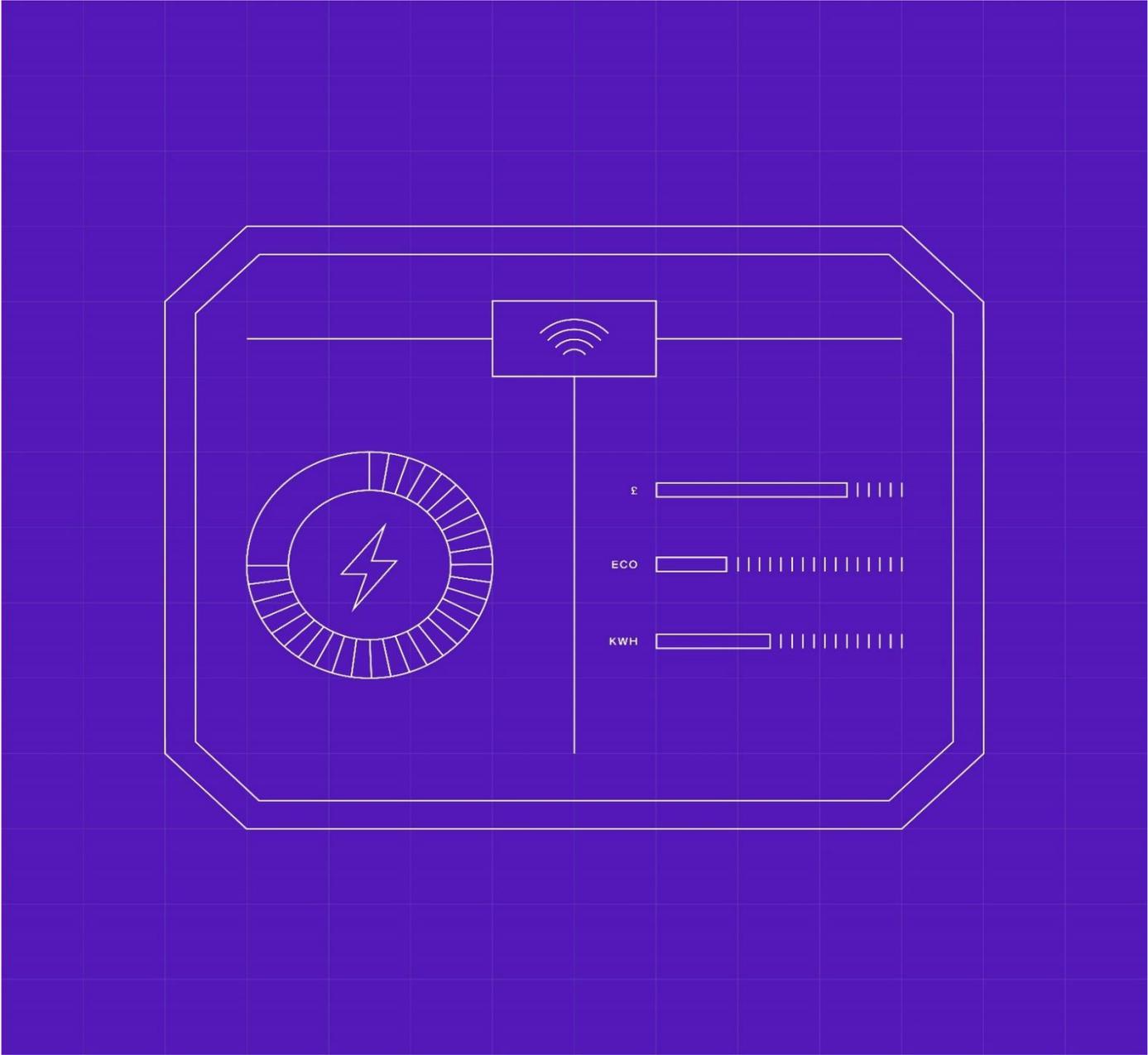


Appendix - Migration Tool Test Approach



Document owner
MHHS Programme
Status:
Approved by MCAG

Document number
MHHS-DEL3532
Date
29 April 2025

Version
1.0
Classification
Public

1 Contents

1	Contents	2
1.1	Table of Figures	3
1.2	Table of Tables	3
1.3	Change Record	4
1.4	References	4
1.5	Terminology	4
2	Introduction	5
2.1	Document purpose	5
2.2	Scope of this Document	5
2.3	Scope of Testing	5
2.4	Assumptions	5
3	Submission 2	6
3.1	Overview	6
3.2	Objectives	6
4	Kestrel Platform Overview	7
4.1	System Overview	7
5	Phased Delivery Approach	8
5.1	Roadmap and Features	8
5.2	User Access Requirements for Kestrel	8
5.3	Preparation	8
5.4	Package 1: Submission 2 (Foundation)	8
5.5	Package 2: Dress Rehearsal 1	8
5.6	Package 3: Dress Rehearsal 2 (Full Simulation)	9
5.7	Package 4: Sprint Cycle 0 (Operational Readiness)	9
5.8	Continuous Capabilities	9
5.9	Test Phase Participation Requirements	10
5.9.1	Test Phase Participation Matrix	10
5.9.2	Key	10
6	Test Strategy	11
6.1	Test Strategy Summary	11
6.1.1	Environment Strategy	11
6.1.2	Test Data Strategy - Data Sources	11
6.1.3	Live Data Commission Strategy	11
6.2	Internal System Testing	11
6.2.1	Integration Testing Approach	11
6.2.2	Performance Testing Approach	11
6.2.3	Security Testing Approach	12
7	Overall Entry and Exit Criteria	13
1.1	Phase Specific Entry and Exit Criteria	13

7.1	Overall Entry Criteria	13
8	Defect Management Approach	14
8.1	Defect Classification and Workflow	14
8.1.1	Defect Workflow (Internal)	14
8.1.2	Defect Classification	14
9	(Internal) Security Testing Framework	15
9.1	Approach and Standards	15
9.2	Penetration Testing	15
10	Data Protection Impact Assessment (DPIA)	15
10.1	Data Handling Considerations	15
10.2	Data Minimisation	15
10.3	Access Controls	15
10.4	Special Data Considerations	15
11	Test Script Development	16
11.1	Approach and Methodology	16
11.2	Execution Responsibility	16
11.3	Incremental Build and Visibility	16
12	Submission 2 and Dress Rehearsal – Plan on a Page	17
13	Kestrel Route to M11 – Post Dress Rehearsal Plan on a Page	18

1.1 Table of Figures

Figure 1- Kestrel – High Level Platform Overview	7
Figure 2- Submission 2, Dress Rehearsal POAP	17
Figure 3 - Kestrel - Post Dress-Rehearsal to M11 POAP	18

1.2 Table of Tables

Table 1- Participation Matrix	10
Table 2 - Phase Entry and Exit Criteria	13
Table 3 – Overall Entry and Exit Criteria	13

