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|----------------|-----------------------|--------------|---------------------|
| Document       | Software Project Plan | Release      | 05/01/26 V1.0 Final |
| Project        | BRN WMS               | Project code | 200-WMS-26-001-00   |
| Project period | 05/01/26–24/08/26     |              |                     |

## 1. Purpose

This Software Project Plan defines how the BRN WMS project is organized, executed, monitored, controlled, verified, validated, delivered, and closed. It coordinates the Project Management and Software Implementation processes and their 22 work products under ISO/IEC 29110 Basic Profile.

## 2. Project overview

BRN WMS is a browser-based, multi-company and multi-warehouse management system. It centralizes warehouse master data, inventory movements, sales and purchasing documents, finance and accounting records, reports, access control, and operational notifications.

The project is intended to:

- Improve the accuracy and timeliness of warehouse operations.
- Provide current stock visibility across authorized warehouses and locations.
- Preserve lot, serial-number, expiry-date, and movement traceability.
- Control sales, purchasing, return, invoice, receipt, payment, and accounting workflows.
- Separate company data and restrict functions according to authorized roles.
- Provide management reports, operational alerts, and auditable records.

## 3. Scope

### 3.1 Included scope

- Company, user, role, application-access, SMTP, and system configuration.
- Contact, product, category, warehouse, storage-area, and bin master data.
- Stock-in, stock-out, stock transfer, balance, lot, serial number, and expiry control.
- Warehouse capacity, occupancy, movement, expired-stock, and product-lot reporting.
- SKU and warehouse-location barcode labels and supported scanning workflows.
- Quotations, sales orders, returns, invoices, and credit notes.
- Purchase requests, purchase orders, purchase invoices, and supplier returns.

- Receipt billing, receipts, payment billing, and payments.
- Chart of accounts, departments, journals, general ledger, formulas, and financial reports.
- Controlled document numbering and lifecycle/status handling.
- Real-time notifications using Node.js and Socket.IO.
- Scheduled stock/GL maintenance, low-stock alerts, and overdue-invoice alerts.
- Deployment configuration, database setup, operating guidance, and maintenance information.
- ISO/IEC 29110 work products and controlled project repository.

### 3.2 Excluded scope

- Procurement of servers, networks, barcode scanners, printers, or user devices.
- Legacy-data migration unless separately assessed and approved.
- Integration with external ERP, banking, shipping, tax, or third-party services unless approved through change control.
- Custom functionality outside the baselined requirements.
- Production hosting or third-party subscription fees unless separately authorized.

## 4. Objectives and success criteria

The project is successful when:

- All acceptance-critical requirements are implemented and traceable to verification evidence.
- Representative warehouse, sales, purchasing, finance, and accounting workflows pass validation.
- No unresolved critical defect blocks intended operation or compromises security or data integrity.
- Installation, configuration, user, operation, and maintenance documentation is available.
- Software and controlled work products are stored in the project repository.
- Verification, validation, and acceptance records receive the required review and authorization.

## 5. Lifecycle and schedule

| Phase                       | Period            | Main activities                                                                   | Primary outputs                                                |
|-----------------------------|-------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------|
| Initiation                  | 05/01/26–23/01/26 | Establish need, stakeholders, objectives, scope, and authority.                   | Statement of Work, stakeholder records                         |
| Planning                    | 12/01/26–18/02/26 | Collect requirements; define schedule, resources, risks, controls, and baselines. | Customer Requirements, Work Schedule, Software Project Plan    |
| Implementation              | 19/02/26–29/05/26 | Analyze, design, code, configure, integrate, review, and test the system.         | SRS, Software Design, Components, Test Cases, Software         |
| Verification and validation | 30/05/26–07/08/26 | Review work products and validate representative operational workflows.           | Traceability, Test Report, Verification and Validation Results |

| Phase                           | Period            | Main activities                                                                          | Primary outputs                                                |
|---------------------------------|-------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Documentation and stabilization | 01/06/26–24/08/26 | Prepare guides, close corrections, configure deployment, and prepare demonstration data. | User Documentation, Operation Guide, Maintenance Documentation |
| Closure                         | 10/08/26–24/08/26 | Review repository, resolve open actions, obtain acceptance, and close the project.       | Acceptance Report, List of Evidence, repository baseline       |

Detailed activities and evidence are maintained in the Work Schedule.

## 6. Software development lifecycle methodology

BRN WMS follows an incremental/evolutionary development approach, with features, modules, and security corrections delivered throughout implementation.

