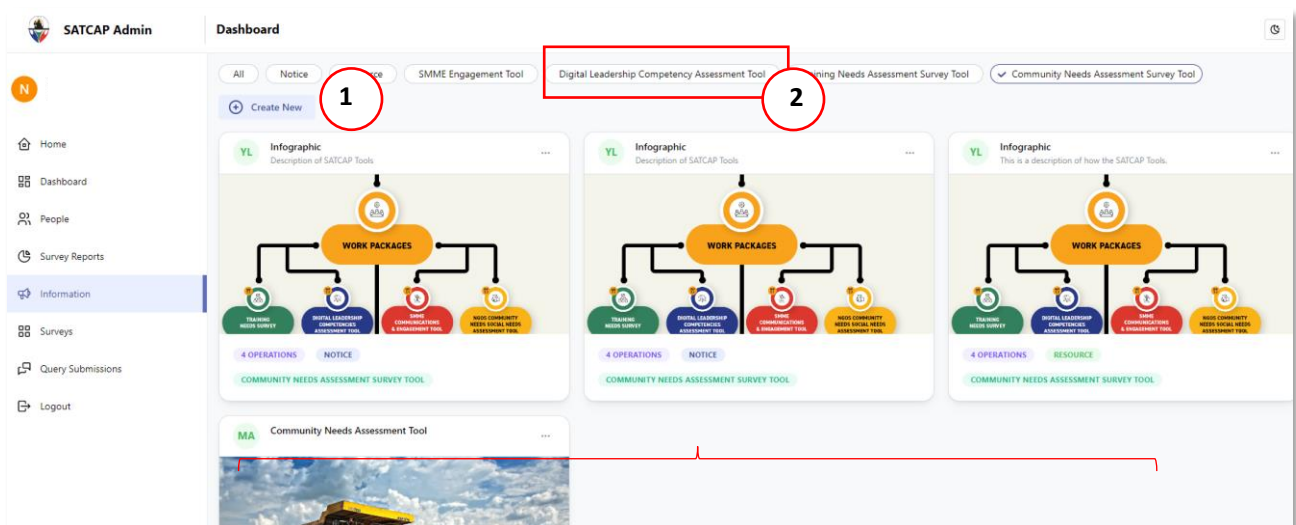


Figure 13: Information section

**STEP 1:** Click on the *Information* section on the taskbar (on the left) as shown in *Figure 13*.

**STEP 2:** Click on Create New (labelled 1) to open the new resources and notice page. View various resources and notices (labelled 2).

Figure 14: How to create new resources

**STEP 3:** Enter the details of the new resources in the fields represented (labelled 3 in Figure 14).

**STEP 4:** Click on *Create Resource* to publish the new resource or notice to the website (labelled 4).

### 3.2.8 MANAGING SURVEY LINKS

Figure 15: Surveys link page

**STEP 1:** Click on the *Surveys* section on the taskbar (on the left) as shown in Figure 15.

**STEP 2:** Create new survey links by clicking on the *Create New* button (labelled 1). A more detailed illustration is shown in Figure 16 below.

**STEP 3:** Click on the three-dotted icon to *Delete* survey links (labelled 2).

**STEP 4:** Copy the URL to distribute the survey link (labelled 3) and/or send the survey link by entering the email addresses of participants (labelled 4).

**SATCAP Admin** | Surveys

**Create New Resource** (5)

Click here to go back

Resource | Notice

Resource  
Your File

Feature Image  
Feature Image

Title  
Title

Location  
Select Locations

Package  
Select Package

Description  
Description

Create Resource (6)

Figure 16: Creating new survey links

**STEP 1:** Enter the details of the new survey link in the fields represented (labelled 5 in *Figure 16*).

**STEP 2:** Click on *Create Link* to create the new survey link for distribution (labelled 6).

### 3.2.9 QUERY SUBMISSION

**SATCAP Admin** | Surveys

1

3

2

Open  
39 Open

Resolved  
4 in total

Archived  
2 Archived

Download Report

OPEN  
Dan  
contact please  
D Daniel  
November 11, 2022

OPEN  
RFQ complain.  
I quoted for a job since march till now.  
KR Kuki Ramos  
October 13, 2022

