OPTIMISING ASSET MANAGEMENT USING ONE PAGE ASSET MANAGEMENT PLAN

FINAL DELIVERABLE REPORT

Ajith Kumar Balamurugan (balay044) & Mohammed Iftekhar Aalam (aalmy001) – Group 2025-SP2-207

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Executive Summary

This project delivered a modular, one-page Asset Management Plan (AMP) dashboard solution for Secora Garage, designed to enhance asset-level decision-making across a range of industrial assets. Developed in collaboration with Secora using real operational data, the dashboard provides a standardised, scalable framework to visualise asset condition, lifecycle cost, maintenance trends, and capital planning indicators in a single dynamic Power BI report.

The primary objective was to create reusable AMP dashboards for three key asset categories - Drill (fixed plant), Crane (infrastructure), and Truck (mobile asset), that offer stakeholders an at-a-glance overview of asset health, financial exposure, and operational status. Each dashboard incorporates interactive features such as asset-level filtering, Data Analysis Expressions (DAX)-driven narrative generation, and logic-based visual cues to support fast and effective decision-making. These dashboards directly address limitations in the earlier Lifecycle Management Metric (LMM) system, where asset-level insights were difficult to extract from clustered heatmaps, thus representing the “next step” in Secora’s reporting evolution.

Key deliverables included three AMP dashboards, a Field-to-Section Mapping document, snapshots of critical DAX logic (provided in the appendix), a comprehensive report, and a stakeholder demonstration session. In addition to improved visibility and usability, the solution supports future scalability, reduces reporting effort, and improves time-to-decision across Secora’s client engagements. Recommendations to support production deployment have also been outlined, including integration with live data sources, parameterisation, and governance setup. The project achieved all planned objectives and delivered meaningful organisational benefits aligned with Secora’s mission to optimise asset management through advanced data solutions.

1 Introduction

1.1 Background Context – Problem Statement

Asset-intensive industries such as mining, defence, utilities, and infrastructure face increasing complexity in managing large numbers of high-value physical assets. These challenges include ageing equipment, increasing safety and compliance demands, and large volumes of segmented data spread across disparate systems such as SCADA, ERP, maintenance logs, and spreadsheets. Asset managers are often burdened by lengthy, fragmented reports that complicate rather than clarify asset health, performance, and risk.

This lack of unified, interpretable data restricts timely decision-making, resulting in reactive maintenance, inefficient capital allocation, and operational downtime. A recurring industry sentiment is that "asset managers hate reading lengthy reports." The demand is growing for concise, visual, and actionable tools that present the right insights on a single screen, without requiring users to compile information from multiple systems.

In partnership with Secora Garage, this project aimed to address these challenges by developing a modular, data-driven solution that consolidates key asset health, lifecycle cost and maintenance metrics into a single, interpretable view. Specifically, the project focused on building a **one-page Asset Management Plan (AMP)** for critical asset types using **Power BI**, with the goal of improving transparency, standardisation, and decision-making efficiency across multiple operational contexts.

1.2 Organisation Overview – Secora Garage

Secora is a Defence DISP-certified organisation that partners with clients across mining, defence, utilities, and energy sectors to improve engineering asset management. The company leverages emerging technologies including AI, cloud computing, machine learning, and advanced analytics to solve complex industrial data problems. Secora specialises in integrating operational technology (OT), information systems (IT), and business intelligence (UI/UX) to drive asset lifecycle decision-making.

This project aligns with Secora's strategic goal of digitising engineering workflows and building smarter, more transparent, and scalable asset management systems.

1.3 Project Objectives and Scope

The primary goal of this project was to design and deliver a **One-Page Asset Management Plan (AMP)** framework that consolidates critical metrics such as asset condition, cost, risk, and maintenance into a single, user-friendly Power BI dashboard. This addresses the core industry demand for simple yet powerful summaries of asset health that eliminate the need for navigating lengthy reports.

Specifically, the objectives were:

- To develop a scalable and reusable Power BI dashboard architecture that supports modular expansion across different asset types.
- To integrate and visualise asset condition, lifecycle cost, outage, and maintenance data from existing reports into an interactive format.
- To implement automated executive summaries that adapt insights based on each selected asset's performance indicators.
- To validate the AMP concept across three asset types: Drill, Crane, and Truck to demonstrate applicability in diverse operational contexts.

The methodology involved extracting data from an existing Secora report, performing field-to-AMP section mapping, and transforming the cleaned dataset into dynamic AMP dashboards.

To ensure alignment with Secora's operational goals, each dashboard includes color-coded indicators, open defect counts, cost summaries, and maintenance ratios - structured under the following key sections: **Lifecycle Cost, Level of Service, Outages, Asset Condition, Maintenance Summary, Operating Conditions**, and **Executive Summary**. Each section is driven by linked dataset fields and supports asset-specific filtering.

By focusing on reusability, modularity, and compact design, the AMP solution enables stakeholders to gain fast, actionable insights without navigating through multiple systems or reports. The final deliverables offer a practical, scalable solution that supports proactive asset management and streamlined capital planning.

The remainder of this report provides a detailed explanation of the methodology, technical implementation, dashboard design, and benefits to the organisation, followed by a critical reflection on challenges faced, resolutions adopted, and future recommendations.

2 Methodology and Techniques

This section outlines the technical process followed to develop the One-Page Asset Management Plan (AMP) dashboard. The methodology involved three key stages: (1) Data extraction and preparation from the existing Lifecycle Management Metric (LMM) dashboard, (2) Field-to-section mapping and dashboard architecture design, and (3) Dashboard Design Strategy and Visual Rationale. These steps were executed iteratively to align with Secora Garage's requirements for scalable, asset-level decision support tools and to follow best practices in dashboard design and data modelling.

2.1 Stage 1: Data Extraction from Lifecycle Management Metric (LMM)

The first phase of the project focused on extracting and preparing a clean, structured dataset from **Secora's existing Lifecycle Management Metric (LMM) dashboard**. The LMM is a strategic reporting tool used by asset managers to monitor the condition and financial risk associated with several physical assets across client operations. It presents key insights through visual scatter plots, risk thresholds, and tabular summaries embedded within Power BI.

However, while the LMM dashboard is effective for visual review, it was not directly usable as a data source for prototyping a new AMP dashboard for individual assets. The data was locked within visuals and required careful extraction, formatting, and transformation to be used dynamically within Power BI. The following steps were undertaken during this stage:

1. Manual Extraction from Visual Tables

Key data points were manually extracted from the **tabular section** at the bottom of the LMM dashboard using Power BI's built-in export feature. The exported files were further formatted and cleaned in Excel. The exported data included asset-level metrics such as:

- Asset Vulnerability
- Financial Risk
- Above or Below Threshold status
- Estimated Value FY2X (USD)
- Cost to Replace (USD)
- Capital Plan Projects
- Descriptive identifiers like LMM Sample ID, Asset ID + Site Short, Grouped Class, Summary Class, Operation, and Description

These variables formed the foundation for various sections of the AMP dashboard. **Appendix A – Data Dictionary** provides detailed definitions and contextual relevance for each field used in the AMP dashboard.

2. Dataset Reconstruction in Excel

The extracted data was consolidated into a **structured Excel file**, with approximately 40 asset records and 40 relevant columns. This reconstruction involved:

- **Cleaning and Parsing**: Numeric fields (e.g., $2.31M, 9.33) were standardised using Excel formatting to ensure compatibility with Power BI.
- **Handling Missing Values**: Empty fields such as "Capital Plan Projects" were replaced with placeholders like "None" to ensure logical consistency in dashboard visuals.
- **Maintenance Field Formatting**: Fields related to maintenance, such as Preventive Measure (XX) counts and costs were cast into correct numeric types to support aggregation and charting.

The result was a clean, flattened dataset that supported a wide range of Power BI visual elements.

3. Field Derivation for Dashboard Logic

Additional calculated fields were added to enrich the dataset and support logic-based visualisations:

- **Harsh Environment**: A binary indicator derived based on operational region or asset grouping (coded as 0 = No, 1 = Yes).
- **Elapsed Design Life**: Parsed or reverse-calculated from available asset metadata, used to infer asset ageing.
- **Combined Status Indicator**: A composite flag indicating whether the asset exceeded either Financial Risk or Vulnerability thresholds.