BRN WMS is more accurately described as incremental/evolutionary, within the same overall lifecycle stages used for planning and reporting purposes (Section 5):

| Stage                 | How it was actually approached                                                                                                                                                                                                                                                     |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Requirements          | Captured once at a level (Customer Requirements), then implicitly refined as implementation proceeded — e.g., the Rack→Bin terminology change (CH-001) and multiple onboarding/security corrections show requirements being clarified during implementation, not frozen beforehand |
| Design                | Not produced as an upfront, separate artifact; Software Design (work product 12) was from the as-built architecture, not authored before coding began                                                                                                                              |
| Implementation        | Continuous, feature-by-feature, evidenced by 105 commits across the implementation period with no clean phase boundary between "build" and "test/fix"                                                                                                                              |
| Verification          | Interleaved throughout implementation (ongoing manual exercising and correction, per the Correction Register) rather than concentrated in a single verification phase; formal independent verification remains a separate, not-yet-executed activity (work product 21)             |
| Stabilization/closure | A distinct late-stage effort (03/08/26 onward) closer to a traditional stabilization phase                                                                                                                                                                                         |

## 7. Organization and responsibilities

| Role                                                            | Assigned person           | Responsibilities                                                                                           |
|-----------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------|
| Project Sponsor / Customer Representative / Authorized Approver | Seri Viriyasakultorn      | Represent customer needs; authorize scope, resources, baseline changes, acceptance, and project closure.   |
| Project Manager                                                 | Apirach Supattaratpateep  | Plan and monitor work; assign responsibilities; manage risks, issues, communication, changes, and closure. |
| System Analyst                                                  | Noppong Chareunsook       | Analyze customer requirements, specify system behavior, and maintain technical traceability.               |
| Developer                                                       | Thanakorn Sathitwitayakul | Design, implement, configure, correct, and maintain source code, aligned with Git implementation evidence. |
| Tester / Reviewer                                               | Parin Ngamkham            | Prepare and execute tests, review work products, report defects, and confirm corrections.                  |
| Document Control                                                | Yaowalak Bangchomphoo     | Control identifiers, versions, approvals, distribution, repository content, and evidence.                  |

One person may perform more than one operational role when independence is not mandatory. Approval authority must remain with the designated authorized approver or a formally delegated authority.

## 8. Resources and environment

### 8.1 Schedule summary

| Phase                           | Calendar span     | Approx. duration |
|---------------------------------|-------------------|------------------|
| Initiation                      | 05/01/26–23/01/26 | 19 days          |
| Planning                        | 12/01/26–18/02/26 | 38 days          |
| Implementation                  | 19/02/26–29/05/26 | 100 days         |
| Verification and validation     | 30/05/26–07/08/26 | 70 days          |
| Documentation and stabilization | 01/06/26–24/08/26 | 85 days          |
| Closure                         | 10/08/26–24/08/26 | 15 days          |

These are calendar spans rather than effort estimates.

## 8.2 Software and infrastructure

- PHP 8.0 or later.
- MySQL or MariaDB.
- Nginx or another compatible PHP web server.
- Node.js, npm, Socket.IO, and PM2 for real-time and scheduled services.
- Git repository with `main` as the controlled integration baseline.
- Current standards-based desktop and mobile browsers.
- Asia/Bangkok time zone across application and scheduled-job environments.

## 8.3 Logical application components

| Component                    | Purpose                                                          |
|------------------------------|------------------------------------------------------------------|
| PHP web application          | Main user interface and operational APIs                         |
| Identity/company database    | Users, companies, access, SMTP, usage, and related configuration |
| WMS/accounting database      | Warehouse, inventory, documents, finance, and accounting records |
| Node.js notification service | Browser notifications and application event relay                |
| Node.js scheduler            | Aggregate maintenance and scheduled operational alerts           |

## 8.4 Configuration constraints

- Local configuration and secrets must not be committed to Git.
- Production database credentials must use the minimum privileges required after installation.
- Application, database, upload, and service configuration must follow the controlled configuration guide.
- Public access to source-control metadata, secrets, and internal service endpoints must be restricted.