1.3 Change Record

Date	Author	Version	Change Detail
14/03/2025	Migration Team	v0.1	Draft for Industry Consultation
11/04/2025	Migration Team	V0.2	Updated following Industry Review
29/04/2025	Migration Team	V1.0	Upversioned following MCAG Approval

1.4 References

Document	Publisher	Published	Additional Information
REF-1 MHHS-DEL2426-[01] Migration Framework Foundations v4.0	Migration Team	29/04/2025	Migration FW
REF-2 MHHS-DEL2427-[02] Migration Framework - Principles and Guidelines v4.0	Migration Team	29/04/2025	Migration FW
REF-3 MHHS-DEL2428-[03] Migration Capacity Calculations - Method Statements v4.0	Migration Team	29/04/2025	Migration FW
REF-4 MHHS-DEL2429-[03a] Calculations Monitoring and Control – Parameters v4.0	Migration Team	29/04/2025	Migration FW
REF-5 MHHS-DEL2430-[04] Migration Requirements and Processes v4.0	Migration Team	29/04/2025	Migration FW
REF-6 MHHS-DEL2431-[04a] Migration Business Process Models v4.0	Migration Team	29/04/2025	Migration FW
REF-7 MHHS-DEL2762-[05] Migration Choreography v4.0	Migration Team	29/04/2025	Migration FW
REF-8 MHHS-DEL2763-[06] Migration Governance and Escalation Framework v4.0	Migration Team	29/04/2025	Migration FW
REF-9 MHHS-DEL2764-[07] Migration Data Requirements and Reports v4.0	Migration Team	29/04/2025	Migration FW
REF-10 MHHS-DEL961 – Migration Design Document v1.4	Migration Team	12/06/2024	
REF-11 MHHS-DEL953 – Data Assessment Report v1.0	Migration Team	21/02/2023	
REF-12 MHHS-DEL1128 – Migration, Cutover and Data Strategy v1.0	Migration Team	02/06/2023	
REF-13 MHHS-DEL1648 - Migration Thresholds Document v2.0	Migration Team	25/02/2025	
REF-14 MHHS-DEL813 – Overarching Test Data Approach and Plan v1.0	Testing Team	19/07/2023	
REF-15 MHHS-DEL1181 – Data Cleanse Plan v3.0	Migration Team	09/08/2024	
REF-16 MHHS-DEL1792 - M15 Acceptance Criteria v2.0	Migration Team	25/02/2025	
REF-17 MHHS-DEL3359 – Terminology and Glossary v4.0	Migration Team	29/04/2025	Migration FW

1.5 Terminology

Please see MHHS-DEL3359 – Terminology and Glossary v4.0

2 Introduction

2.1 Document purpose

This document sets out the Testing Plan, Approach and Test Strategy for Submission 2 of the Supplier Migration Plans and the Dress Rehearsals under the MHHS Programme. It sets out the assumptions scope of testing, approach and the test scenarios to be undertaken by Migration Participants.