4. Initial Field-to-Section Mapping

With the cleaned dataset in place, a **preliminary mapping of columns to AMP dashboard sections** was initiated. Placeholder visuals were prepared in Power BI using this mapping to test layout feasibility and formatting compatibility.

Overall, this stage was foundational in transforming raw presentation data into a structured, reusable dataset suitable for dynamic analysis for each asset level in Power BI. By ensuring the data was clean, structured, and enriched with derived fields, it laid the foundation for building the modular and scalable AMP dashboards in subsequent stages.

2.2 Stage 2: Field-to-AMP Mapping and Dashboard Architecture

Once the dataset was finalised, the next step was to develop a structured **Field-to-AMP Mapping Table** that linked specific data columns to their corresponding dashboard sections. The goal was to ensure that each visual element in the final one-page Asset Management Plan (AMP) dashboard was directly supported by relevant, interpretable data aligned with decision-making needs.

The AMP was conceptually divided into six key sections:

1. **Lifecycle Cost**
2. **Outages**
3. **Asset Condition**
4. **Maintenance Summary**
5. **Capital Plan Projects**
6. **Executive Summary**

Each section was associated with a targeted subset of columns from the consolidated dataset, chosen for their significance in evaluating asset health, operational risk, and investment planning. Below is the detailed mapping with justification.

Lifecycle Cost

This section provides a financial overview of the asset, enabling stakeholders to weigh ongoing maintenance costs against replacement value. Mapped fields include:

- **Estimated Value FY2X (USD):** Indicates the forecasted value of the asset in future capital planning, helping asset managers determine whether the asset is financially viable to retain or replace.
- **Cost To Replace (USD):** Offers an estimate of replacement cost, critical for identifying high-risk and high-capital-exposure assets.

- **Cost To Repair Open Defects:** Indicates outstanding maintenance liabilities. Comparing this against asset value supports cost-benefit analysis.

Together, these fields provide a comprehensive picture of the asset's current and future economic impact, helping prioritise investment decisions.

Asset Condition

This section focuses on technical and financial risk associated with the asset's health. Mapped fields include:

- **Asset Vulnerability:** A composite score representing degradation risk based on design life, historical failures, and maintenance frequency.
- **Financial Risk:** Quantifies the economic impact of potential failure such as covering downtime, safety hazards, and emergency maintenance.
- **Threshold Fields** (e.g., Asset Vulnerability Threshold, Financial Risk Threshold): Serve as benchmarks to trigger alerts when scores exceed acceptable operational levels.

These indicators were chosen because they align directly with operational risk management practices, where both technical condition and financial exposure must be monitored to prevent unplanned outages or overspending.

Outages

The "Outages" section highlights reliability performance and maintenance backlog. The following fields were mapped:

- **Avg Monthly Defect Count X1–X4:** Represents the average number of defects per month across criticality levels. Priority 1 (X1) indicates urgent, high-risk issues requiring immediate attention, while X4 represents less severe or administrative issues. This field helps quantify asset stability.
- **Open Defect Count X1–X4:** Shows the current backlog of unresolved issues, indicating maintenance responsiveness and highlighting whether defects are being addressed in a timely manner.
- **Open XX01 Count:** XX01 refers to planned preventive maintenance tasks. The number of open XX01s signals whether preventive routines are scheduled but not yet executed, which can be a leading indicator of future outages if not addressed.

These fields are key for assessing how effectively outages are being managed and whether reliability programs are keeping pace with asset degradation.

Maintenance Summary

This section provides insights into the overall maintenance investment patterns and cost efficiency. It includes:

- **Avg Monthly Cost X1–X4:** Displays average maintenance costs by defect priority. This helps asset managers understand which issues are consuming the most resources, enabling better prioritisation.
- **Avg Monthly XX01/XX02/XM03 Cost:** Breaks down costs by maintenance type - XX01 (planned), XX02 (preventive), and XX03 (corrective). High XX03 cost relative to XX01 may suggest a reactive maintenance culture or unexpected asset failures.

These fields were selected because they tie expenditure to operational risk, giving visibility into both short-term costs and long-term investment planning.

Capital Plan Projects

This section is designed to highlight whether forward-looking investment decisions have already been made for the asset. It includes:

- **Capital Plan Projects:** Indicates whether there are strategic projects already allocated in the capital plan for this asset.

The presence or absence of planned projects can significantly impact how stakeholders interpret other AMP sections. For instance, high risk and cost with no capital allocation signals immediate management attention.

Executive Summary

The Executive Summary section synthesises key insights across the entire AMP into a 3-part narrative WHAT, SO WHAT, and NOW WHAT based on logic-driven Data Analysis Expressions (DAX) measures. It uses:

- **Asset ID + Site Short, Summary Class:** To personalise the narrative per asset type and location.
- **Open Defect Count X1, Avg Monthly XX03 Count:** Indicate whether the asset is currently strained by failures or backlog.
- **Asset Vulnerability, Financial Risk:** To assess whether the asset is within or beyond acceptable operational bounds.
- **Avg Monthly XX01 Count, XX03 count:** Used to infer if preventive programs are sufficient or if corrective trends dominate.
- **Capital Plan Projects, Open Defect Count X2:** Support decision logic on whether capital investment or monitoring is needed.

This section serves as a stakeholder-facing overlay that translates metrics into an immediately understandable operational story tailored for decision-makers who may not want to interpret individual charts but still need accurate guidance.

Reusability and Layout Consistency

The mapping table approach ensured that any new asset type could be onboarded into the dashboard framework with minimal additional effort. This modularity and traceability were essential for meeting Secora's objective of repeatable and scalable architecture. This structured architecture enabled rapid replication of the AMP dashboard across multiple assets, supporting better planning and risk management while reducing the time and complexity of asset-level reporting.

2.3 Stage 3: Dashboard Design Strategy and Visual Rationale

Power BI was selected as the visualisation platform due to its strong integration with Excel, ease of DAX development and interactivity. The AMP dashboard was designed on a single canvas page (16:9 layout) to ensure that all critical asset insights could be viewed at a glance without requiring users to navigate across multiple tabs or pages. Three separate AMP dashboards were created for the selected prototype assets: Drill, Truck, and Crane. These asset types represent diverse operational profiles - Fixed plant (Drill), infrastructure support (Crane) and mobile equipment (Truck).

Key Design Features and Purpose of Visual Elements

1. Card Visuals and KPIs

High-impact financial metrics such as Estimated Value FY2X, Cost to Replace, and Cost to Repair Open Defects were presented using card visuals. These were chosen to provide immediate, at-a-glance financial insights into each asset. Each card was conditionally formatted and colour-coded based on lifecycle risk thresholds to highlight critical values. Elapsed Design Life, a key condition indicator, was converted into percentage format and displayed with fixed rounding for clarity.

2. Gauge Visuals for Asset Condition

To communicate technical and financial risk levels, gauges were used to display Asset Vulnerability and Financial Risk on a 0–10 scale. Colour coding (green/yellow/red) allowed for intuitive interpretation without the need for deep technical analysis. This was critical for executive users who require fast, visual cues to determine risk zones across assets.

3. Maintenance Insights

Average monthly counts for XX01 and XX03 were compared using bar charts to highlight the balance between planned and corrective maintenance. Pie charts were used to show cost distribution across XX01, XX02, and XX03. These visuals were further supported by conditional

status indicators (e.g., ✅ / ⚠️), which automatically flagged cases where corrective maintenance exceeded planned efforts, enabling quick identification of potential maintenance inefficiencies.

4. Outage Table using DAX-Driven Matrix

A matrix table was used to display Avg Monthly Defect Count and Open Defect Count across four priority levels (X1–X4) to provide a consolidated view of both historical issue frequency and unresolved backlog. Presenting these metrics in a stacked format allowed users to easily assess the severity and volume of defects by priority level.

5. Executive Summary Generation via DAX

The automated executive insights were created using DAX text measures structured around the "WHAT – SO WHAT – NOW WHAT" model. This aimed to convert complex data into narrative form, guiding users on what the asset's condition is, why it matters and what action should be taken.

These text blocks were displayed using **multi-row card visuals**, allowing vertical alignment and conditional formatting for emphasis (e.g., highlighting "critical defect" or "capital plan required"). Logic trees were implemented using nested IF and SWITCH constructs to vary summary messages based on thresholds and rules.