## 8.5 Computer and equipment resources

The example reference package's Section 7 lists specific equipment (notebook count, scanner, Git server, software licenses). No equipment inventory record exists as project evidence for BRN WMS — this is not fabricated here. What is evidenced instead:

| Item        | Evidence                                                                                                                                         |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Git hosting | Primary remote origin ( <code>188.166.228.62:nok/wms-app.git</code> ) and backup remote backup (GitHub) — see Project Repository, work product 9 |

| Item                                                         | Evidence                                                                                                                                                               |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Deployment target                                            | Manual LAMP install or Docker Compose stack (php-apache, mariadb, node/pm2) — see Software Configuration, work product 8, and Product Operation Guide, work product 19 |
| Developer workstation(s)                                     | Not recorded — no inventory evidence exists                                                                                                                            |
| Office/licensed software (word processor, spreadsheet, etc.) | Not recorded — no inventory evidence exists                                                                                                                            |

## 9. Deliverables and work products

### 9.1 Project Management work products

1. Statement of Work 2. Project Plan, including Work Schedule, Software Project Plan, and Customer Requirements 3. Progress Status Record 4. Correction Register 5. Acceptance Report 6. Change Report 7. Meeting Record 8. Software Configuration 9. Project Repository 10. Project Repository Backup

### 9.2 Software Implementation work products

11. Software Requirements Specification 12. Software Design 13. Traceability Record 14. Software Components 15. Test Cases and Test Procedures 16. Test Report 17. Software 18. Software User Documentation 19. Product Operation Guide 20. Maintenance Documentation 21. Verification Results 22. Validation Results

## 10. Monitoring and communication

| Record or activity     | Frequency or trigger                                 | Owner                    | Audience                                        |
|------------------------|------------------------------------------------------|--------------------------|-------------------------------------------------|
| Work Schedule update   | At least weekly during active work                   | Project Manager          | Project team and sponsor                        |
| Progress Status Record | Weekly during active work                            | Project Manager          | Project team and sponsor                        |
| Project meeting        | At planned reviews or when decisions are required    | Project Manager          | Relevant stakeholders                           |
| Meeting Record         | For each formal project/review meeting               | Recorder                 | Attendees and affected stakeholders             |
| Correction Register    | When a defect, issue, or nonconformity is identified | Tester / Project Manager | Assigned owner and reviewer                     |
| Change Report          | When a baseline change is requested                  | Project Manager          | Sponsor, affected team, customer representative |

| Record or activity | Frequency or trigger                 | Owner            | Audience                     |
|--------------------|--------------------------------------|------------------|------------------------------|
| Repository review  | At each baseline and project closure | Document Control | Project Manager and reviewer |

Progress status includes completed work, planned work, deviations, risks, issues, required decisions, corrective actions, and schedule impact.

## 11. Risk management

| ID   | Risk                                               | Impact                                               | Planned response / control                                                                         | Owner                     |
|------|----------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------|
| R-01 | Pre-development records are                        | Audit evidence may be weaker than records.           | Mark assumptions clearly and obtain review and approval.                                           | Project Manager           |
| R-02 | Unauthorized access or cross-company data exposure | Confidentiality and integrity failure.               | Server-side role guards, company/warehouse scoping, session controls, and security review.         | Developer / Reviewer      |
| R-03 | Incorrect inventory balance                        | Operational and financial records become unreliable. | Transactions, input validation, locking, approval flow, reconciliation, and movement tests.        | Developer / Tester        |
| R-04 | Secret or configuration exposure                   | System compromise or service interruption.           | Ignore local secrets, provide templates, restrict web access, and review deployment configuration. | Configuration Manager     |
| R-05 | Incomplete requirement or acceptance evidence      | Delivery cannot be objectively demonstrated.         | Maintain bidirectional traceability and obtain signatures before baselining.                       | Project Manager           |
| R-06 | Uncontrolled scope expansion                       | Schedule and quality degradation.                    | Require Change Report, impact analysis, authorization, and re-planning.                            | Project Manager / Sponsor |

| ID   | Risk                                       | Impact                                          | Planned response / control                                                              | Owner                            |
|------|--------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------|
| R-07 | Inadequate backup or recovery              | Loss of source, documents, or operational data. | Maintain repository backup and documented database/file backup and recovery procedures. | Configuration Manager            |
| R-08 | Third-party or environment incompatibility | Deployment or notification failure.             | Document supported versions and verify the target environment before acceptance.        | Developer / System Administrator |

Risks are reviewed with progress status. New risks and changes to exposure or response are recorded by the Project Manager.