This document, and supporting documents as listed in the References section, together with the migration timetable, form the MHHS Migration Plan that details the obligations, as defined in Section C12 of the Balancing and Settlement Code Section C, that defines the obligations on MHHS Market Participants relating to participation in the Migration of MHHS Metering Systems.

2.2 Scope of this Document

This document covers the Test phases, Test Scenarios and Test evidence required by Migration Participants.

See Section 5.9.1

- Test Phase Participation Requirements

This document does not cover the functionality relating to calculating Supplier Submission Templates or detailed internal processes of the Migration Control Centre (MCC), noting the MCC will be conducting internal testing using submission data provided.

2.3 Scope of Testing

The following sets out the scope of the Testing:

1. Supplier submission template generation, submission and validation
2. Role-based access control using MHHS credentials
3. Migration Schedule creation and baseline
4. Aggregate reporting functionality
5. Integration with external systems (Simulated data for DIP integration)
6. Performance and security

2.4 Assumptions

1. Migration Participants will make resources available to undertake the testing in accordance with the Test Phases defined in this document.
 - a. Participants will meet PPIR response deadlines
 - b. Participants will complete mandatory testing activities
 - c. Test Scripts will be provided in advance of test-cycles and provide clear instructions of test activities
 - d. Participants will record results/observations and confirm pass/fail of each test with commentary
 - e. Suppliers can re-use plans created as part of Submission 2 in Dress Rehearsal activities
2. Migration Team will provide Test Scripts just in time for feature testing in weekly iterations incrementally
 - a. Participants will self-test according to scripts
 - b. Participants will capture and submit required evidence
 - c. Migration team can monitor all Kestrel activity
 - d. Evidence review can be completed within schedule
3. Migration team will be resourced to Support Dress Rehearsal activities
 - a. Basic support function will be available

- b. Training materials will be provided

3 Submission 2

3.1 Overview

Following the CR55 announcement, the Programme is planning a second run of Migration Plan Submissions, effectively re-running the Initialize phase of the Migration Framework.

This activity builds upon the submission process conducted in July 2024, incorporating revised information and process improvements.

- Submission 2 is a separate activity from the formal Kestrel testing and Dress Rehearsals. Its primary objective is to collect accurate, up-to-date migration data to support overall Programme planning.
- If the platform is not fully ready or fit to support the process, the previous data exchange mechanism (zip files over email) will be employed to ensure continuity.
- The MCC will use all Supplier Plans provided as part of Submission 2 to baseline the first version of the Migration Schedule.

3.2 Objectives

1. Collect updated Target Migration Start Dates from all Suppliers
2. Confirm the correctness of the Submission Templates in accordance with the Migration Framework
3. Gather revised Migration Plans reflecting current market conditions
4. Establish baseline data for migration planning and capacity allocation
5. Validate the Kestrel platform in an operational context

4 Kestrel Platform Overview

The Migration Planning and Management Tool (MPMT), now known as "Kestrel".

K, Engine for **S**cheduling, **T**racking, **R**eporting, and information **E**xchange, **L**, is a purpose-built platform designed to support the complete MHHS migration process.

4.1 System Overview

Kestrel provides a secure, role-based approach to managing MHHS migration data, ensuring all market participants have access to the necessary information while protecting commercially sensitive data. The platform serves as the central hub for migration planning, execution, monitoring, and reporting throughout the MHHS Migration Transition Window. M10 to M15/M16.

