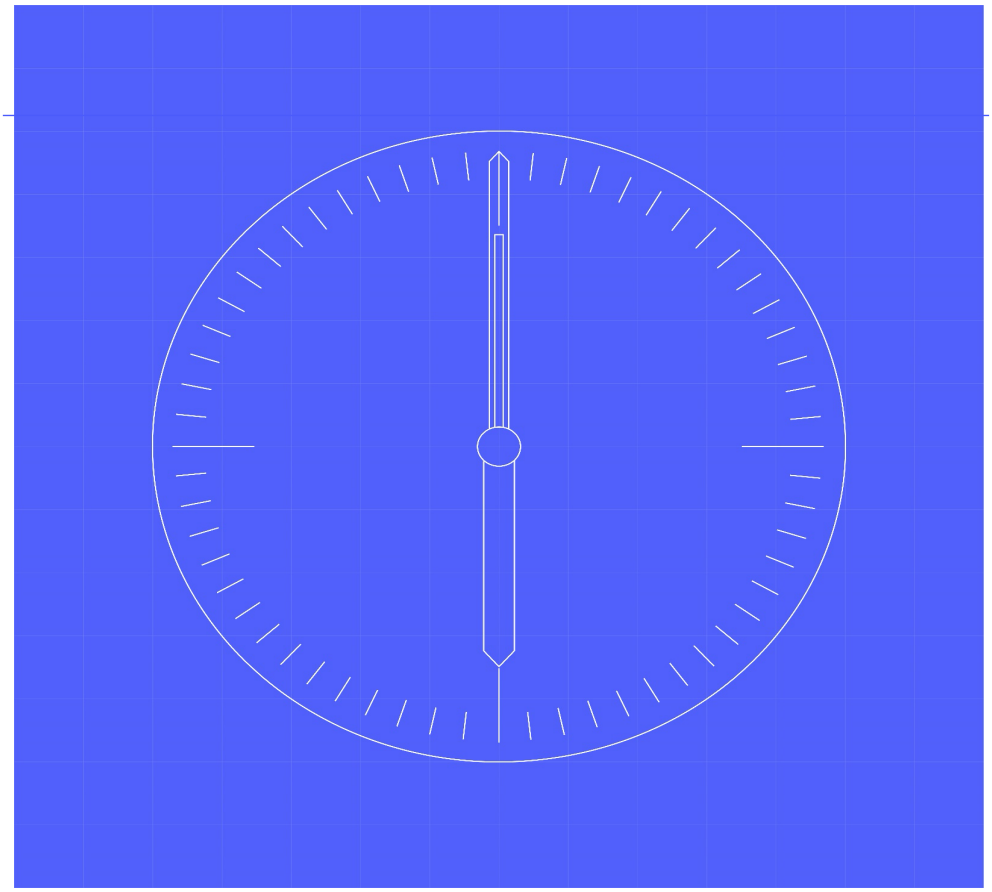
MHHS PROGRAMME
Industry-led, Elexon facilitated

SIT Non-Functional Test Approach & Plan



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1.1 Change Record

Date	Author(s)	Version	Change Detail

21/12/2023	Mansoor Vali	0.1	Initial Draft
18/01/2024	Mansoor Vali	0.2	Amended approach to reflect discussion with Adrian around volume & performance tests for DIP & Helix and high-level plan for SIT Non-Functional
06/03/2024	MHHS NFT	0.3	Overall approach refined and documented
18/03/2024	MHHS NFT	0.4	Approved version for Industry Review
11/04/2024	MHHS NFT	0.5	Updates post industry review
19/04/2024	MHHS NFT	0.6	Updates post Assurance review
24/07/2024	MHHS NFT	0.7	Updated to reflect revised NFT SIT Theme 1 & 3

1.2 Reviewers

Reviewer	Role
Lee Cox	SI Test Manager
Kevin Davis	SI Test Architect
Julia Ledden	SI Operational Test Manager
Paul Petit	Design
Cesar Lopes	SI Data Architect
John Wiggins	SI Migration Lead
Adrian Ackroyd	SRO Function Programme Test Manager
Smitha Pichrikat	SRO Function Client Delivery Manager
Phil Heiton	SRO SIT NFT/Operational Test Manager
Code Bodies (BSC and REC)	Various