OPEN  
RFQ complain.  
I quoted for a job since march till now.  
KR Kuki Ramos  
October 13, 2022

OPEN  
Conflict of Interest  
Engineer manager is giving out jobs to one company that...  
JV John Vuligate  
October 13, 2022

OPEN  
Communication Platform  
Creating a better platform for smme's to sit with end-users  
At Access to the mine  
October 13, 2022

OPEN  
Final decision on application  
Not letting know when our applications is not successful.  
B Boitumelo  
October 13, 2022

Figure 17: Query submissions

**STEP 1:** Click on *Query Submission* on the taskbar (on the left) to manage queries as shown in *Figure 17*.

**STEP 2:** View query status indicating the number of queries that are opened, resolved, and archived (labelled 1).

**STEP 3:** Click on the *Archive* icon to put query submissions in the archive folder (labelled 2).

**STEP 4:** Click on the right tick icon to *Resolve* queries (labelled 3).

### 3.3 MANAGER

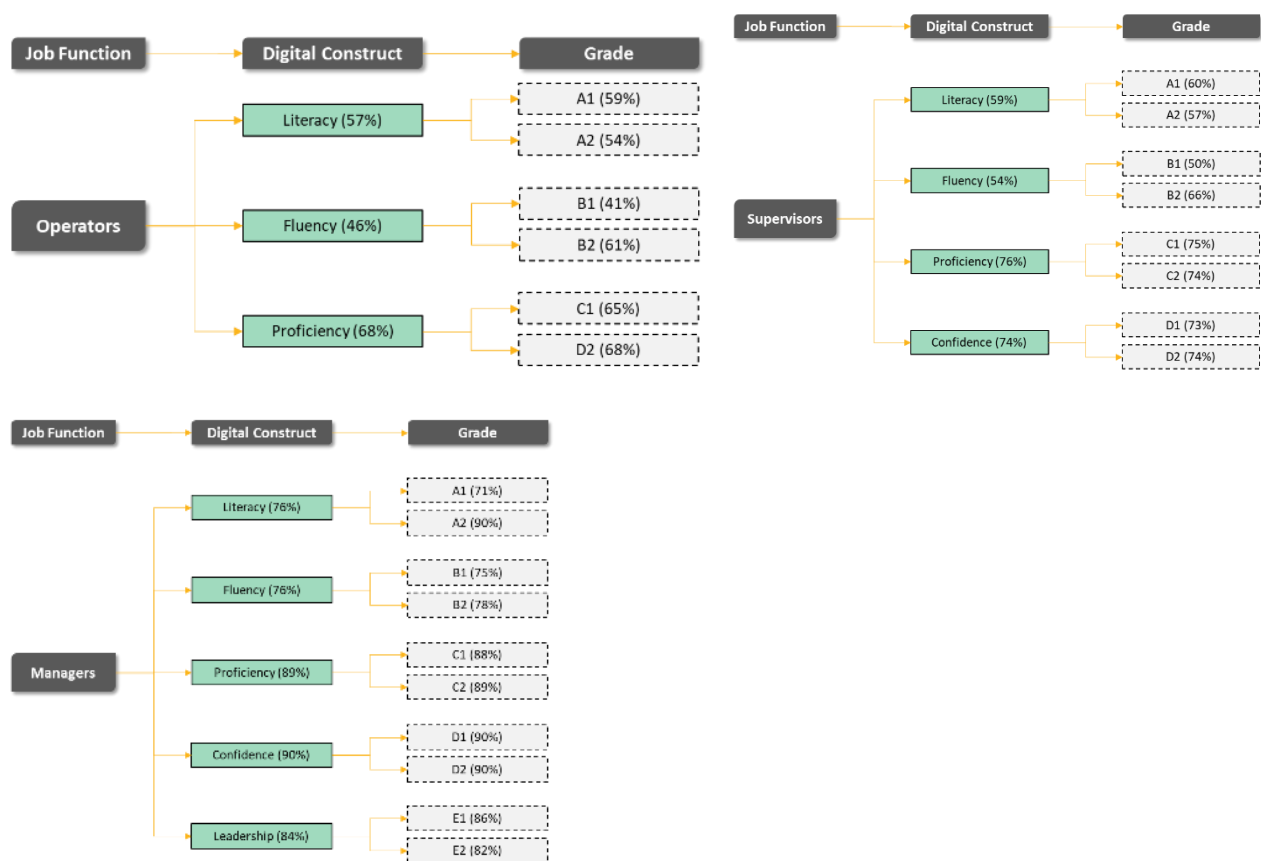
The manager can access and review reports from the system.

