**1. Functional Requirements (FR)**

**FR1 – User Management**

* **FR1.1** The system shall allow users (engineers, managers, admins) to log in using a username and password.
* **FR1.2** The system shall allow engineers to create an account (Sign Up) with their full name, email, and password.
* **FR1.3** The system shall identify the logged-in user and display their name and role in the application header.
* **FR1.4** The system shall restrict functionality based on user roles (e.g., managers can review reports, engineers can only submit inspections).

**FR2 – Site and Zone Selection**

* **FR2.1** The system shall allow engineers to select a site (e.g., “Unit 20”).
* **FR2.2** The system shall allow engineers to select a zone (e.g., “First Floor”, “Rear”) within the chosen site.
* **FR2.3** The system shall ensure only zones belonging to the selected site are displayed.

**FR3 – Inspection Type Selection**

* **FR3.1** The system shall allow engineers to select an inspection category:
  + Facility Checks (e.g., Emergency Lights, Fire Doors)
  + Machine Safety Checks (e.g., Die-Cut Machine, Finishing Machine)
* **FR3.2** The system shall dynamically load available inspection types based on the selected category.

**FR4 – Performing an Inspection**

* **FR4.1** The system shall load the appropriate checklist based on the selected inspection type.
* **FR4.2** The system shall display subchecks dynamically, based on machine type or facility type.
* **FR4.3** The system shall allow the engineer to record outcomes for each sub check:
  + Boolean (Pass/Fail or Yes/No)
  + Numeric (e.g., readings, measurements)
* **FR4.4** The system shall allow the engineer to add an optional comment for each sub check.
* **FR4.5** The system shall allow attaching optional photos as evidence.
* **FR4.6** The system shall automatically calculate the overall inspection result (Pass only if all mandatory subchecks pass).
* **FR4.7** The system shall allow the engineer to submit and save the completed inspection.

**FR5 – Inspection Review and Reporting**

*(Prototype may skip this, but include for completeness and TM470 future scope)*

* **FR5.1** The system shall allow managers to view all completed inspections filtered by date, site, or inspector.
* **FR5.2** The system shall allow managers to view inspection details, including comments and photo evidence.
* **FR5.3** The system shall allow exporting inspection results (PDF or Excel). *(future scope)*

**FR6 – Notifications (Optional/Future)**

* **FR6.1** The system shall notify managers when a critical inspection fails.
* **FR6.2** The system shall allow engineers to view system notifications (e.g., scheduled inspections, overdue checks).

**2. Non-Functional Requirements (NFR)**

**NFR1 – Usability**

* **NFR1.1** The system shall provide a tablet-friendly interface with touchscreen-optimised controls.
* **NFR1.2** The system shall use clear labels and colour coding (e.g., Green = Pass, Red = Fail).

**NFR2 – Performance**

* **NFR2.1** Forms shall load in under 3 seconds.
* **NFR2.2** Saving an inspection shall take no more than 2 seconds.

**NFR3 – Security**

* **NFR3.1** Only authenticated users shall access the system.
* **NFR3.2** Data shall be encrypted during transmission (future online implementation).

**NFR4 – Reliability**

* **NFR4.1** The system shall prevent data loss if a device loses connection (local saving before sync).

**NFR5 – Maintainability**

* **NFR5.1** The system shall allow new inspection types and subchecks to be added without code changes (dynamic from database).

**3. Actors**

* **Engineer** – performs inspections, submits forms.
* **Manager** – reviews inspection results, approves or escalates failures.
* **Admin (future)** – manages users, updates sub check definitions.

**4. Key Use Cases (Overview)**

1. **Log in**
2. **Sign up (Engineer)**
3. **Select Site and Zone**
4. **Select Inspection Type**
5. **Complete Inspection Form** *(main use case)*
6. **Attach Photos**
7. **Save Inspection**
8. **Review Completed Inspections (Manager)**