6. Personalised Titles and Section Headers

Each AMP dashboard displayed a dynamic title incorporating asset type and ID, reinforcing context awareness for users. This enabled seamless switching between different assets via slicer. Header sections were delineated using rectangle shapes and bold fonts to clearly distinguish Lifecycle Cost, Asset Condition, and Maintenance.

7. Interactive Filtering and Scalability through Slicer Integration

To support Secora's goal of a repeatable dashboard architecture, all visuals were configured to respond dynamically to asset selection via slicers. This allowed real-time comparison and analysis without having to build new dashboards for each asset. The slicers were grouped by asset type (e.g., Drill, Crane, Truck) and designed to only show relevant assets for each tab, ensuring clarity and relevance.

3 Implementation

This section details the technical and practical implementation of AMP dashboard using Power BI, based on the dataset extracted from Secora's LMM report. The implementation process was structured around transforming a static dataset into a dynamic, interactive dashboard solution, enabling stakeholders to monitor key asset insights on a single page with minimal interpretation

effort. The approach prioritized modularity, responsiveness, and executive readability, aligning closely with Secora Garage's vision for standardised, scalable asset intelligence.

3.1 Technology Environment and Tool Selection

Power BI was selected as the primary platform for implementing the **Asset Management Plan (AMP)** dashboard due to its strong alignment with Secora Garage's existing technology environment and its capabilities in delivering scalable, interactive business intelligence solutions. Power BI integrates seamlessly with Excel-based datasets, which were essential given that the cleaned and structured project data was maintained in Excel. It also provides powerful **data modelling** functionality through the use of **DAX** (Data Analysis Expressions), allowing for the creation of dynamic measures, conditional formatting, and logic-driven narratives. Compared to **alternatives** such as **Tableau**, Power BI offered superior integration with Microsoft 365 tools, stronger governance control, and greater ease of deployment within enterprise environments like Secora's. Moreover, Secora had already embedded Power BI into their reporting and analysis workflows, making it a natural and **preferred choice** for this project. Its native support for slicers, drill-through filters, responsive visuals, and narrative-driven tools enabled the creation of an intuitive, one-page AMP layout - designed to present critical asset metrics.

3.2 Dashboard Layout and Canvas Structure

The AMP dashboard was designed as a one-page canvas (16:9 aspect ratio), with clearly defined sections corresponding to the mapping developed earlier as outlined in the Methodology section. The layout was informed by principles of data storytelling, user interface design, and operational relevance. The seven key sections were:

1. Title & Header
2. Lifecycle Cost
3. Outages
4. Asset Condition
5. Maintenance Summary
6. Capital Plan Projects
7. Executive Summary

Each section was visually boxed using shapes and alignment guides to maintain consistency across assets. Section labels were fixed using text boxes, and values were displayed using appropriate visuals such as card KPIs, gauges, bar charts, and matrix tables. Consistent font sizes and margin spacing were used to ensure legibility.

A single page design was critical, as it supported the goal of "no lengthy reports" by giving stakeholders a full overview in one glance. This also enabled real-time decision-making without navigation overhead.

3.3 Asset Filtering and Page Dynamism

A core feature of the AMP dashboard was its asset-specific filtering capability, which allowed users to interactively switch between different assets using a slicer based on the **Asset ID + Site Short field**. Once an asset was selected, all visuals on the dashboard including lifecycle cost indicators, condition gauges, outage tables, and executive summaries dynamically updated to reflect the selected asset's profile. This interactivity enabled a single dashboard to function as a reusable template and eliminate the need to build separate reports for each asset. It also directly supported Secora's objective of reducing reporting redundancy and streamlining asset-level analysis.

This approach represented a natural next step from the original LMM dashboard, refining its insights to enable more targeted asset-level decision-making. In the LMM dashboard, assets were clustered into scatter plots or heatmaps, providing a portfolio-level view but making it difficult for users to drill down into a specific asset's details without navigating multiple pages or systems. In contrast, the one-page AMP dashboard provided a focused, asset-centric view that allowed asset managers to quickly assess key metrics such as financial risk, vulnerability, outage trends, and maintenance history for a single asset in isolation.

Additionally, asset filtering was grouped by asset type to enhance interpretability. For example, selecting the "**Drill**" category would limit the slicer to show only drill assets, such as Drill XXYYYY-ZZ. This ensured that stakeholders reviewing a particular class of assets were not distracted by unrelated asset types. Similar dashboards were developed for two other representative asset types "**Crane"** and "**Truck"** ensuring that the filtering logic remained consistent across diverse operational contexts. To demonstrate the flexibility of the AMP dashboard, three distinct asset categories were selected: Fixed Plant (Drill), Infrastructure (Crane), and Mobile Equipment (Truck). This selection was intentional to reflect the diversity of operational and maintenance contexts.

3.4 Technical Implementation of Visual Components

This section explains the technical design and Power BI implementation of the final dashboard visuals, whereas Section 4.2 will summarise the same features from a business-value and user experience perspective with representative screenshot of the working AMP dashboard.

Each section of the One-Page AMP dashboard was implemented using appropriate Power BI visual types, selected for clarity and interpretability.

a. Lifecycle Cost Section

Three key financial indicators such as Estimated Value FY2X, Cost to Replace, and Cost to Repair Open Defects were displayed as **card visuals**. These cards were formatted with dollar values,

consistent decimal precision, and supporting data labels to enhance readability. These indicators help users assess current and projected financial impact. To support executive decision-making, a dedicated **Insight Box** was implemented next to the cards. This text-based box dynamically summarises the implications of the financial metrics using logic-based interpretation. For example, if the **Cost to Repair Open Defects** approaches or exceeds the **Estimated Value FY2X**, the insight box flags this as a potential overinvestment risk, prompting the user to consider capital planning. Similarly, low replacement costs relative to value may indicate cost-effectiveness in retaining the asset.

b. Asset Condition

Asset health was visualised using **dual gauges** - one each for Asset Vulnerability and Financial Risk. Gauges were selected over bar or line charts due to their intuitive dial format, which mimics real-world equipment monitoring.

Risk score ranges were divided into three zones:

- Green (Healthy: 0–5),
- Yellow (Monitor: 5–7), and
- Red (Critical: 7–10).

By aligning condition and financial risk on the same page, this section allowed managers to evaluate technical and economic risk side by side. A traffic light status indicator such as green, yellow and red was derived from threshold rules and displayed in a separate card to simplify interpretation for executive users.

c. Outages

This section was implemented using a **matrix visual**, showing two metrics such as Average Monthly Defect Count and Open Defect Count across four priority levels (X1 to X4). These measures offered insight into both historical defect frequency and unresolved issue backlog. Since the data was in wide format (i.e., separate columns for each priority), synthetic tables and mapping logic were used to transpose the data into a long format suitable for matrix display. This visual group allowed users to assess how well outages were being managed across severity levels.

d. Maintenance Summary

This section focused on maintenance cost distribution using:

- **Bar charts** for average cost per defect priority (P1–P4)
- **Pie charts** for cost breakdown by maintenance type (XX01 – planned, XX02 – preventive, XX03 – corrective)

These visuals provided insight into resource allocation and were crucial for identifying inefficiencies or over-investment in low-priority issues.

e. Capital Plan Projects

This field was displayed using a **card visual**, which dynamically showed the presence (or absence) of any associated capital projects. The rationale was to signal whether the asset had been planned for major upgrades or replacement. If no capital allocation existed for an asset with high condition risk, stakeholders could flag it for urgent planning.

f. Executive Summary

One of the most distinctive features of the AMP dashboard was its automated Executive Summary. It included three structured text boxes:

1. **WHAT** – Describes the asset's current status, such as defect counts, maintenance trends, and risk indicators.
2. **SO WHAT** – Interprets the data, flagging issues such as threshold breaches, rising costs, or reliance on corrective work.
3. **NOW WHAT** – Recommends actions such as defect resolution, capital project consideration, or increased monitoring.

These summaries were tailored for business users who prefer narrative over visuals and allowed interpretation without needing to engage with technical charts. Text blocks were dynamically generated based on underlying data and displayed using aligned card visuals for readability.