### 11.1 Contingency actions for non-completed tasks

Distinct from the risk table above (which addresses project-level threats), this table addresses the specific, recurring situation of an individual task or work product not finishing by its planned date.

| Situation                                                    | Common cause                                                        | Likely impact                                    | Contingency action                                                                                                                | Owner           |
|--------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Task not finished by its due date                            | Timeline or resource estimate was too tight                         | Downstream tasks slip; delivery date at risk     | Meet with the team to reassess status and priority; agree and communicate a revised timeline                                      | Project Manager |
| Delay due to insufficient staffing (illness, unavailability) | Single-person roles (Section 7) have no backup                      | Work stalls until the person returns             | Document a handover/knowledge-transfer note; consider temporary outside help for the specific gap only with Sponsor authorization | Project Manager |
| Delay due to late or incomplete requirement/content input    | Upstream dependency (customer input, data) not ready                | Downstream development or testing cannot proceed | Escalate to the Sponsor with a clear description of what is blocking; agree a revised input date                                  | Project Manager |
| Delay due to unexpected technical complexity                 | Underestimated integration/defect complexity discovered during work | Task takes materially longer than planned        | Prioritize by severity (Critical/High/Low, per Section 12.1); temporarily set aside lower-priority items                          | Developer       |

| Situation                            | Common cause                           | Likely impact                                     | Contingency action                                                                | Owner           |
|--------------------------------------|----------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|
| Delay because scope changed mid-task | Requirement changed after work started | Effort already spent may be partially invalidated | Raise a Change Report; obtain authorization before continuing under the new scope | Project Manager |

## 12. Quality assurance

- Assign a unique identifier to each approved requirement.
- Review requirements for clarity, completeness, consistency, testability, and scope alignment.
- Review design against requirements and operational constraints.
- Review implementation for authorization, tenant isolation, data integrity, configuration safety, and error handling.
- Trace requirements to design elements, components, test cases, and results.
- Record defects and nonconformities in the Correction Register.
- Re-test corrected behavior and retain objective evidence.
- Validate representative end-to-end scenarios with customer-oriented data.

### 12.1 Defect disposition

| Severity    | Meaning                                                                                                   | Acceptance treatment                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Critical    | Prevents core operation, compromises security, causes cross-company exposure, or corrupts essential data. | Must be corrected and verified before acceptance.                    |
| Major       | Material function fails without an acceptable workaround.                                                 | Correct before acceptance or obtain explicit authorized disposition. |
| Minor       | Limited impact with an acceptable workaround.                                                             | Record planned correction or authorized acceptance.                  |
| Observation | Improvement or documentation item without functional failure.                                             | Record and prioritize as appropriate.                                |

### 12.2 Quality criteria and evaluation methods

The example reference package states measurable quality thresholds directly in the Software Project Plan (response time, uptime, security scan result, etc.). BRN WMS's measurable criteria are already defined as non-functional requirements in Customer Requirements (Section 8) and restated as technical requirements in the SRS (work product 11); this table cross-references them here rather than duplicating a second copy that could drift out of sync.

| Quality area           | Criterion                                                                      | Evaluation method                                        | Reference                                    |
|------------------------|--------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|
| Functional correctness | All Must requirements implemented and traceable                                | Traceability Record review + Test Report execution       | NFR-009, work products 13, 16                |
| Performance            | Practical operational response time; aggregates support dashboards/reports     | Representative-operation timing under agreed data volume | NFR-006, SR05:001–003, TC-NFR-006            |
| Security               | No unresolved critical security defect; server-side auth/tenant scope enforced | Negative-authorization/invalid-input testing             | NFR-002, SR07:001–005, TC-NFR-002            |
| Reliability/integrity  | No invalid negative/duplicate stock or GL movement                             | Failure/rollback and concurrency test                    | NFR-003, SR09:003, TC-NFR-003                |
| Usability              | Responsive UI usable on desktop and warehouse-floor devices                    | Representative-screen check at agreed viewport sizes     | NFR-005, SR02:002, TC-NFR-005                |
| Installability         | Installation/configuration/backup/recovery repeatable                          | Follow Product Operation Guide end-to-end                | NFR-004, TC-NFR-004                          |
| Post-delivery support  | Backup and restoration                                                         | Restoration check (currently open — BK-002)              | Project Repository (Backup), work product 10 |

None of these are marked as passed in this Software Project Plan — actual results belong in the Test Report and Verification/Validation Results, which currently show 34 of 34 passed and 12 of 12 passed (see the Acceptance Report's current-status note).