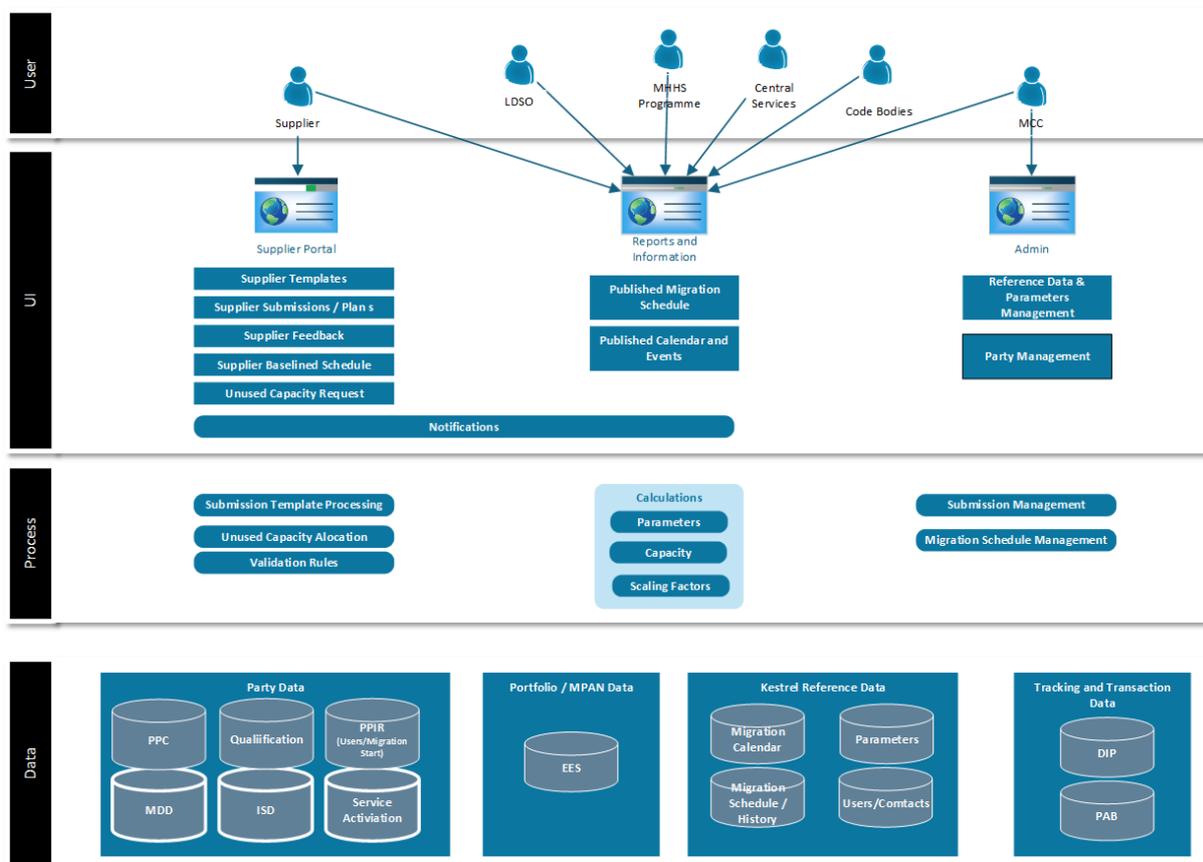


Figure 1- Kestrel – High Level Platform Overview

5 Phased Delivery Approach

The Kestrel platform is being delivered through an iterative, phased approach that aligns development with Dress Rehearsal testing phases. This methodology enables incremental validation of functionality while maintaining focus on the critical path to operational readiness.

5.1 Roadmap and Features

Kestrel is being delivered in incremental packages to ensure stable, validated functionality that aligns with the MHHS Migration timeline. Each release builds upon previous capabilities while introducing new features. This phased approach enables testing and validation of all features before the M11 milestone, ensuring operational readiness for live migration.

5.2 User Access Requirements for Kestrel

Kestrel uses the existing MHHS identity management system to provide secure, role-based access. All users must have valid MHHS credentials prior to accessing the platform in both Test and Live environments.

5.3 Preparation

The MHHS Programme and Migration Team will coordinate the user registration process prior to Submission 2, each Dress Rehearsal phase, and Live activation to ensure all participants have appropriate access. The outline of activities includes the following:

1. User registration and preliminary setup, including PPIR to Migration Principal contacts, and Migration Lead
2. Priority user onboarding/registration prioritise (SIT Suppliers and Agents)
3. Secondary user onboarding/registration for remaining Suppliers, Agents and Other Market Roles)

5.4 Package 1: Submission 2 (Foundation)

Basic Supplier planning capabilities to support Submission 2 activities only.

Features	Test Scope
Core Supplier Functions <ol style="list-style-type: none">1. Secure login with MHHS credentials2. Migration plan template download and upload3. Basic file validation4. Supplier profile and LDSO portfolio viewing	N/A

5.5 Package 2: Dress Rehearsal 1

Enhanced Supplier planning capabilities.

