**User Requirements Document (URD)**

**Maintenance Routine Checks Application**

**1. Introduction**

**1.1 Background**

The maintenance team relies on paper forms to perform and record facility, routine safety and compliance checks. This approach is inefficient, error-prone, and limits traceability. To modernise and digitise this process, a Maintenance Routine Checks Application will be developed. This application will support the digital recording, scheduling, and reporting of routine **Facility Checks**, as well as **Machine Safety Checks,** replacing the current paper-based system.

**1.2 Document Overview**

This User Requirements Document defines the intended features, behaviours, and constraints of the application, including user roles, functional and non-functional requirements, scheduling logic, and data input mechanisms. It is intended for the development team, stakeholders, quality assurance, and compliance auditors.

**2. Purpose**

The purpose of this application is to:

* Digitise the existing paper-based routine facility maintenance checks
* Improve compliance, traceability, and data quality
* Enable quicker access to historical records
* Automate check scheduling, alerts, and pass/fail logic
* Provide photographic and comment-based evidence for each check

**3. Scope**

**3.1 In-Scope**

* Facility maintenance checks (10 check types as outlined)
* Windows desktop application
* Data entry via forms with logic-based validation
* Role-based access and permissions
* Attachments (images, comments)
* Automated pass/fail results
* Monthly/semi-annual/annual scheduling and reminders

**3.2 Out-of-Scope**

* Mobile version (handled separately)
* Machine Safety Checks (covered in a separate document)
* Integration with external maintenance systems (e.g., CMMS)

**4. Functional Requirements**

Each facility check is defined with its fields, input methods, pass/fail logic, and scheduling frequency.

**4.1 Bio Waste Plant Check**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto-filled |
| unit | dropdown |
| comment | Text field |
| annualService | Slide button (YES/NO), Date picker |
| annual Emptying | Slide button (YES/NO), Date picker |
| subChecksGroup | Slide button (Pass/Fail) |
| userInitials | From user login |

**Logic**: Pass if all sub-checks are marked OK, except "Annual Service" and "Annual Emptying" which can be pending.

**4.2 Emergency Lights Check**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto-filled |
| unit | Dropdown |
| zone | Dropdown |
| switchLocation | Dropdown |
| lightId | Dropdown |
| lightType | Dropdown |
| location | Dropdown |
| standardTest | slide button: Pass/Fail |
| threeHrTest | slide button: Pass/Fail |
| comment | Text field |
| userInitials | from user login |

**Logic**: Pass only if both sub-checks are pass.

**4.3 Fire Doors Check**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto-filled |
| unit | Dropdown |
| location | Dropdown |
| description | Dropdown |
| userInitials | Auto from login |
| comment | Text |
| Photo | Upload (jpg/png) |
| subChecksGroup | slide buttons for each (Pass/Fail) |

**Logic**: Pass only if all sub-checks pass.

**4.4 Fire Extinguishers Check**

Same structure and logic as Fire Doors Check.

**4.5 Floodlights Check**

| **Field** | **Input Method** |
| --- | --- |
| lightID | Dropdown |
| unit | Dropdown |
| location | Dropdown (front/back/sides) |
| comments | Text |
| photo | Upload |
| userInitials | Auto from login |

**Frequency**: Semi-annual (May and December)

**4.6 Meter Readings Record**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto-filled |
| unit | Dropdown |
| meterType | Dropdown: Water / Electricity / Gas |
| meterReading | Number input |
| importKVAH | Number input |
| importKWh | Number input |
| exportKWh | Number input |
| dayKWh | Number input |
| nightKWh | Number input |
| comment | Text input |
| userInitials | auto completed from login |

**Logic**: Read-only validation (editable logic to be defined later).

**4.7 Ladder Log Check**

| **Field** | **Input Method** |
| --- | --- |
| ladderReference | Text |
| unit | Dropdown |
| location | Text |
| description | Text |
| comment | Text |
| userInitials | Auto completed from login |
| subChecksGroup | slide: OK/Fail |

**Frequency**: Semi-annual (May/December)  
**Logic**: Pass only if all sub-checks are OK.

**4.8 Legionella Check**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto |
| unit | Dropdown |
| location | Text |
| testType | Dropdown: Temperature / Flushing |
| item | Dropdown |
| comment | Text |
| photo | Upload |
| userInitials | Auto |
| subChecksGroup | Slide buttons (Pass/Fail) based on testType |