## 13. Verification and validation

Verification confirms that each work product satisfies its specified inputs and criteria. Validation confirms that the integrated BRN WMS supports its intended operational use.

Verification covers:

- Customer Requirements and Software Requirements Specification.
- Software Design and database/configuration design.
- Software Components and integration behavior.
- Test Cases, Test Procedures, Test Report, and traceability.
- User, operation, configuration, and maintenance documentation.

Validation covers representative workflows for:

- User onboarding and role-based access.
- Warehouse and product configuration.
- Stock receipt, issue, transfer, balance, lot, serial, and expiry handling.
- Sales, purchasing, return, invoice, receipt, and payment workflows.

- Accounting postings and management reports.
- Notifications, scheduled jobs, and operational recovery.

## 14. Configuration management

Configuration items include:

- PHP, JavaScript, CSS, Node.js, and database/setup source files.
- Application and service configuration templates.
- Database schema and migration/setup logic.
- Controlled requirements, design, test, guide, and management work products.
- Approved releases, evidence, and repository backups.

Controls include:

- Controlled main baseline.
- Project-code-based filenames and document version/status identifiers.
- Review and authorization before changing an approved baseline.
- Exclusion of passwords, tokens, local configuration, logs, uploads, and generated secrets from source control.
- Repository and operational-data backup with recoverability checks.

## 15. Change and correction control

A baseline change follows this sequence:

1. Record the requested change and reason. 2. Analyze its scope, schedule, technical, quality, security, and documentation impact. 3. Obtain authorization from the designated authority. 4. Update affected plans, requirements, design, traceability, tests, and configuration records. 5. Implement and verify the change. 6. Record the result and close the Change Report.

Defects and nonconformities are recorded in the Correction Register, assigned to an owner, corrected, re-tested, and closed with evidence.

## 16. Repository and document control

### 16.1 File naming convention

BRN WMS's actual naming convention, in force since PM work product 1 and used consistently across all 42 controlled files, differs deliberately from the example reference project's:

[Project code] [Document name] [YYYYMMDD Buddhist] V[version], for example 200-WMS-26-001-00 Correction Register 25690817 V1.0.

| Element       | Meaning                                                                                                                                                        | Example              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Project code  | 200-WMS-26-001-00                                                                                                                                              | Fixed                |
| Document name | Descriptive title; where a work product has multiple instances (Progress Status Record, Change Report, Meeting Record), a short distinguishing suffix is added | - Rack to Bin Rename |
| Date          | Compact Buddhist-calendar date (YYYYMMDD), matching the date on the document header                                                                            | 25690817             |
| Version       | V<major>.<minor>, e.g. V1.0                                                                                                                                    | V1.0                 |

BRN WMS document filenames do not append author initials.

## 16.2 Version declaration

Documents created for BRN WMS are released directly at V1.0 once content is complete, without the example's separate 0.1/0.2 Draft stages — BRN WMS work products are not labeled **Draft** unless explicitly requested, per the same recorded decision. "Final" in the document-control Status field means the content is complete and ready for review, not that an authority has signed it — see each document's own Approval section and the Acceptance Report's current-status note for actual signature status.

## 16.3 Repository and backup

- Every controlled filename starts with 200-WMS-26-001-00.
- Documents identify title, date, version, status, preparer, reviewer, and approver as applicable.
- Drafts remain distinguishable from approved baselines.
- The Project Repository contains the current controlled work products and supporting evidence (work product 9).
- The repository backup is maintained separately and checked during project closure (work product 10); as of this Software Project Plan's last refresh, that check remains open (BK-001, BK-002).
- Superseded records are retained or archived according to organizational control practices.

# 17. Acceptance and closure

The project may close when:

- Acceptance-critical requirements have passed their linked verification and validation.
- No unresolved critical defect remains.
- Deferred items and accepted exceptions have authorized dispositions.
- Required user, operation, configuration, and maintenance documents are available.
- Software, source, setup information, evidence, and required work products are in the repository.
- The Acceptance Report and closure decision are signed by the authorized approver.

## 18. Approval

### Prepared by

Name: Apirach Supattaratpateep

Role: Project Manager

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Technical contributor

Name: Thanakorn Sathitwitayakul

Role: Developer

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Reviewed and authorized by

Name: Seri Viriyasakultorn

Project roles: Project Sponsor / Customer Representative / Authorized Approver

Position: Managing Director

Company: B.R.N. Enterprise Co., Ltd.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_