#### 3.3.1 INTERPRETATION GUIDE

A baseline for the South African mining industry will be determined as more evaluations are completed. Currently, it would be impractical to recommend specific digital training courses without understanding the exact situational context of the mining industry.

The interpretation guideline aims to build fundamental digital capabilities through free-to-use sources that anyone can access through a digital device with an internet connection. The interpretation guideline acts as a preliminary training reference guide for the workforce whilst industry baselines are being developed. The interpretation guideline acts as a high-level indicator of what potential training could take place to improve the digital leadership competence of the workforce. The traffic light system indicates where the employee **exceeds** (green; greater than the baseline), **meets** (yellow; within 25% of the baseline), and **needs development** (red; less than 25% of the baseline). The ideal case is represented by the mining workforce meeting the industry standard for digital leadership competence for a modernising mining industry.

The preliminary baseline figures are based off results obtained through a pilot study consisting of 60 participants. The ideal is represented by the following figures:



If the workforce does not meet the requirements, then there are open-source development interventions as represented in the interpretation guide; however, these can be more specific depending on the digital training at the respective mine.

*Note that operators are evaluated according to digital literacy, fluency, and proficiency. Supervisors are evaluated against the same digital constructs as operators with the inclusion of digital confidence. Lastly, managers are evaluated across all the constructs: literacy, fluency, proficiency, confidence, and leadership. The colour scaled bar to the left of the table is an indicator of the evaluation ranges. Each workforce level will have a separate report.*

Table 1: Example of interpretation guide

| Construct           | Grade | Construct interpretation                                                                                                                                                                                                                                                                                                                                                                                                                                            | Operators | Supervisors | Managers | Development intervention                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Manager signed agreement & approval |
|---------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Digital Literacy    | A1    | This grade relates to the workforce's ability to use digital assets to communicate and learn. A low score would imply that the workforce does not confidently type on digital devices and/or does not use digital assets to learn.                                                                                                                                                                                                                                  |           |             |          | Recommended that the workforce increase the amount of time typing on a digital device. An online, free-to-use learning platform is TypingClub ( <a href="https://www.typingclub.com/">https://www.typingclub.com/</a> ) or TypingTrainer ( <a href="https://www.typingtest.com/trainer/">https://www.typingtest.com/trainer/</a> ). Utilising these resources can increase the workforce's ability to type and improve their active learning scores.                                     |                                     |
|                     | A2    | These questions are evaluation-type questions that are based on the workforce's general knowledge of digital security. A low score would relate to a lack of awareness of the discipline. In addition, this section aims to understand how the workforce responds to change.                                                                                                                                                                                        |           |             |          | Living in a more digitised economy would require a better understanding of cyber security and the risks thereof. SkillUp hosts a free Introduction to Cyber Security course for anyone who registers to use it on their platform ( <a href="https://www.simplilearn.com/learn-cyber-security-basics-skillup#how-do-beginners-learn-cyber-security-fundamentals">https://www.simplilearn.com/learn-cyber-security-basics-skillup#how-do-beginners-learn-cyber-security-fundamentals</a> ) |                                     |
| Digital Fluency     | B1    | This selection of questions relates directly to how often the workforce uses specific software or applications to perform a function. Note that some of these may not be required of the workforce to perform their job. Therefore, it is important to consider the actual job activities of that workforce and whether the software tested is critical for them to perform their job.                                                                              |           |             |          | Encourage the workforce to spend more time using a digital asset that they have access to. There are various upskilling interventions available on ICDL Global ( <a href="http://www.icdl.org.za">www.icdl.org.za</a> ).                                                                                                                                                                                                                                                                 |                                     |
|                     | B2    | These questions relate to the workforce's awareness of how and when to use technology to perform day-to-day activities and their willingness to use technology for their job.                                                                                                                                                                                                                                                                                       |           |             |          | Engage with the workforce level to understand the hesitation behind using technology in their day-to-day activities. Bespoke interventions may be required as per the workforce's needs and reservations.                                                                                                                                                                                                                                                                                |                                     |
| Digital Proficiency | C1    | This grade relates to the workforce's ability to integrate their personal or professional activities with technology for optimal results. A low score would imply the workforce still lives a "low-tech" life.                                                                                                                                                                                                                                                      |           |             |          | Encourage the workforce to spend more time using a digital asset that they have access to. There are various upskilling interventions available on ICDL Global ( <a href="http://www.icdl.org.za">www.icdl.org.za</a> ).                                                                                                                                                                                                                                                                 |                                     |
|                     | C2    | This section aims to understand if and how the workforce uses the internet to obtain information. Once that information is obtained, how do they then make sense of it in relation to their specific job function within the organisation. Furthermore, the section aims to understand the psychological nature of the workforce and how they perceive themselves in relation to the digital transformation and perceived leadership ability from close colleagues. |           |             |          | Development intervention may require a refresher course on specific procedures required to perform the day-to-day activities across the workforce levels.                                                                                                                                                                                                                                                                                                                                |                                     |