**Logic**:

* Temp: Hot >50°C, Cold <20°C
* Flushing: All checks must pass  
  Fail any = Fail

**4.9 Racking Inspection**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto |
| unit | Dropdown |
| location | Text |
| comment | Text |
| photo | Upload |
| userInitials | Auto |
| subChecksGroup | Dropdown: Red / Amber / Green |

**Logic**: Any Red/Amber = Fail. All Green = Pass.

**4.10 Rodent Bait Check**

| **Field** | **Input Method** |
| --- | --- |
| Box No | Number input |
| Unit | Dropdown |
| Location | Text |
| Type | Dropdown: Internal / External |
| Rodent | Dropdown: Mouse / Rat |
| Bait Code | Dropdown: A, N, RM, R, OK |
| subChecksGroup | subChecksGroup |

**Logic**:

* Codes "A", "N", "RM", "R", "OK" = Active status
* Only "OK" = Pass
* Anything else = Fail

**4.11 Machine Monthly Safety Check**

**Fields & Input**

| **Field** | **Input Method** |
| --- | --- |
| date | Auto-filled |
| machineType | Dropdown: Print, Die-Cut, Finishing Bespoke, Finishing |
| machineName | Text or searchable dropdown (predefined list) |
| subChecksGroup | Slide buttons (Pass/Fail) — dynamically rendered per Machine Type |
| result | Auto-calculated (Pass/Fail based on sub-checks) |
| comments | Text field (optional unless a failure occurs) |
| imageAttachment | Upload field (JPG/PNG, max 10MB) |
| userInitials | Auto-filled from user login initials |

**Sub-checks & Logic – machine monthly safety checks**

| **Sub-check** | **Applies to** | **Input** |
| --- | --- | --- |
| Function test all E-stops | All types | Slide (Pass/Fail) |
| Function test gate switches | All types | Slide (Pass/Fail) |
| Function test light guards | All types | Slide (Pass/Fail) |
| Function test pull cords | All types | Slide (Pass/Fail) |
| Function test bump stop table lift | Die-cut only | Slide (Pass/Fail) |
| Function test stacker drop stops | Print only | Slide (Pass/Fail) |
| Stacker chocks engage | Print only | Slide (Pass/Fail) |
| Traffic lights working | Print only | Slide (Pass/Fail) |
| Master panel-key working | All types | Slide (Pass/Fail) |
| Bump stop working | All types | Slide (Pass/Fail) |
| Function test knee bar | All types | Slide (Pass/Fail) |
| Function test U-stop | All types | Slide (Pass/Fail) |
| Safety sounder works | All types | Slide (Pass/Fail) |
| Time delay before the start | All types | Slide (Pass/Fail) |
| Guards present | All types | Slide (Pass/Fail) |
| Test rollers operation | All types | Slide (Pass/Fail) |

**Pass/Fail Logic**:

* **Pass** if all applicable sub-checks are marked as **Pass**
* **Fail** if any sub-check is marked as **Fail**
* Comments become **mandatory** if result is **Fail**

**Dynamic Behaviour**

* Sub-checks for **Print machines** include 3 additional checks.
* Non-Print machines hide those fields.
* The result is auto calculated once all visible checks are completed.

**5. Non-functional Requirements**

| **Category** | **Requirement** |
| --- | --- |
| Performance | An application must load all forms within 2 seconds |
| Security | Role-based access with user login |
| Availability | Application must support offline mode with data sync |
| Backup | Daily backup of all check records |
| Audit Trail | All changes logged with timestamps and user ID |
| Platform | Windows 10/11 desktop compatibility |
| Usability | Forms must be completed with keyboard and mouse inputs only |
| Support | In-app help section with tooltips for each field |

**6. User Roles & Permissions**

| **Role** | **Permissions** |
| --- | --- |
| Admin | Full access, manage users, edit logic, override results |
| Manager | View all records, approve/reject checks |
| Engineer | Complete checks, add comments/photos |
| Viewer | Read-only access to reports |

**7. UI Elements & Logic**

* Slide switches (buttons) for binary choices (OK/Fail, Yes/No)
* Radio buttons for Pass/Fail choices
* Dropdowns for predefined options (unit, type, zone)
* Date pickers for date entries
* Text fields for comments and free text
* File upload field for photos (image validation required)
* Auto-fill fields (date, initials) based on system/user data