3.5 Visual Design Enhancements

To ensure usability and aesthetics, several UI/UX improvements were implemented:

- **Colour Coding:** Used consistently across visuals (e.g., red = risk, green = healthy) to assist at-a-glance interpretation.
- **Shape Boxes:** Rectangle shapes were used to group related visuals under a common section title, enhancing readability.
- **Icons and Labels:** Supplemented with visual cues (🟢, ⚠️, 🔴) and badges (e.g., "Monitor", "Critical") to indicate status clearly.
- **Font Styling:** Header fonts were bolded and sized larger than body text to guide viewer attention.

These design elements made the dashboard both visually appealing and user-friendly.

Overall, the implementation successfully delivered a modular, user-friendly, and insight-rich dashboard tailored to Secora's operational needs.

3.6 Validation and Testing

Validation was carried out through hands-on testing of the AMP dashboard across multiple assets within each selected category - Drill, Crane, and Truck. The primary goal was to ensure that each dashboard section dynamically updated based on the selected asset and accurately reflected the corresponding insights from the dataset.

During internal testing, each section - Lifecycle Cost, Asset Condition, Outages, Maintenance Summary, Capital Plan Projects, and Executive Summary was reviewed to confirm that visuals, narratives, and KPIs responded appropriately to asset selection via slicers. This ensured that the dashboard structure was robust, modular, and data-driven.

A demonstration session was conducted with Secora stakeholders to showcase the dashboard functionality. We walked through individual assets under each category, highlighting how the dashboard adapted dynamically by updating gauges, costs, counts, and executive summaries based on the selected asset. Additionally, filtering at the category level was shown to restrict the view to only the relevant assets within that type (e.g., only Drill), thereby simplifying asset manager navigation and enhancing interpretability.

3.7 Justification of work done

To ensure a consistent and substantial effort across the semester, we followed a structured sprint-based project delivery approach. The sprint planning model was recommended by the client organisation (Secora) and allowed us to pace and monitor our progress through iterative milestones. At the end of each sprint, internal validation sessions were conducted to review progress before proceeding to the next phase.

The table below summarises project activities by sprint:

Week 1-3: Project Planning Phase (Mar 10 – Mar 28)	• Reviewed the project brief and clarified expectations through meetings with Secora stakeholders. • Drafted the initial project plan, deliverables list, and scope documentation. • Conducted background research into Secora's operating context and AMP requirements. • Participated in project kickoff and onboarding activities.
Week 4-5: Sprint 1 (Mar 31 – Apr 11)	• Extracted and cleaned data from the LMM dashboard. • Structured Excel dataset with ~40 key fields across ~40 assets. • Started field derivations and early mappings for Power BI visuals.
Week 6-7: Sprint 2 (Apr 14 – Apr 25)	• Developed Field-to-Section Mapping Document. • Designed core architecture and AMP layout.

	• Developed foundational DAX measures that automates calculation. • Implemented first working AMP prototype for one asset type (Drill).
Week 8-9: Sprint 3 (Apr 28 – May 9)	• Finalised visuals for Asset Condition, Lifecycle Cost, and Outages. • Implemented advanced logic for the Executive Summary. • Extended dashboard to two more asset types (Crane and Truck). • Enhanced visual formatting (conditional cards, traffic light indicators, cost vs value insights).
Week 10-11: Sprint 4 (May 12 – May 23)	• Conducted stakeholder validation sessions and walkthrough demonstrations. • Incorporated feedback on capital plan section, summary logic, and asset filtering • Conducted testing on dynamic filtering and reusability of visuals • Finalised a clean and modular structure.
Week 12-13: Sprint 5 (May 26 – June 6)	• Compiled a comprehensive project report covering methodology, implementation, and deliverables including two detailed appendices: (A) Data Dictionary and (B) Key DAX Logic. • Delivered all required artefacts to Secora (AMP dashboards, source files, supporting documents). • Created the poster, presentation content, and delivered final submission package

Table 1: Sprint Timeline and Key Activities Completed Throughout the Project

4 Final Deliverables

This section summarises the key outputs developed throughout the project and outlines the practical application, alignment with Secora Garage's goals, and value to asset management processes. The deliverables were centred around creating a dynamic, one-page Asset Management Plan (AMP) dashboard for three different asset types - Drill, Crane, and Truck. These deliverables were designed to support scalability, improve decision-making, and offer asset managers a concise and easily interpretable visualisation of asset condition, risk, cost, and maintenance performance metrics.

In addition to the dashboards, the following artefacts were developed and shared with Secora via SharePoint during the final handover:

- **Power BI data files and links** for all three AMP dashboards (Drill, Crane, and Truck)
- A **Field-to-Section Mapping Document**, detailing how each dataset column is tied to a specific dashboard visual or logic element.
- **Snapshot images of key DAX formulas** used to automate logic such as the Executive Summary narratives, insight flags, and conditional formatting and these are included in the **Appendix B – Key DAX Measures and Logic** of this report.
- A **demo** session conducted with Secora stakeholders, showcasing dashboard functionality and walking through dynamic updates, insights, and filtering features across different asset types.
- A **consolidated final project report** documenting the background, methodology, technical implementation, outcomes, and recommendations for production use.

4.1 Dashboard Artefacts

The core deliverable was a set of **three AMP dashboards**, each tailored to a specific asset type:

1. **AMP – Drill**
2. **AMP – Crane**
3. **AMP – Truck**

Each dashboard is built on a unified architecture and dynamically filters data and insights for the selected asset within that category. The dashboards use a consistent layout comprising six key sections: Executive Summary, Lifecycle Cost, Asset Condition, Maintenance Summary, Outages, Capital Plan Projects.

The dashboard visuals include a combination of card KPIs, gauges, matrix tables, pie charts, and bar charts, designed for interpretability and visual appeal. All content is dynamically generated based on the selected asset via a slicer, ensuring modularity and repeatability without additional configuration.

4.2 End-User View and Insight Delivery

A representative screenshot of the working AMP dashboard is provided for visual reference. Each section of the One-Page AMP dashboard is specifically designed to deliver critical operational insights in a visually intuitive format. To maintain **client confidentiality,** asset names and identifiers (e.g., asset ID, site) shown in the dashboard have been **de-identified.** These sections combine quantitative metrics, conditional formatting, and logic-based indicators to support faster, data-informed decisions:

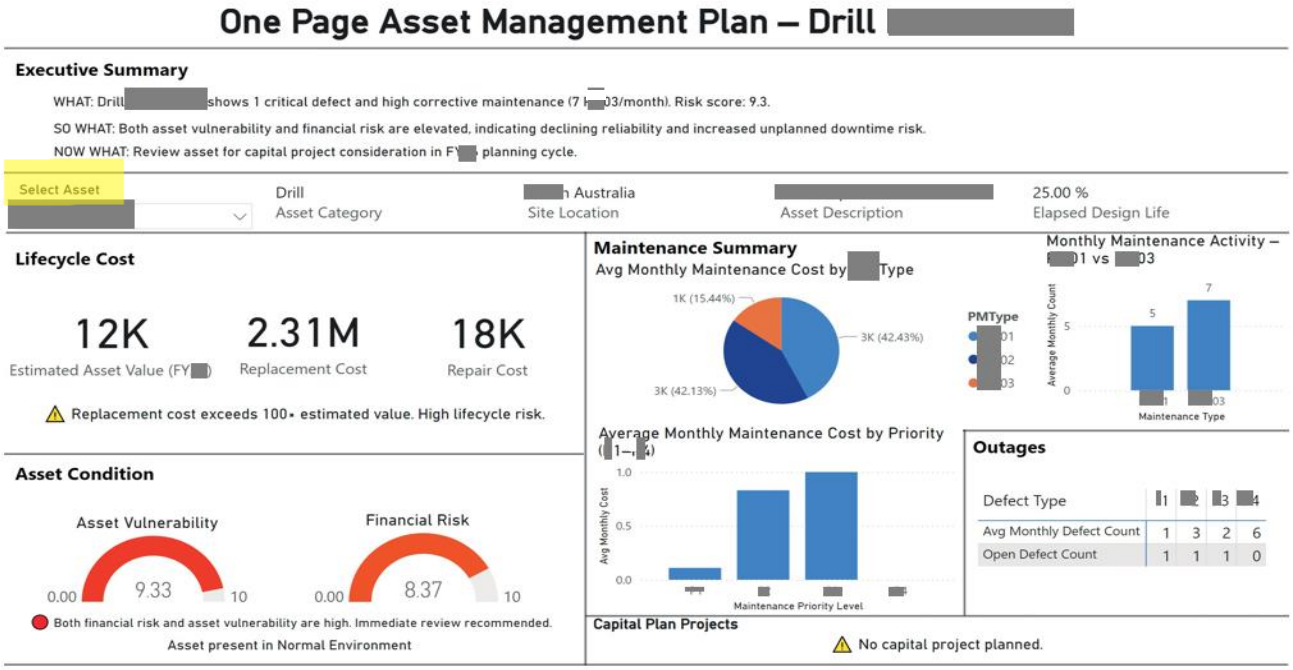


Figure 1: De-identified AMP Dashboard for Asset Drill, showcasing dynamic insights and risk indicators

- **Executive Summary**

  Positioned at the top of the dashboard, this section translates raw metrics into a concise, three-part business narrative: **WHAT, SO WHAT, and NOW WHAT**. It interprets live data on asset defects, maintenance trends, and condition risks, then generates a tailored summary using DAX-driven text logic. This removes the need for stakeholders to manually analyse multiple charts, providing clear and contextual insight.