|                    |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
|--------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Digital Confidence | D1 | The digital confidence section tries to understand how capable the workforce believes they are when utilising digital assets to perform specific job activities. A low score would imply that the workforce does not feel confident using the specific applications to perform their job.                                                                                                                                                                                                                         |  |  |  | <p>Refer to the job description of the employee to understand their specific job activities. If the various digital tools are not necessary then the employee should not be judged unfavourably.</p> <p>However, there are free online training courses if additional training is required on the specific applications. For example, free video tutorials can be found on GCF Global (<a href="https://edu.gcfglobal.org/en/topics/office/">https://edu.gcfglobal.org/en/topics/office/</a>). Skilling and upskilling in these applications can occur in the employee's personal time. More advanced courses can be found on Alison (<a href="https://alison.com/tag/microsoft-office">https://alison.com/tag/microsoft-office</a>), which are free to use once an account has been created.</p> |  |
|                    | D2 | This section aims to understand how the workforce proactively uses digital assets to learn, and subsequently apply those learnings to their job. In addition, the section attempts to understand how the workforce responds to change within their job function. A low score would imply that the workforce does not actively learn and apply new ways of doing things to their job activities nor are they willing to.                                                                                           |  |  |  | <p>Refer to the job description of the employee to understand their specific job activities. If the various digital tools are not necessary, then the employee should not be judged unfavourably.</p> <p>Microsoft 365 offers a wide range of training services that are free to use if the organisation possesses a Microsoft subscription. There are many factsheets, infographics, and training courses that any employee can use to increase their knowledge on how to use the various software applications more confidently and productively. These can be found here <a href="https://support.microsoft.com/en-us/training">https://support.microsoft.com/en-us/training</a></p>                                                                                                           |  |
| Digital Leadership | E1 | These questions aim to understand the level of critical thinking with digital assets that the workforce utilises to understand and interpret information. Relate that information to the organisation's objectives. Plan a course to achieve those objectives using the information and human capital at their disposal. Lastly, setting clear goals to measure, monitor, and evaluate the outcomes of their decisions. A low score would imply limited utilisation of digital assets to perform the steps above. |  |  |  | <p>It is recommended that the employee read over the resources listed on the SATCAP dashboard. For ease of reference:</p> <ul style="list-style-type: none"> <li>• PwC Workforce Of The Future 2030</li> <li>• PwC Global Trends Challenged By African Realities Report</li> <li>• Harvard Business Review Digital Transformation Refocused</li> <li>• SABPP Leadership Standard</li> <li>• WEF Future Skills Article</li> </ul>                                                                                                                                                                                                                                                                                                                                                                  |  |
|                    | E2 | The aim of this section is to understand how the workforce leads and influences across digital channels. Furthermore, whether they are willing to adapt to the digital transformation occurring around them.                                                                                                                                                                                                                                                                                                      |  |  |  | <p>It is recommended that the employee read over the resources listed on the SATCAP dashboard. For ease of reference:</p> <ul style="list-style-type: none"> <li>• PwC Workforce Of The Future 2030</li> <li>• PwC Global Trends Challenged By African Realities Report</li> <li>• Harvard Business Review Digital Transformation Refocused</li> <li>• SABPP Leadership Standard</li> <li>• WEF Future Skills Article</li> </ul>                                                                                                                                                                                                                                                                                                                                                                  |  |