1.3 References

Ref No.	Document/Link	Publisher	Published	Additional Information
REF-01	MHHS-DEL315 - E2E Testing & Integration Strategy	SI Testing	29th April 2022	
REF-02	MHHS-E2E002 Requirements	Design	4th June 2024	
REF-03	MHHS-DEL852 - Pre-Integration Test Guidance	SI Testing	4th April 2024	
REF-04	MHHS-DEL618 - Environment Approach & Plan	SI Testing	7th June 2024	
REF-05	MHHS-DEL813 - Overarching Test Data Approach and Plan	SI Testing	19th July 2023	
REF-06	MHHS-DEL1332 - Test Management Tool User Guide	SI Testing	5th March 2024	
REF-07	MHHS-DEL1064 - Placing Reliance Policy	SI Testing	21st November 2023	
REF-08	MHHS-DEL466 - Defect Management Plan	SI Testing	29th Feb 2024	
REF-09	MHHS-DEL1089 - Release and Configuration Management Approach & Plan	SI Testing	30th May 2023	
REF-10	MHHS-DEL1139 - MHHS Outline Plan	SI Testing	See MHHS Website	
REF-12	MHHS-DEL030 - Programme Governance Framework	PMO	27th November 2023	
REF-13	MHHS-DEL1140 - Milestone Register	PMO	3rd April 2024	
REF-14	MHHS-DEL2128 NFR Categorisation	SI Testing	In Development	
REF-15	MHHS E2E003 - End-to-End Solution Architecture - Transaction Volumes	MHHS DAG	25th Sept 2023	
REF-16	MHHS-DEL2324 Initial BAU Volume Model	MHHS DAG	13th Feb 2024	

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REF-17	MHHS-DEL1259 SIT Functional Test Approach & Plan	SI Testing	16th Aug 2023	
REF-18	MHHS-DEL1118 Qualification Approach and Plan	BSC & REC Code Bodies	28th March 2024	
REF-19	MHHS-DEL396 MHHS-DIP002 Functional & Non-Functional Requirements		18th Jul 2022	
REF-20	MHHSP_OPC001_Operational_Choreography		21st Sept 2023	
REF-21	Requirements traceability SIT F OOS v2.xlsx		15th Nov 2023	
REF-22	MHHS-DEL2437 Non-Functional Test Policy	SI Testing	18th March 2024	
REF-23	MHHS-DEL2376 SIT Non-Functional Test Data Approach & Plan	SI	11th April 2024	

1.4 Terminology

Term	Description
Various	For terminology, see Programme Glossary on the MHHS portal: Programme Glossary (SharePoint.com)

2 Executive Summary

The Market-wide Half Hourly Settlement programme (MHHS), when completed, will contribute to a more cost-effective electricity system, encouraging more flexible use of energy and helping consumers lower their bills.

[REF-22] MHHS-DEL2437 Non-Functional Test Policy describes the overall approach to NFT - the manner in which all parties involved in the MHHS programme will conduct testing. It spans initial testing of individual systems through to complete E2E tests ahead of the start of the Migration Period (where the new systems are progressively introduced, and old systems progressively retired), through the following phases of testing:

- **Pre-Integration Testing (PIT)**
- **Systems Integration Testing (SIT)**
- **Qualification Testing (QT)**

This document, the SIT Non-Functional Test Approach and Plan, intends to document activities required during the NFT Systems Integration Testing (SIT) phase to prove that the component Services are implemented in a way consistent with the MHHS E2E Design, and interact in a coherent and consistent manner, in other words to "prove" the MHHS E2E Design.

The Programme has a defined set of documentation which will be produced to support the preparation and conduct of each SIT stage. This Approach and Plan document specifically relates to the SIT Non-Functional Test stage, describing the associated objectives, scope, approach, schedule, management, governance, and assurance of the test stage. This document has been developed in parallel with [REF-22] MHHS-DEL2437 Non-Functional Test Policy, and therefore it is recommended that for context both documents are read in conjunction.

As an overview of the contents of this documents content, SIT NFT is to be split into 3 stages of delivery, with each stage providing the additional assurance required by the programme as these are cycled through, these being:

- Integrated DIP and Helix infrastructure at expected messaging volumes (environments to be integrated will be determined via bilateral meetings with involved participants)
- End to End performance, in terms of processing times. This will be carried out on the SIT-B environment using a suitable volume of messaging rates from all involved programme participants.
- Infrastructure focused NFT – Behaviour profiles of participant systems when DIP interfaces become unavailable or return errors.