- **Lifecycle Cost**

  This section displays key financial indicators such as **Estimated Asset Value (FY26), Replacement Cost,** and **Repair Cost** as cleanly formatted card visuals. An adjacent **insight Box** evaluates whether the replacement cost is justified against current value and repair liabilities. In the displayed example, a caution symbol highlights when replacement cost exceeds the asset value by more than 100%, flagging high lifecycle risk.

- **Asset Condition**

  Asset health is assessed using dual gauge visuals for **Asset Vulnerability and Financial Risk**, each mapped to traffic-light colour zones (green = safe, yellow = monitor, red = high risk). Below the gauges, dynamic insight text reinforces key conclusions - for example, indicating whether the asset is in a **harsh operating environment** or requires immediate review due to threshold breaches.

- **Maintenance Summary**

  This section combines a **pie chart** (for **cost distribution** across XX01, XX02, and XX03 maintenance types) with **bar charts** (for **cost breakdown** by defect priority: X1–X4). A secondary bar chart compares XX01 vs XX03 counts, helping asset managers assess the balance between planned and corrective work. In the example, XX03 is higher than XX01, which triggers a maintenance imbalance warning.

- **Outages**

  A matrix table summarises both **Average Monthly Defect Count** and **Open Defect Count across defect priority levels (X1–X4)**. This gives stakeholders a snapshot of unresolved backlog and historical issue frequency.

- **Capital Plan Projects**

  This card visual indicates whether the selected asset is already allocated for capital investment. If no future project is linked, a warning icon prompts decision-makers to review funding needs. This section is closely tied to risk and condition scores, ensuring that high-risk assets without capital planning are not overlooked.

- **Title and Asset Selection Section**
  At the top of the dashboard, the title dynamically updates to reflect the selected asset, displaying both asset type and unique ID (e.g., "One Page Asset Management Plan – Drill XXYYYY-ZZ"). This ensures clarity about which asset's data is currently being reviewed. Just below the Executive Summary, the **Asset Selection** section includes a slicer labeled **"Select Asset"** highlighted by yellow colour in Figure 1, which displays all assets belonging to a specific asset type (e.g., Drill, Crane, Truck). This is achieved by creating separate dashboard tabs for each asset type, with each tab filtered by the **Summary Class** field. As a result, only the relevant assets under the selected category appear in the slicer for that page, simplifying navigation and preventing accidental cross-type selection. Supporting fields such as **Asset Category**, **Site Location**, **Asset Description**, and **Elapsed Design Life** are also shown in this section to provide quick operational context.

4.3 Architecture and Design Consistency

The AMP dashboards were built on a common layout grid and formatting template. A dedicated field-to-section mapping structure was established during the Methodology phase to ensure uniformity in visuals and allow repeatable generation for **any new asset** added to the dataset. This structure ensures that:

- New assets can be onboarded simply by updating the dataset.
- No changes to layout or visuals are required when new rows are added.
- Executive summaries, gauges, and matrices automatically update based on backend data.

This architectural consistency makes the AMP scalable and production-ready with minimal rework, saving both time and report preparation cost.

4.4 Demonstration

A live demonstration was conducted for Secora stakeholders to showcase the dashboard for each of the three asset categories. This session was used to verify the following:

- All sections dynamically updated per asset selection.
- Filtering by asset category correctly narrowed the view to relevant assets only.
- Executive summary responded appropriately to varying asset performance metrics.
- Maintenance, cost, and risk visuals updated correctly per category and asset.

5 Organisational Benefits

The One-Page Asset Management Plan (AMP) dashboards developed in this project provide a range of practical benefits to Secora Garage. Designed with scalability, clarity, and decision-support in mind, the dashboards represent a major improvement over traditional static reports or portfolio-level heatmaps. By enabling asset-specific insights in a compact, consistent format, this solution supports Secora's mission to empower asset-intensive clients with data-driven tools for improved lifecycle planning, risk mitigation, and capital expenditure optimisation.

5.1 Alignment with Secora's Vision

Secora Garage collaborates with clients across the mining, defence, and utilities sectors, aiming to reduce operational risks and optimise capital expenditure by leveraging technologies such as AI, data visualisation, and advanced analytics. The AMP dashboards extend this vision by operationalising data intelligence at the asset level. By providing a scalable and repeatable model for individual asset reporting, these dashboards translate complex datasets into actionable intelligence tailored to stakeholders across technical and executive levels.

Moreover, the AMP structure complements the Lifecycle Management Metric (LMM) framework by bridging the gap between portfolio-level analysis and asset-specific diagnostics, enabling better decisions at the asset level.

5.2 Time and Cost Efficiency

A key organisational benefit is the streamlined reporting process and quicker access to decision-support insights. Traditionally, asset managers and engineers relied on multiple static reports or manual data extraction to evaluate a single asset. The AMP dashboard eliminates this friction by consolidating all relevant metrics such as financial, risk-based, and operational into a single dynamic page that updates automatically based on asset selection.

This consolidation results in the following efficiencies:

- Reduced report preparation time for engineers or analysts.
- Faster review cycles for executives.
- Lower error rates by eliminating manual rework and formatting.
- Repeatable architecture that can scale across hundreds of assets with no redesign effort.

Furthermore, the use of DAX-based logic to auto-generate executive summaries and insights significantly reduces the interpretation burden for decision-makers. By summarising asset issues in plain language (what the issue is, why it matters, and what to do next), the dashboard shortens the time between data access and action.

5.3 Improved Asset Decision-Making

Another key benefit is enhanced visibility into asset health and performance. The AMP dashboards provide critical insights to support decision-making at the individual asset level by:

- Highlighting high-risk or underperforming assets through gauges and conditional formatting.
- Offering immediate comparison between maintenance costs and capital exposure.
- Visualising maintenance backlog and defect severity using XX indicators.
- Flagging capital plan mismatches (e.g., high-risk assets with no upcoming funding).

These features support smarter resource prioritisation, timely intervention, and more effective capital planning. For example, an asset showing high corrective maintenance (XX03), rising X1 defects and no capital allocation would immediately stand out in the AMP dashboard, allowing Secora's clients to take corrective action before costly failure occurs.

5.4 Scalability and Reusability

The architecture of the AMP dashboards was designed with a focus on repeatability. A field-to-section mapping document was created and shared with Secora to ensure that the model can be reused as new asset types or categories are introduced in the future. As a result:

- The dashboard does not require rework when datasets grow in size.
- Existing DAX logic scales with new assets without modification.
- Easy replication of dashboards across new asset categories by filtering on Summary Class.

This scalable approach reduces long-term maintenance effort and cost and supports Secora's ambition to offer templated asset intelligence tools to its clients across industries.

6 Challenges and Resolutions

The development and delivery of the One-Page Asset Management Plan (AMP) dashboards presented a range of challenges beyond technical implementation. As a project delivered within a real-world organisational context, success depended on developing effective dashboards while also navigating unfamiliar environments, tools, stakeholder expectations, and communication routines. This section outlines five major challenges encountered during the project and the steps taken to overcome them.