### 3.3.2 VISUALISATIONS ACCOMPANYING INTERPRETATION GUIDE

#### Reporting output #1: Average digital leadership competency across the workforce of the mine

The figure below depicts the total group average of the digital leadership competence scores obtained across the specific job function (in this case managers; there would be a separate graph for operators and supervisors).

The reporting output may be used to compare how the job function is performing across the digital constructs against a defined baseline, that can be set by the mine.

#### Example Interpretation (Figure 18):

- Overall digital competence score of the managers is average as they exceed performance on digital fluency, proficiency, and confidence. However, improvement is required across digital literacy and leadership.

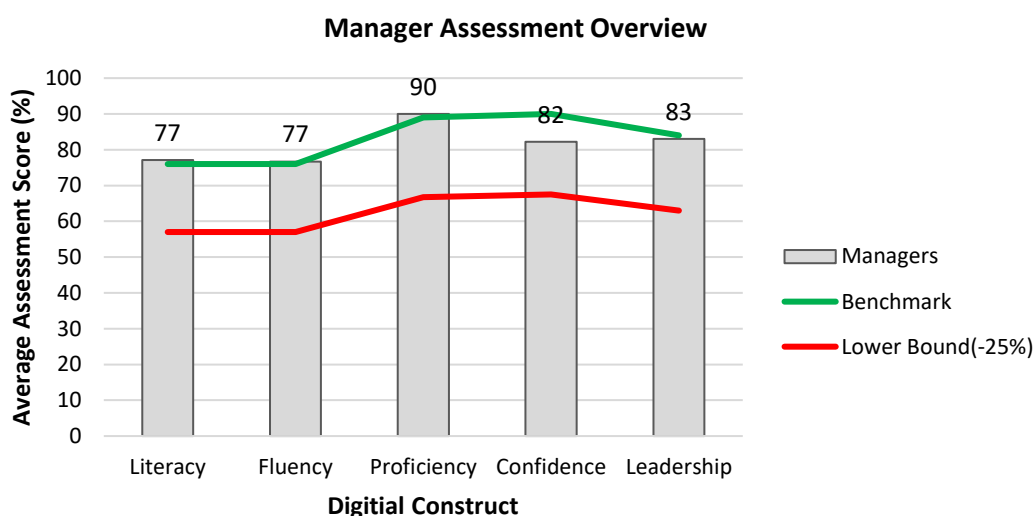


Figure 18: Example of average digital leadership competency across workforce

#### Reporting output #2: Digital training reference guide across workforce of the mine

The figure below depicts a more detailed perspective of where specific training is required for the job function.

This information may be displayed as an aggregate compared against the baseline. Or each result from the workforce can be displayed simultaneously.

The reporting output can be used to inform more specific training as per the specific needs of the job function.

Note: there would be a separate graph for each workforce level (i.e. operators, supervisors, and managers).

#### Example Interpretation (Figure 19):

- The baseline (green) line shows the industry standard, whereas the red line represents the lower boundary of the industry standard. Below we see that the group performs above the industry standard in A2 and C1 (i.e. grades per literacy and proficiency) which represents critical analysis, frequency of technology use flexibility and adaptability, and active learning. Overall, the mine meets digital leadership competence expectations as there are no sections below the red line.