Features	Test Scope
Expanded Supplier Capabilities: <ol style="list-style-type: none">1. Submission rules for supplier plan validation2. Detailed validation feedback3. Migration contact list4. Offline bulk change of agent request processing5. Online access to baselined schedules	<ol style="list-style-type: none">1. Validate template generation and distribution2. Validate role-based access control3. Test submission upload and validation4. Verify plan baseline process

5.6 Package 3: Dress Rehearsal 2 (Full Simulation)

Full system functionality including reporting.

Features	Test Scope
<p>Complete Supplier Toolkit:</p> <ol style="list-style-type: none"> 1. Baselined schedule access and management 2. Supplier submission preference configuration (Daily granularity only opt-in) 3. Migration simulation for SIT participants 4. Unused capacity allocation requests 5. Agent demand submissions and reports <p>Market-Wide Reporting:</p> <ol style="list-style-type: none"> 6. Role-appropriate aggregate schedule views 7. Simulated migration progress reporting 8. Sanitized performance tracking 	<ol style="list-style-type: none"> 1. Test sprint execution phase visibility 2. Validate migration progress reporting 3. Test unused capacity allocation process 4. Verify aggregate reporting for all market roles

5.7 Package 4: Sprint Cycle 0 (Operational Readiness)

Remaining feature and infrastructure for Live commissioning and deployment.

Features	Test Scope
<p>Live Migration Features:</p> <ol style="list-style-type: none"> 1. Migration tracking (intraday frequency) 2. Actual migration outturn reporting 3. Online bulk change of agent processing 4. Full sprint cycle management 5. Issue tracking and resolution 	N/A

5.8 Continuous Capabilities

Ongoing development and testing for internal capabilities to support MCC back-office functions.

Features	Other Activities
<p>MCC Administration:</p> <ol style="list-style-type: none"> 1. Comprehensive user management 2. Automated template generation 3. Plan tracking and visualization 4. Migration parameter management 	<p>Test Scripts and Defect Management:</p> <ol style="list-style-type: none"> 1. Develop and issue test scripts for each test cycle 2. Collect and manage defects reported 3. Triage and prioritise defects 4. Produce test reports <p>Support Services:</p> <ol style="list-style-type: none"> 5. Detailed user documentation 6. Regular training sessions 7. Knowledge base and FAQs 8. Dedicated support channels

5.9 Test Phase Participation Requirements

The Test Phase Participation Matrix defines the expected engagement levels for different market participant groups across the platform's development and deployment phases.

5.9.1 Test Phase Participation Matrix

Phase	Activity	SIT Suppliers	Wave 1 and 2 Suppliers	Wave 3 and 4 Suppliers	Other Stakeholders
Preparation	User Registration via PPIR	✓	✓	✓	✓
	Confirm Group MPID	✓	✓	✓	✓
	Confirm Migration Start Date	✓	✓	✓	☑
Submission 2	Portal Access	✓	✓	✓	-
	Download Templates	✓	✓	✓	-
	Submit Migration Plans	✓	✓	✓	-
DRH 1	Portal Access	✓	✓	✓	-
	Plan Validation Testing	✓	●	●	-
	Access Baselined Schedule	✓	●	○	-
DRH 2	Portal Access	✓	✓	✓	✓
	Sprint Execution View	✓	●	○	-
	Migration Progress Reports	✓	●	○	✓
	Unused Capacity Requests	✓	●	○	-
	Agent Demand Submission	✓	●	○	-
	Access Aggregate Reports	-	-	-	✓

Table 1- Participation Matrix

- See REF-9 MHHS-DEL2764-[07] Migration Data Requirements and Reports v for Reporting Levels

5.9.2 Key

Stakeholder Categories

- **ALL Suppliers:** Every supplier with MPANs to migrate
- **SIT Suppliers:** Suppliers participating in Systems Integration Testing
- **Wave 1&2 Suppliers:** Early qualifying suppliers
- **Wave 3&4 Suppliers:** Later qualifying suppliers
- **Other Stakeholders:** Report consumers such as LDSOs, Agents (Service Providers), DCC, Code Bodies, MHHS Programme, OFGEM, NESO

Participation Optionality Indicators

Mandatory	✓
Mandatory SIT Agents (optional otherwise)	☑
Optional (preferred)	●
Optional	○
Not Applicable	-

6 Test Strategy

6.1 Test Strategy Summary

6.1.1 Environment Strategy

Single environment supporting (Suppliers only)

- Submission 2
- DRH 1

Single Environment supporting (All Participants)

- DRH 2

Test data simulation for:

- Active migration sprint execution
 - Migration outturn data
 - Report generation
-

6.1.2 Test Data Strategy - Data Sources

- EES data for template generation
 - ISD data for market participant information
 - Qualification, Code Bodies for status activation monitoring
 - Simulated migration data for reporting scenarios
 - DIP integration test data pipeline (DRH 2 only)
-