6.1 Challenge 1: Understanding the Organisation and Operating Context

Problem:
At the start of the project, one of the key challenges was understanding the operational structure of Secora Garage, including their communication practices, collaboration tools, and how projects are typically planned and delivered within the organisation. As an external student team, we were not familiar with the internal workflows, tools such as Microsoft Outlook for scheduling, Planner for sprint planning, or SharePoint for file management. Additionally, it was necessary to quickly grasp the industry context in which Secora's clients operate specifically in mining, defence, and utilities to build dashboards that were not only functional but also meaningful for their use cases.

Resolution:
To address this, we scheduled introductory meetings with key stakeholders to gain insight into their work culture, tools, and reporting practices. We adapted quickly by aligning with their preferred platforms: using Outlook for all meeting communication and calendar events, Microsoft Teams for day-to-day updates, **Planner** for sprint task tracking, and **SharePoint** for centralized documentation and file sharing. This ensured smooth collaboration and prevented project artefacts from being stored in unsecured or inaccessible locations. Additionally, time was spent reviewing

publicly available material on asset-intensive industries to understand client expectations, enabling us to better align our deliverables with industry needs.

6.2 Challenge 2: Interpreting Complex Dataset and Data Architecture

Problem:
The project was initiated using a raw extract from the Lifecycle Management Metric (LMM) report - a dataset containing a large number of operational metrics. Understanding the meaning of each column, its relevance to asset performance, and how metrics tied together in the broader architecture was not immediately clear. There was also no accompanying data dictionary or schema, which initially made interpretation slow and prone to errors.

Resolution:
Stakeholder consultations helped us validate the role of key variables such as Cost to Repair, Elapsed Design Life, and Asset Vulnerability. Based on this, we created a Field-to-Section Mapping Document, detailing how each variable feeds into dashboard components. This document was also shared on SharePoint to assist in future. Understanding this data structure early on was crucial to ensuring the AMP dashboards produced meaningful, interpretable outputs aligned with operational insights.

6.3 Challenge 3: Learning and Applying Power BI from Scratch

Problem:

Although both team members had academic exposure to Tableau as part of coursework, neither had prior hands-on experience with Power BI before the commencement of this project. The platform's learning curve particularly in areas such as DAX formula writing, dynamic filtering, visual interactivity, and layout design, posed a significant challenge at the start.

Resolution:
We invested time in self-directed learning through Microsoft tutorials, documentation, and community forums. Practice dashboards were developed to test different visual types, DAX measures, and slicer configurations before applying them to the final AMP solution. By gradually building confidence in Power BI, we were able to implement advanced features such as gauge visuals, insight boxes, executive summary automation, and matrix tables for outages. The learning process was both rapid and practical, with knowledge immediately applied to solve real-world project needs.

6.4 Challenge 4: Designing a Cohesive One-Page Layout

Problem:
Translating a diverse dataset into a single-page dashboard presented a unique design challenge. The layout needed to accommodate multiple sections including cost, condition, maintenance, outages, and executive summary - all while maintaining clarity, avoiding visual clutter, and

supporting real-time interaction via asset selection. Condensing all insights into a single page without compromising usability or clarity was a significant challenge.

Resolution:
We adopted a layout planning approach using Power BI's grid system and shapes to organise and separate visual sections clearly. Each section was boxed and aligned to a unified 16:9 canvas structure. Font sizes, icon styles, and color-coding were standardised to enhance visual consistency. Placeholder logic was used for assets with missing fields to avoid blank visuals or misalignment. The final result was a balanced, user-friendly layout that retained core functionality while fitting critical insights into a single screen - one of the core goals of the AMP dashboard.

6.5 Challenge 5: Managing Communication with Time-Constrained Stakeholders

Problem:
Working with a professional organisation meant adjusting to the reality that stakeholders often had limited availability due to client meetings, workshops, and travel. This sometimes led to delays in receiving feedback or scheduling critical review sessions, particularly when coordinating with senior team members.

Resolution:
We addressed this challenge by proactively planning all meetings through Outlook well in advance and confirming availability via Teams. Agendas were shared ahead of time, and meetings were kept concise and targeted. Additionally, key deliverables were supplemented with screenshots and explanatory notes to enable asynchronous review if stakeholders were unavailable for live sessions. This ensured the project stayed on track despite availability constraints and allowed us to secure meaningful feedback at key points in the development cycle.

Overall, the challenges encountered during the AMP dashboard project provided valuable real-world learning experiences in stakeholder engagement, technical problem-solving, and adaptive project delivery. Each challenge was addressed with a solution that strengthened the final product and enhanced team capability. Working within an unfamiliar organisational environment, learning new tools quickly, and delivering a business-ready solution benefited Secora Garage and provided a valuable professional development opportunity for the team.

7 Recommendations & Next Steps

Based on our implementation experience, testing outcomes, and stakeholder feedback, the following recommendations are proposed to strengthen long-term value and support production readiness.

7.1 Recommendations Based on Project Work

1. Merge Three Dashboards into a Unified, Tab-Driven Template

Currently, we have developed three separate AMP dashboards filtered by Summary Class—each hosted on its own page (Drill, Crane, Truck). For production rollout, we recommend consolidating them into a single Power BI file using tab-level filters or a universal slicer that adjusts content by asset type. This reduces file management effort and promotes consistency across dashboards.

2. Replace Excel Input with Automated Data Feeds

All dashboards were built using cleaned Excel datasets that had to be manually uploaded and refreshed. For operational use, this should be replaced with a dynamic data connection—e.g., to a SharePoint-hosted source or integrated system (SAP, historian, etc.). Power BI's scheduled refresh or Power Query can help automate this process, improving reliability and reducing manual errors.

3. Expand Business Logic Behind Executive Summary and Insights

In this project, insight boxes and executive summaries were generated using custom DAX conditions (e.g., XX03 > XX01 → "Corrective overload"), which we defined based on threshold logic and stakeholder suggestions. We recommend formalizing and expanding this rule set in collaboration with industry partners. This would make the narrative logic more robust and tailored to industry-specific interpretations.

4. Maintain Reusable Logic via a Documentation Package

As part of our final handover, we have prepared and shared:

- Power BI files for each AMP dashboard
- Field-to-Section Mapping Document in SharePoint
- Key DAX logic snapshots (included in the appendix)

To streamline future development, this documentation package should be maintained as a baseline template for additional asset types or client-specific deployments.

7.2 Next Steps – Productionising the AMP Dashboards

If the solution were to be productionised for live client environments, the following steps are recommended:

Step 1 – Build Live Data Integration

Integrate Power BI directly with structured data repositories such as SharePoint, SQL Server, or Snowflake to enable real-time or scheduled refreshes. This would eliminate reliance on Excel exports and ensure dashboards remain current and reliable across asset portfolios.

Step 2 – Parameterise for Scalability

Introduce Power BI parameters or dynamic filters based on the Summary Class so users can toggle between asset types or client portfolios within a single interface, without needing to switch tabs or files. This avoids maintaining separate tabs or files and enhances usability in broader deployments.

Step 3 – Set Up Governance and Ownership

Assign a dedicated owner (e.g., data analyst or asset engineer) responsible for maintaining the dashboard, validating new data, and handling version control. Additionally, a shared documentation space (e.g., in SharePoint) should be created to log future enhancements, known issues, and logic changes (like DAX adjustments) are logged for transparency and continuity.

Step 4 – Pilot Rollout with Feedback Loop

Before full-scale deployment, initiate a pilot phase with a selected client site or department. Gather feedback on usability, performance, and the relevance of each dashboard section. Adjust visuals, logic, or narratives based on real-world user input. This iterative testing approach ensures alignment with business needs and improves user adoption.

By implementing these steps, the AMP dashboard can evolve into a scalable reporting product that aligns with Secora's long-term strategy for data-informed asset planning.

8 Reflection

This project marked our first experience working within a professional organisational environment in Australia, where we adapted to Secora's professional culture and tools, including Outlook for formal communication, SharePoint for documentation, and Microsoft Planner for sprint planning. Operating within a structured workflow taught us how to plan tasks effectively, maintain accountability, and meet deadlines. Collaborating with new people in a workplace setting helped build our confidence and gave us a realistic view of how projects are executed in industry.