**8. Frequency & Scheduling Logic**

| **Check Type** | **Frequency** | **Auto-Reminders** |
| --- | --- | --- |
| Bio Waste | Monthly | 1st of each month |
| Emergency Lights | Monthly | 1st of each month |
| Fire Doors | Monthly | 1st of each month |
| Fire Extinguishers | Monthly | 1st of each month |
| Floodlights | Semi-annual | May 1st, Dec 1st |
| Meter Readings | Monthly | 1st of each month |
| Ladder Log | Semi-annual | May 1st, Dec 1st |
| Legionella | Monthly | 1st of each month |
| Racking | Monthly | 1st of each month |
| Rodent Bait | Monthly | 1st of each month |
| Machine Safety | Monthly | 1st of each month |

**9. Calculated Pass/Fail Logic per Test**

Summarised from above:

* **All-or-nothing**: Fire Doors, Fire Extinguishers, Ladder, Racking
* **Mixed logic**: Bio Waste (service/emptying can be pending), Emergency Lights (both sub-checks must pass), Rodent Bait (OK code only passes)
* **Numeric validation**: Legionella (temperature thresholds)
* **Color-coded logic**: Racking (Green = Pass; Red/Amber = Fail)

**10. Attachments (Images, Comments)**

| **Check Type** | **Image Required?** | **Comments Required?** |
| --- | --- | --- |
| Fire Doors | Yes | Optional |
| Fire Extinguishers | Yes | Optional |
| Legionella | Yes (optional) | Optional |
| Racking | Yes | Optional |
| Rodent Bait | Optional | Optional |
| All Others | Optional | Optional |
| Machine Safety | Optional | Required on Fail |

Photos must be JPG/PNG format and under 10MB.

**11. Assumptions & Constraints**

**Assumptions**

* Users are trained in performing checks and using the application
* A PC or laptop is available in the maintenance area
* Internet connection may be intermittent; offline use is required

**Constraints**

* Windows-only application
* No real-time cloud integration in the first release
* All check data stored locally or on secure shared drive

**Use Case Requirements**

**1. Bio Waste Plant Check**  
We need to test **Bio Waste condition**, which involves **visual and operational checks** on the treatment plant, pipes, pump float switch, and biomass clarity.  
This test is performed with a **monthly frequency**, within **7 days of month start**.

**2. Emergency Lights Check**  
We need to test **emergency lighting reliability**, which involves a **standard switch test** and a **3-hour duration test**.  
This test is performed **monthly**, within **7 days of the month start**.

**3. Fire Doors Check**  
We need to test **fire door safety**, which involves inspecting seals, structure, operation, and obstructions.  
This test is performed **monthly**, within **7 days of the month start**.

**4. Fire Extinguishers Check**  
We need to test **extinguisher readiness**, which involves checking condition and accessibility.  
This test is performed **monthly**, within **7 days of the month start**.

**5. Floodlights Check**  
We need to test **exterior floodlight operation**, which involves functional inspection of all installed units.  
This test is performed **semi-annually**, in **May and December**, within **14 days of the scheduled month start**.

**6. Meter Readings Record**  
We need to record **utility meter readings**, which involves noting water or electricity usage from the building utility meters.  
This test is performed **monthly**, within **7 days of the month start**.

**7. Ladder Log Check**  
We need to test **ladder condition**, which involves checking structural integrity and fitness for use.  
This test is performed **semi-annually**, in **May and December**, within **14 days of the scheduled month start**.

**8. Legionella Check**  
We need to test **legionella risk**, which involves temperature and flushing tests on taps, WCs, and tanks.  
This test is performed **monthly**, within **7 days of the month start**.

**9. Racking Inspection**  
We need to test **racking safety**, which involves visual inspection of posts, guards, fixings, and shelves.  
This test is performed **monthly**, within **7 days of the month start**.

**10. Rodent Bait Check**  
We need to test **bait station status**, which involves logging bait code and rodent type.  
This test is performed **monthly**, within **7 days of the month start**.

**Machine Monthly Safety Check**

We need to test **machine safety systems**, which involves checking **emergency stops, guards, pull cords, bump stops, key switches, safety signals, and rollers**. For **Print machines**, additional sub-checks like **stacker drop stops, chocks, and traffic lights** are tested.  
This test is performed with a **monthly frequency**, within the **first 7 days of each month**.