6.1.3 Live Data Commission Strategy

- The Migration Team will seek to include Supplier Plans and all associated reference and portfolio data as part of Production deployment of Kestrel so that suppliers can access their original plans via Kestrel.
 - **CAVEAT:** Depending on how the Migration Team collect Suppliers plans and potential data structure changes this may not be possible.
-

6.2 Internal System Testing

6.2.1 Integration Testing Approach

- Manual data import testing for EES and ISD
 - Automated integration testing with DIP during DRH 2
 - Validation of data transformation and aggregation processes
-

6.2.2 Performance Testing Approach

Candidate Non-Functional Requirements

- Support 100 concurrent users for Supplier Portal
 - Support 100 concurrent users for reporting functions
-

-
- Response time targets (to be defined)
 - Load testing of key functionalities:
 - Template generation
 - Plan validation
 - Report generation
-

6.2.3 Security Testing Approach

Access Control Testing

- Validation of MHHS credential integration
- Market Role and MPID access matrix verification
- Multi-role access scenario testing
- Session management and timeout controls

Data Security Testing

- Verification of data isolation between market participants
- Validation of aggregate data anonymization
- Testing of sensitive data handling processes
- Audit trail validation for data access and modifications
- File upload/download security controls

Infrastructure Security

- Azure Security Posture scoring (target >80%)
- Cloud infrastructure security configuration
- Network security controls testing
- API security validation
- Secure configuration testing

7 Overall Entry and Exit Criteria

7.1 Phase Specific Entry and Exit Criteria

The following sets out the Entry and Exit Criteria for each Phase:

	Submission 2	Dress Rehearsal 1	Dress Rehearsal 2
Entry	<ul style="list-style-type: none"> All Supplier users onboarded with MHHS accounts (Assuming Kestrel is used for Submission 2) Supplier Group MPID mappings validated Migration Planners registered and mapped to correct Supplier Group MPIDs All data sources refreshed and loaded (as per section 6.1) 	<ul style="list-style-type: none"> Successful completion of Submission 2 exit criteria Test data prepared for validation scenarios 	<ul style="list-style-type: none"> Successful completion of DRH 1 All remaining users onboarded with MHHS accounts Simulated DIP integration configured Simulated test data prepared for sprint execution simulation
Exit	<ul style="list-style-type: none"> 100% of Suppliers can access supplier portal 100% of Suppliers can download/upload submission templates 95%+ MPAN coverage in submitted Migration Plans 	<ul style="list-style-type: none"> All SIT Suppliers and other Suppliers taking part can view validation results All SIT Suppliers and other Suppliers taking part can access baselined plans Validation feedback mechanisms verified 	<ul style="list-style-type: none"> SIT Suppliers have submitted validation Daily Granularity Plan for upcoming Sprint Execution Phase SIT Suppliers can view simulated sprint execution SIT Suppliers can access simulated migration progress reports All 'Other Stakeholders' can access relevant aggregate plans All 'Other Stakeholders' can access relevant simulated aggregate progress reports

Table 2 - Phase Entry and Exit Criteria

7.2 Overall Entry Criteria

	Area	Overall
Entry	All	<ul style="list-style-type: none"> All identified users have valid MHHS accounts Supplier Group MPID mappings confirmed via PPIR Target Migration Start Dates confirmed for all Supplier Groups Test environments ready and configured Required test data loaded and verified
Exit	Functional Requirements	<ul style="list-style-type: none"> 100% of MVP requirements tested and verified Validation rules working correctly
	User Access and Adoption	<ul style="list-style-type: none"> 100% of SIT Suppliers and Agents performing key functions 99% of Suppliers have submitted valid migration plans All stakeholders able to access appropriate reports
	MCC Operational Capability	<ul style="list-style-type: none"> Template generation working correctly Submission tracking and monitoring operational Migration schedule baselining process verified Report generation and distribution working
	Technical Requirements	<ul style="list-style-type: none"> No outstanding Severity 1 defects Performance criteria met (user concurrency, response times) Initial security posture assessment complete (>80% score) Data isolation and protection verified

Table 3 – Overall Entry and Exit Criteria

8 Defect Management Approach

8.1 Defect Classification and Workflow

For defect management Kestrel will follow the established Azure DevOps (ADO) defect management workflow, incorporating both standard ADO states.