Prior to this project, we had no experience with Power BI, having only worked with Tableau during our university coursework. Learning DAX formulas, implementing dynamic filters, and structuring visuals for executive reporting was initially challenging but ultimately rewarding. Working with a live business dataset added a layer of complexity, requiring us to fully understand the meaning and relationships of each variable. Interpreting real asset management data rather than academic samples sharpened our analytical thinking and taught us the importance of context when designing decision-support tools.

Collaborating with a company that supports asset-intensive clients in mining and defence exposed us to meaningful, high-impact work. Being entrusted with responsibility for a deliverable that could be scaled or reused in a real-world setting was both motivating and validating. Overall, this hands-on experience strengthened our technical, communication, and project management skills, and provided valuable insight into how data science and visualisation can address real-world operational challenges.

9 Conclusion

This capstone project set out to address a clear challenge: Secora Garage required a scalable and easy-to-interpret solution to communicate asset-level risk, cost, and condition insights capabilities not fully supported by their existing Lifecycle Management Metric (LMM) heatmap. Our solution was the design and development of a dynamic, one-page Asset Management Plan (AMP) dashboard in Power BI, tailored for three key asset categories: Drill, Crane, and Truck. Each dashboard consolidates key performance indicators, automated narratives, and conditional insights into a single interface that dynamically updates per asset, thereby aligning with Secora's goal of reducing manual effort and improving decision latency.

Beyond technical outcomes, the project provided valuable professional development - exposing us to real-world data, cross-functional communication, agile planning, and corporate tools. All core objectives outlined at the project's inception were successfully achieved. We developed a modular, data-driven dashboard that dynamically updates based on asset selection. We integrated logic-driven executive summaries, cost-risk visuals, and maintenance analytics into a single-screen format. Supporting documentation including the field-to-section mapping, DAX logic snapshots, and user demo was prepared to ensure transparency and reusability. Our work aligned with agile principles through the use of sprint planning and iterative feedback to refine the solution based on stakeholder input.

More broadly, the project has equipped Secora with a reusable and scalable dashboarding framework that can be extended to additional assets or client environments with minimal overhead. Professionally, this project offered us hands-on exposure to enterprise data environments, stakeholder engagement, and Power BI development deepening our technical capabilities and appreciation of applied data science in real-world contexts.

10 REFERENCE

1. Secora. (2025). *Secora Garage*. https://www.secora.com.au/company

2. Secora Garage. (2025). *One-page asset management plan – Drill XXYYYY-ZZ [Power BI dashboard]*. Internal report. https://app.powerbi.com/groups/me/reports/c83b91d8-8d34-4538-9a51-65fffc32ca46/d25c8f3e091918018934?ctid=ef392155-82e9-4e8d-8e8f-276e93247b23&experience=power-bi&clientSideAuth=0

Note. Internal report; access requires client login credentials.

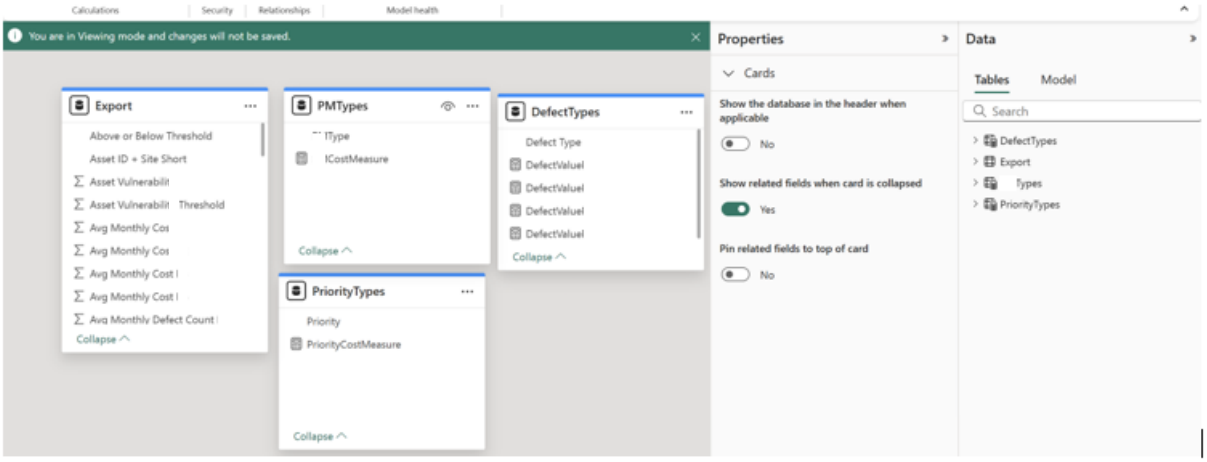
11 Appendix

11.1 Appendix A – Data Dictionary

Field Name	Description
LMM Sample ID	Unique identifier for the LMM sample record.
LMM ID	Identifier linked to the Lifecycle Management Metric report.
Asset ID + Site Short	Combined field showing the asset identifier and site location.
Financial Risk Threshold	Benchmark threshold for financial risk score.
Asset Vulnerability Threshold	Benchmark threshold for technical condition risk.
Above or Below Threshold	Flag indicating whether the asset exceeds defined vulnerability thresholds.
Asset Vulnerability	Risk score based on the asset's physical or functional condition (0–10).
Financial Risk	Risk score representing financial exposure or replacement impact (0–10).
Capital Plan Projects	Indicates whether capital projects are planned or approved for the asset.
Est Value FY2X (USD)	Estimated asset value forecasted for FY2X.
Cost To Replace (USD)	Replacement cost estimation in USD.
Cost To Repair Open Defects	Total cost estimate to address currently open defects.
Summary Class	Categorical asset classification (e.g., Drill, Crane, Truck).
Operation	Business unit or function where the asset is operated.
Description	Text description of the asset.
Elapsed Design Life	Number of years the asset has been in operation relative to its design life.
Harsh Environment	Boolean flag indicating if the asset operates in challenging environmental conditions.
Level of Service	Internal classification used for operational or service-critical assets.
Avg Monthly XX01 Count	Average monthly count of planned maintenance work orders (XX01).
Avg Monthly XX03 Count	Average monthly count of corrective maintenance work orders (XX03).
Avg Monthly Defect Count X1–X4	Average monthly defect counts per priority level (X1 = highest, X4 = lowest).
Open Defect Count X1–X4	Current unresolved defect counts per priority level.
Open XX01 Count	Current open planned maintenance (XX01) work orders.
Avg Monthly XX01/XX02/XX03 Cost	Average monthly cost for each maintenance type.
Avg Monthly Cost X1–X4	Average monthly maintenance cost by defect priority level.
Cost To Repair Open Defects	Cost estimate to resolve all unresolved defects for the asset.

Table 2: Data Dictionary

11.2 Appendix B – Key DAX Measures and Logic



XXTypes

```
1  Types = DATATABLE(
2      "IType", STRING,
3      {
4          {"101"},
5          {"102"},
6          {"103"}
7      }
8  )
```

```
1  ICostMeasure =
2  SWITCH(
3      SELECTEDVALUE(F[...].[...Type]),
4      "101", SELECTEDVALUE('Export'[Avg Monthly ... 1 Cost]),
5      "102", SELECTEDVALUE('Export'[Avg Monthly ... 2 Cost]),
6      "103", SELECTEDVALUE('Export'[Avg Monthly ... 3 Cost]),
7      BLANK()
8  )
```

Priority Types

```
Priority
    "Priority", STRING,
    { {"                4"} }
)
```

```
PriorityTyp
    "Priority", STRING,
    { {"                "} }
)
```

```
PriorityCostMeasure =
SWIT   (
    !  LECTEDVALUE(PriorityTypes[Priority]),
       L", SELECTEDVALUE('Export'[Avg Monthly Cost  1])
       2", SELECTEDVALUE('Export'[Avg Monthly Cost  2])
       3", SELECTEDVALUE('Export'[Avg Monthly Cost  3]),
    " 4", SELECTEDVALUE('Export'[Avg Monthly Cost  4]),
    BLANK()
)
```