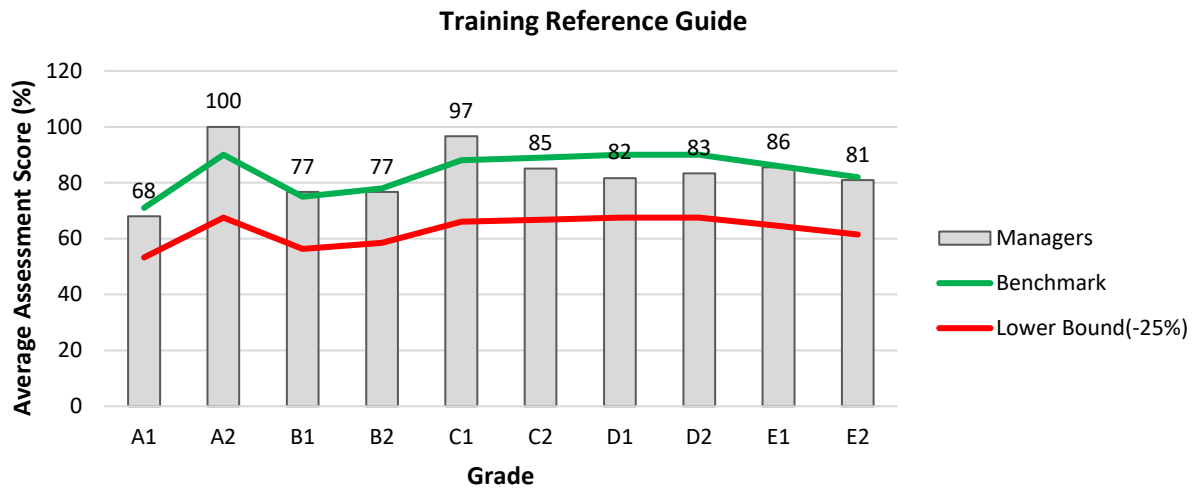


Figure 19: Example of training reference guide

### 3.4 IM OPEN-SOURCE HANDOVER GUIDE

#### Context

The below information has been included into this guideline should a mining company wish to incorporate these applications and their functionality into their IM space as a mine-specific tool. This guide provides a comprehensive view of prerequisites, structures and roles etc.

#### Prerequisites

- Have an existing [Firebase/Google](#) account
- Have a [Firebase project](#) set up
- Have [Firebase CLI installed](#) on your workstation
- Have the code on your workstation (either downloaded, cloned or forked)
- Have access to a unix-based terminal on your workstation
- Have [NPM and NodeJS \(npm recommended\)](#) installed on your workstation

#### Project setup

##### [Firebase Project docs](#)

1. Open this project in VS Code and open the terminal inside VS Code (or open your terminal and `cd` to the project root directory)
2. `firebase login`
3. `firebase use --add`
4. When prompted for which project you want to add, select the project you created in the prerequisite step
5. Write your alias (can be anything like e.g. `satcap-prod`)
6. You are now using your own Firebase project and no longer the default (`satcap-research`)

To switch projects run the following, changing ALIAS to a defined alias

```
firebase use ALIAS
```

Please note, if you're on a project that your Google account does not have access to, you won't be able to deploy.

### Firestore setup

1. Login to [Firebase console](#)
2. Open your project
3. Click on Build -> Firestore Database
4. Click "Create Database"
5. Follow the prompts

### Authentication setup

1. Login to [Firebase console](#)
2. Open your project
3. Click on Build -> Authentication
4. Go to the "Sign-in method" tab
5. Click "Add new provider"
6. Turn on "Email/Password"

### Hosting setup

[Hosting docs](#) ADMIN\_SITE\_ID and USER\_SITE\_ID has to be replaced with a value of your choosing.

This would however need to be unique across the entire Firebase platform so if you use a value that already exists, you will get an error similar to the below:

Error: HTTP Error: 400, Invalid name: `admin-satcap-research` is reserved by another project; try something like `admin-satcap-research-51aa9` instead

1. `firebase hosting:sites:create ADMIN_SITE_ID`
2. `firebase hosting:sites:create USER_SITE_ID`
3. `firebase target:apply hosting admin ADMIN_SITE_ID`
4. `firebase target:apply hosting user USER_SITE_ID`

### Functions setup

[Functions docs](#)

1. `cd functions/`
2. `npm i`

### Deploy

Because of the admin website requires a build before deployment, it is not advised to run the global `firebase deploy` command, as this will cause unforeseen problems.