8.1.1 Defect Workflow (Internal)

The defect workflow encompasses the following key states:

DRH State	ADO State	Meaning
New/Open	New	Initial defect identification and logging
Triaged/Assigned	Assigned	Defect allocated to developer
		Fix in Progress: Active development to resolve issue
		Fixed: Resolution implemented
		Ready to be Deployed : Fix prepared for deployment
Ready to Test	Resolved	Ready for Test: Deployed and available for verification
		In Test: Under verification testing
		Test Passed/Failed Verification outcome
Rejected	Rejected	Defect determined to be invalid
Closed	Closed	Issue resolved and verified

8.1.2 Defect Classification

All defects will be classified by severity to enable appropriate prioritisation:

Severity	Defect Classification	Meaning
1	Showstopper	Prevents critical functionality; blocks testing progress
2	Critical	Severely impacts user experience; no viable workaround
3	Major	Impacts functionality but workaround exists
4	Minor	Limited impact; cosmetic or non-critical issue
5	Trivial	Not a defect or Issues noted for future releases but don't impact current operations

Weekly defect status reports will be generated to track resolution progress and aging defects, with additional focus on any showstopper or critical issues.

9 (Internal) Security Testing Framework

9.1 Approach and Standards

- Azure Secure Posture scoring (target >80%)
- Minimal attack surface through limited ingress/egress points
- Role-based access control testing
- Data protection/obfuscation verification

9.2 Penetration Testing

We plan that Elexon will conduct penetration testing against the Kestrel platform before Dress Rehearsal phases to identify potential security vulnerabilities. Testing will focus on:

- Authentication mechanisms
- Authorisation controls
- Data protection measures
- API security
- Input validation

10 Data Protection Impact Assessment (DPIA)

10.1 Data Handling Considerations

Kestrel will process MHHS migration data including MPANs, which are considered personally identifiable information (PII). The following controls will be implemented:

10.2 Data Minimisation

- MPAN data used only as necessary for migration tracking
- All user-facing reports will use aggregated data by:
 - LDSO MPID
 - Supplier Group MPID
 - Migration time period (day/week/month)

10.3 Access Controls

- Strict role-based access to underlying data
- Market participants can only view their own data or appropriately aggregated information

10.4 Special Data Considerations

- EES data containing ~33 million MPANs will be processed to provide aggregated counts
- All PII data other than MPANs will be obfuscated
- Backend processing will maintain data integrity/data lineage while reporting maintains privacy

11 Test Script Development

11.1 Approach and Methodology

Test scripts will be developed using a scenario-based approach, supplemented with Behaviour-Driven Development (BDD) techniques where detailed specifications are required. Each test scenario will:

- Define test objectives
- Outline preconditions
- Detail step-by-step execution
- Specify expected results
- Include evidence capture requirements

11.2 Execution Responsibility

Test execution will be shared between the Kestrel development team and market participants:

Kestrel Team

- Technical integration testing
- Security testing
- Performance testing
- Backend functionality

Market Participants

- End-to-end scenarios
- User acceptance testing
- Role-specific functionality

Test scripts will be tailored and distributed to specific participant groups:

- SIT Suppliers
- Non-SIT Suppliers
- Report Consumers (Suppliers, LDSOs, DCC, MHHS Programme, Code Bodies)

11.3 Incremental Build and Visibility

Test scripts will be developed and released incrementally to align with the phased delivery approach. Participants will have visibility of:

- Current test phase requirements
- Upcoming test scenarios
- Previous phase results and defect status
- Verification progress against exit criteria