Defect Types

```
DefectTypes = DATATABLE(
    "Defect Type", STRING,
    { {"Avg Monthly Defect Count"}, {"Open Defect Count"} }
)
```

```
DefectValue 1 =
SWITCH(
    SELECTEDVALUE(DefectTypes[Defect Type]),
    "Avg Monthly Defect Count", SELECTEDVALUE('Export'[Avg Monthly Defect Count  1]),
    "Open Defect Count", SELECTEDVALUE('Export'[Open Defect Count  _])
)
```

```
DefectValue 2 =
SWITCH(
    SELECTEDVALUE(DefectTypes[Defect Type]),
    "Avg Monthly Defect Count", SELECTEDVALUE('Export'[Avg Monthly Defect Count  2]),
    "Open Defect Count", SELECTEDVALUE('Export'[Open Defect Count  2])
)
```

```
DefectValue 3 =
SWITCH(
    SELECTEDVALUE(DefectTypes[Defect Type]),
    "Avg Monthly Defect Count", SELECTEDVALUE('Export'[Avg Monthly Defect Count  3]),
    "Open Defect Count", SELECTEDVALUE('Export'[Open Defect Count  3])
)
```

```
DefectValue 4 =
SWITCH(
    SELECTEDVALUE(DefectTypes[Defect Type]),
    "Avg Monthly Defect Count", SELECTEDVALUE('Export'[Avg Monthly Defect Count  4]),
    "Open Defect Count", SELECTEDVALUE('Export'[Open Defect Count  4])
)
```

Other Important and Insight DAX measures

```
AMP_Title =
"One Page Asset Management Plan – " &
SELECTEDVALUE('Export'[Summary Class], "Unknown") & " " &
SELECTEDVALUE('Export'[Asset ID + Site Short], "")
```

```
AssetConditionCombinedInsight =
VAR Risk = SELECTEDVALUE('Export'[Financial Risk])
VAR Vuln = SELECTEDVALUE('Export'[Asset Vulnerability])

RETURN
SWITCH(
    TRUE(),
    ISBLANK(Risk) || ISBLANK(Vuln),
        "⚪ Data unavailable for condition assessment.",

    Risk > 5 && Vuln > 5,
        "🔴 Both financial risk and asset vulnerability are high. Immediate review recommended.",

    Risk > 5 && Vuln <= 5,
        "🟠 Financial risk is elevated. Monitor cost drivers and asset age.",

    Risk <= 5 && Vuln > 5,
        "🟡 Vulnerability is elevated. Watch for potential condition-related failures.",

    Risk <= 5 && Vuln <= 5,
        "🟢 Asset condition is healthy. No immediate action required.",

    "⚠️ Condition unclear."
)
```

```
CapitalPlanMessage =
VAR Plan = SELECTEDVALUE('Export'[Capital Plan Projects])
RETURN
IF(
    ISBLANK(Plan),
    "⚠️ No capital project planned.",
    "✅ Capital Plan: " & Plan
)
```

```
Executive_NowWhat =
VAR HasNoCapitalPlan = ISBLANK(SELECTEDVALUE('Export'[Capital Plan Projects])) || SELECTEDVALUE
('Export'[Capital Plan Projects]) = "None"
VAR HighDefects = SELECTEDVALUE('Export'[Open Defect Count  1], 0) + SELECTEDVALUE('Export'[Open
Defect Count | 2], 0) > 5

RETURN
 NOW WHAT: " &
IF(HasNoCapitalPlan && HighDefects,
    "Initiate capital planning and priori
    IF(HasNoCapitalPlan,
        "Review asset for capital project                                    /cle.",
        IF(HighDefects,
            "Focus on addressing outstand                                    ability.",
            "Maintain monitoring; no imme
        )
    )
)
```

```
1  Executive_SoWhat =
2  VAR Vulnerability = SELECTEDVALUE('Export'[Asset Vulnerability], 0)
3  VAR FinancialRisk = SELECTEDVALUE('Export'[Financial Risk], 0)
4  VAR I                        port'[Avg Monthly    3 Count], 0)
5  VAR I                        port'[Avg Monthly    1 Count], 0)
6  VAR I
7
8  VAR HighVulnerability = Vulnerability > 5
9  VAR HighRisk = FinancialRisk > 5
10
11 RETURN
12 "SO WHAT: " &
13 SWITCH(
14     TRUE(),
15     ISBLANK(Vulnerability) || ISBLANK(FinancialRisk),
16         "Condition metrics are unavailable; unable to determine asset risk status.",
17
18     HighVulnerability && HighRisk,
19         "Both asset vulnerability and financial risk are elevated, indicating declining reliability
           and increased unplanned downtime risk.",
20
21     HighVulnerability,
22         "Asset vulnerability is high, suggesting condition-based degradation and potential failure
           risk.",
```

```
Executive_What =
"WHAT: " & SELECTEDVALUE('Export'[Summary Class], "[Type]") & " " &
SELECTEDVALUE('Export'[Asset ID + Site Short], "[Asset]") &
" shows " & INT(SELECTEDVALUE('Export'[Open Defect Count  1], 0)) &
" critical defect and high corrective maintenance (" &
INT(SELECTEDVALUE('Export'[Avg Monthly    )3 Count], 0)) &
"   03/month). Risk score: " &
IF(ISBLANK(SELECTEDVALUE('Export'[Asset Vulnerability])), "N/A", FORMAT(SELECTEDVALUE('Export'[Asset
Vulnerability]), "0.0")) & "."
```

```
GaugeColor_Vuln =
VAR Vuln = SELECTEDVALUE('Export'[Asset Vulnerability])
VAR VulnThresh = SELECTEDVALUE('Export'[Asset Vulnerability Threshold])
RETURN
IF(ISBLANK(Vuln) || ISBLANK(VulnThresh), "#A9A9A9",  // gray if missing
    IF(Vuln > VulnThresh, "#FF5C5C", "#4CAF50")       // red vs green
)
```

```
HarshEnvironment_Label_Measure =
VAR Harsh = SELECTEDVALUE('Export'[Harsh Environment])
RETURN
SWITCH(
    TRUE(),
    ISBLANK(Harsh), "Unknown",
    Harsh = 1, "Asset present in Harsh Environment",
    Harsh = 0, "Asset present in Normal Environment",
    "Unknown"
)
```

```
LifecycleInsight =
VAR Ratio = [ReplacementToValueRatio]
RETURN
SWITCH(
    TRUE(),
    ISBLANK(Ratio), "Data unavailable for lifecycle cost insight.",
    Ratio > 100, "⚠️ Replacement cost exceeds 100× estimated value. High lifecycle risk.",
    Ratio > 10, "🟡 Replacement cost is high relative to asset value. Monitor and plan.",
    "🟢 Lifecycle costs are within acceptable range."
)
```

```
LifecycleStatus =
VAR Ratio = [ReplacementToValueRatio]
RETURN
SWITCH(
    TRUE(),
    ISBLANK(Ratio), "Gray",
    Ratio > 100, "Red",
    Ratio > 10, "Yellow",
    "Green"
)
```

```
MaintenanceInsight =
VAR                DVALUE('Export'[Avg Monthly PM01 Count])
VAR                DVALUE('Export'[Avg Monthly PM03 Count])
RETL
SWI1

                   || ISE  NK(PM03), "Data un    ilable for maintenance insight.",
                   ⚠ Co  ective maintenance    03) is higher than planned (  01).",
                   ✅ Planned maintenance (I  1) is higher than corrective (  03)",
                    counts are equal. Maintenance effort is balanced."
)
```

```
PMCountMeasure =
SWITCH(
    SELECTEDVALUE(          Type]),
    "  01", [  01_Count],
    "  03", [  03_Count],
    BLANK()
)
```

```
1  PriorityCosts =
2  VAR Cost  1 = SELECTEDVALUE('Export'[Avg Monthly Cost  1])
3  VAR Cost  2 = SELECTEDVALUE('Export'[Avg Monthly Cost  2])
4  VAR Cost  3 = SELECTEDVALUE('Export'[Avg Monthly Cost  3])
5  VAR Cost  4 = SELECTEDVALUE('Export'[Avg Monthly Cost  4])
6
7  RETURN
8  UNION(
9      ROW("Priority", "  1", "Cost", Cos   ),
10     ROW("Priority", "  2", "Cost", Cos   ),
11     ROW("Priority", "  3", "Cost", Cos   ),
12     ROW("Priority", "  4", "Cost", Cos   )
13 )
```

```
ReplacementToValueRatio =
DIVIDE(
    SELECTEDVALUE('Export'[Cost To Replace (USD)]),
    SELECTEDVALUE('Export'[Est Value FY^^ (USD)]),
    BLANK()
)
```