### Rules and Indexes (Firestore / Storage)

`firebase deploy --only firestore:indexes`

```
firebase deploy --only firestore:rules
firebase deploy --only storage
```

## Functions

```
firebase deploy --only functions
```

You can [read here](#) for more details about Firebase Functions and deployments

## Admin

1. `cd admin/`
2. `npm i && npm run build`
3. `cd ../`
4. `firebase deploy --only hosting:admin`

## User (survey links)

```
firebase deploy --only hosting:user
```

## Create Admin User

Initially, you will have to manually add a person to the "backend" to get started.

All subsequent users can be added the traditional way on the "People" tab within the admin application.

Please see [Data Architecture](#) for more information before proceeding to the below steps

1. Login to [Firebase console](#)
2. Open your project
3. Click on Build -> Authentication
4. Under the "Users" tab, click "Add user"
5. Enter details and "Add User"
6. Copy UID generated
7. Click on Build -> Firestore Database
8. Click on "mines" collection
9. Click on the mine you're wanting to add the person to
10. Click on the Sub-collection "users"
11. Click "Add document"
12. Click "Auto-Id" and add the [following fields](#)

## Email / SMS

You will need to enable the following extensions within Firebase:

## Trigger Email

- [Link to extension](#)
- Setup with your own SMTP account
- Use mail as the collection name

## Send Messages with Twilio (optional)

- [Link to extension](#)
- Setup with your own Twilio account
- Use messages as the collection name

## Data Architecture

The current application version does not support the creation of mines or packages within the application itself, so these will have to be manually added before accessing the application.

## Packages

Collection Id: packages

## Structure

| Field                              | Type       | Value                                                        |
|------------------------------------|------------|--------------------------------------------------------------|
| docId                              | string     | Redundant copy of actual doc UID                             |
| name                               | string     | Name of work package                                         |
| survey                             | map        | Survey information this package links to                     |
| survey.complete                    | map        | Custom messages on completion of a survey                    |
| survey.complete[surveyKey].message | string     | Custom message                                               |
| survey.complete[surveyKey].type    | string     | Custom heading                                               |
| survey.shortDescription            | string     | Summary description of survey                                |
| survey.description                 | string     | Full description of survey                                   |
| survey.key                         | string     | Unique key of survey or parent key of surveys                |
| survey.title                       | string     | Title of survey or parent title of surveys                   |
| survey.surveys                     | array[map] | (Optional) list of surveys if package provides more than one |
| survey.surveys[0].color            | string     | HEX value of theme colour for survey                         |

|                               |               |                                                                    |
|-------------------------------|---------------|--------------------------------------------------------------------|
| survey.surveys[0].description | string        | Description of survey                                              |
| survey.surveys[0].faqUrl      | string        | Link to FAQ's for survey                                           |
| survey.surveys[0].key         | string        | Unique key of survey                                               |
| survey.surveys[0].title       | string        | Title of survey                                                    |
| scopes                        | array[string] | List of all menu items this package has access to on the user side |
| <b>Scope</b>                  |               |                                                                    |
| home                          |               |                                                                    |
| survey                        |               |                                                                    |
| information                   |               |                                                                    |
| queries                       |               |                                                                    |

## Mines

Collection Id: mines

## Structure

| Field           | Type          | Value                                                                  |
|-----------------|---------------|------------------------------------------------------------------------|
| address         | string        | Area of mine                                                           |
| name            | string        | Name of mine                                                           |
| description     | string        | Description of mine                                                    |
| featureImageUrl | string        | Link to header image                                                   |
| imageUrl        | string        | Link to logo of mine                                                   |
| packages        | array[string] | Document ID's of all <a href="#">packages</a> this admin has access to |

## Users

Sub-collection of [mines](#)

Collection Id: users

### Structure

| Field         | Type          | Value                                                                                                       |
|---------------|---------------|-------------------------------------------------------------------------------------------------------------|
| authUid       | string        | Value of UID according to authentication user                                                               |
| name          | string        | Name of user                                                                                                |
| mobile        | string        | Mobile number of user                                                                                       |
| email         | string        | Email of user (must be contactable - not required to be same as authentication email)                       |
| isAdmin       | boolean       | true if can manage mine (operations / about etc.) and add people to mine                                    |
| jobTitle      | string        | Job title of user                                                                                           |
| mineId        | string        | Document ID of current mine                                                                                 |
| locationAdmin | array[string] | Document ID's of all locations (operations) this user can manage (is allowed to be null if isAdmin is true) |