12 Submission 2 and Dress Rehearsal – Plan on a Page

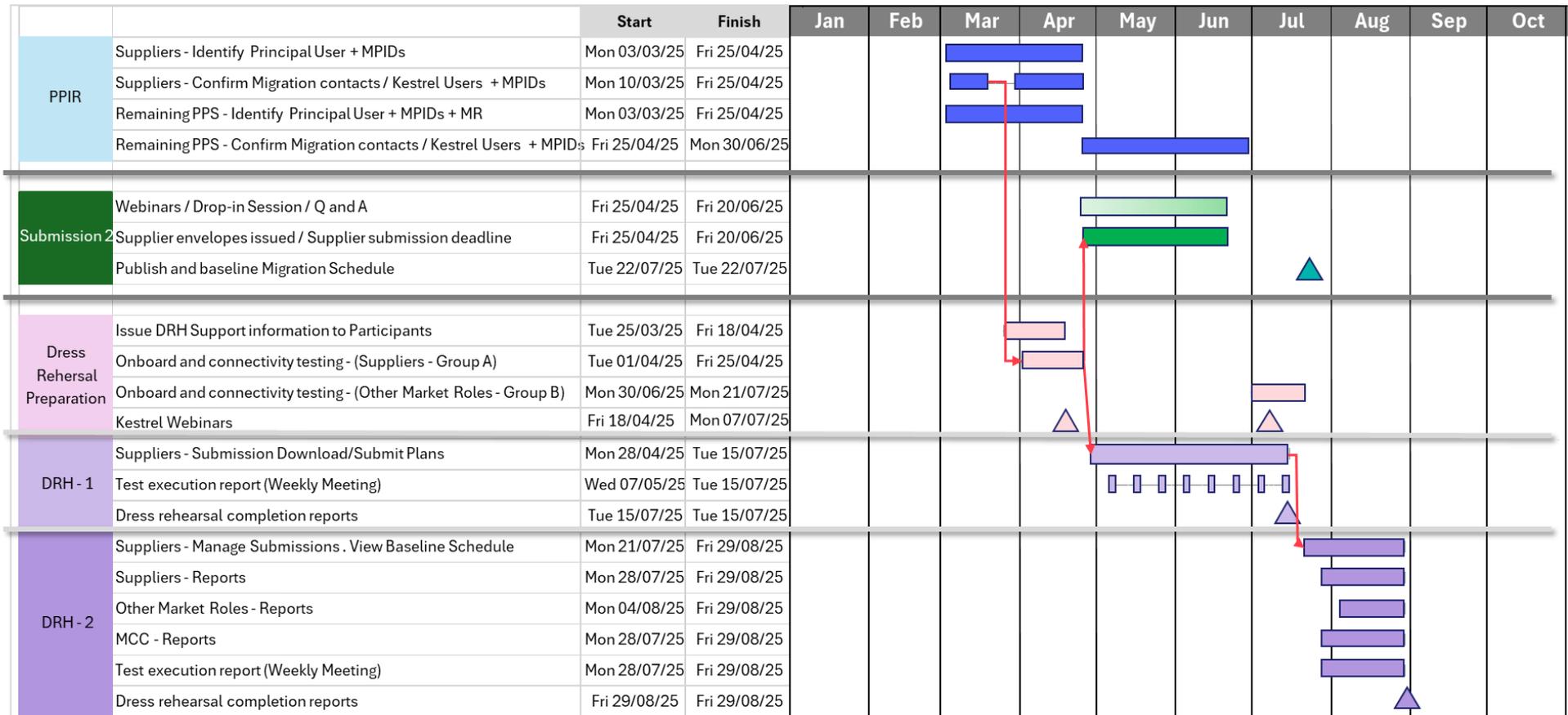


Figure 2- Submission 2, Dress Rehearsal POAP

13 Kestrel Route to M11 – Post Dress Rehearsal Plan on a Page

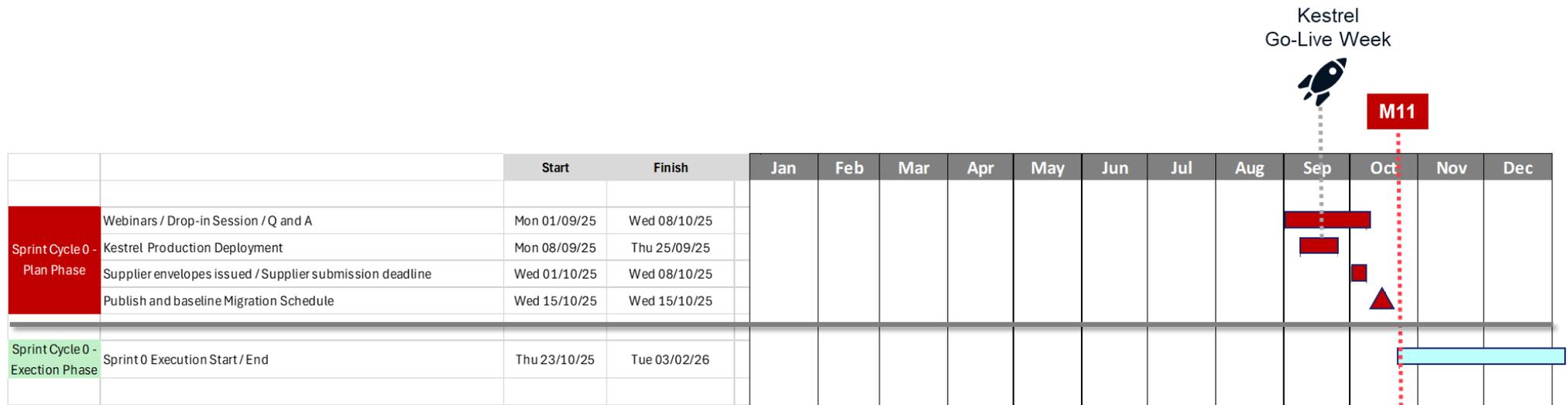


Figure 3 - Kestrel - Post Dress-Rehearsal to M11 POAP