### Locations

Sub-collection of [mines](#)

Collection Id: locations

### Structure

| Field | Type   | Value            |
|-------|--------|------------------|
| name  | string | Name of location |

## 3.5 FAQ SECTION

### 3.5.1 USER FAQS

| Question                                                                               | Answer                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Why can't I begin the survey?                                                          | Each user must provide consent first by ticking the tick box and then they can commence the survey.                                                                                                                                                                                                                                                                               |
| Why can't I submit my results?                                                         | All questions must be answered. Review the survey to ensure each question has a response.                                                                                                                                                                                                                                                                                         |
| Where can I find more information on the Future Workforce and Digital Transformations? | Refer to the resource library for addition content.                                                                                                                                                                                                                                                                                                                               |
| Where will my responses go, will my information be shared externally?                  | No information will be shared external to the mine. Each response is captured and stored on a database hosted by the mine and is not shared with third party entities.                                                                                                                                                                                                            |
| Do I need an advanced computer or digital device to complete the assessment?           | No. The assessment can be completed on any digital device which has access to the internet.                                                                                                                                                                                                                                                                                       |
| Who will see the reporting outputs?                                                    | The Human Resource Manager, Learning and Development Manager or Head of Technology at the mine will receive the reporting outputs.                                                                                                                                                                                                                                                |
| The link that I click on to access the application does not work, what should I do?    | Please ensure that there is a stable internet connection when accessing the application. If the link continues to not work, please contact the administrator.                                                                                                                                                                                                                     |
| Where can I find the overall results/data of the survey?                               | The information gathered from the surveys is hosted on the database, and the admin can download these to be shared upon request. The manager may decide to share results, but this is completely dependent on the mine manager.                                                                                                                                                   |
| Why is this survey being conducted?                                                    | The mine aims to understand how challenges relating to people in the mining modernisation process can be understood from all perspectives. The focus of the digital leadership competency assessment illustrates how digitisation will have an impact on current versus future mining activities across the workforce – specifically across operators, supervisors, and managers. |
| Is the application available in other languages?                                       | No, the application is only available in English.                                                                                                                                                                                                                                                                                                                                 |

### 3.5.2 ADMINISTRATOR FAQs

| Question                                                                   | Answer                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What is the difference between a Super admin and admin?                    | Super admins can create new users and assign access permissions. Whilst Admins are merely able to manage survey links and reporting outputs.                                                                                                                                                                            |
| Where is all this information stored?                                      | The IT administrator together with the super administrator is responsible for managing the database and responsible for security of information and access to the information collected.                                                                                                                                |
| How do I integrate the application into my respective mine's systems?      | Refer to the IT Team guideline for more information.                                                                                                                                                                                                                                                                    |
| Who is in control of how data is managed?                                  | Once the tool has been handed over to the mine, the data obtained from the surveys with the tool will be managed by the administrator at the mine.                                                                                                                                                                      |
| Who is responsible for managing the database generated by the application? | The IT administrator together with the super administrator is responsible for managing the database and responsible for security of information and access to the information collected.                                                                                                                                |
| How does one become an Admin of the application?                           | A link will be shared with the administrator by the Super Admin via email.                                                                                                                                                                                                                                              |
| Can I create multiple survey links at the same time?                       | Yes, the administrator can create as many as necessary and/or required by the respective mine.                                                                                                                                                                                                                          |
| Can I have multiple surveys in the same region?                            | Yes. However, a single dataset per region is advised to not confuse the findings of the assessment.                                                                                                                                                                                                                     |
| I no longer have Admin access, what should I do?                           | The administrator should contact the required mine-designated Super Admin to grant access.                                                                                                                                                                                                                              |
| Can the application be updated or modified?                                | The open-source code is available for all mines wanting to use the tool. It is customisable according to the needs of the mine if they have the expertise in their IT teams.                                                                                                                                            |
| Why am I not seeing analytic reports when I set up the survey?             | The analytics on the dashboard will only be visible once new survey data has been submitted. The back end of the dashboard has been programmed to collate data and compute the analyses but needs input data to produce the reports. Do not be concerned if you do not see analytic reports when setting up the survey. |