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3 Introduction

3.1 Document Purpose

The SIT Non-Functional Test Approach and Plan (this document) sits within a two tier MHHS Test documentation hierarchy. Please note this document references tier 1 parent documents throughout and doesn't seek to repeat content contained within them, readers (Programme Participant roles defined in section 5.1) will be sign posted to these documents for further detail where relevant. This document also refers to tier 2 child documents that will be produced later.

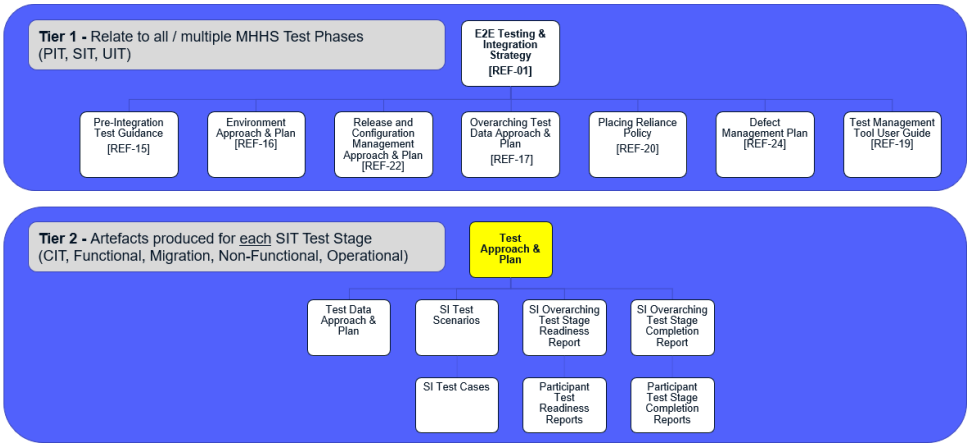

Figure 1 - MHHS two tier test documentation hierarchy

The SIT Non-Functional Test Approach and Plan covers:

- Test Stage Objectives
- Scope
- Architecture and Coverage
- Approach (Preparation & Execution), covering:
  - Test Scenario overviews
  - Test Data (to be read in conjunction with the SIT NFT Test Data Approach document)
  - Stubs and Harnesses
  - Test Management Tool
  - Tooling & Access requirements
  - Evidence Capture
  - Defects Management
  - Environments & Releases
  - Readiness and Completion Reports
  - Entry and Exit Criteria
- Schedules
- Management & Organisation
- Governance & Reporting
- Assurance.

This document is intended to be read by the following groups:

- SRO Function (SRO)
- Lead Delivery Partner (LDP)
- Migration Working Group (MWG)
- SIT Working Group (SITWG)
- Systems Integration Testing Advisory Group (SITAG)
- Non-Functional Testing Working Group (NFTWG)
- All Programme party teams and resources involved in SIT NFT execution or support.
- BSC and REC Code Body Qualification teams
- Independent Programme Assurance (IPA).

3.2 Reviews and Approvals

The SIT Non-Functional Test Approach and Plan will go through initial LDP review by the following team members:

- Lee Cox, SI Test Manager
- John Wiggins, SI Transition Lead
- Cesar Lopes, SI Data Architect
- Miren Sookdeo, SI Environments and Release Manager
- Paul Pettitt, Design Lead
- Nicola Farley, SRO Qualification Test Manager
- Julia Ledden, SI Operational Test Manager

Upon completion of LDP review, any comments and feedback would be incorporated before going to the SRO team and Code Body Teams for formal review by:

- Adrian Ackroyd, SRO Client Programme Test Manager,
- Smitha Pichrikat, SRO Function Client Delivery Manager,
- Kiran Raj, SRO SIT Functional Test Lead,
- Phil Heiton, SRO SIT NFT/Operational Test Manager,
- Code Bodies (BSC and REC)

Upon completion of the SRO and Code Body review it will then be distributed to the NFTWG for consultation, where comments will be incorporated leading to a recommendation for SITAG approval by the groups.

Approval will then be requested from:

- Systems Integration Testing Advisory Group (SITAG)

The document will be made available for information via the programme portal.

3.3 Change Forecast

The SI team will own this document and keep it up to date, with review and approval by MHHS programme governance as appropriate. Each new version supersedes the previous version in its entirety.

This document, alongside updates to [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance **and the** MHHS Non-Functional Test Policy are to be issued and reviewed in conjunction, in order gain an understanding of the overall scope and approach to NFT testing for the MHHS Programme. Once a greater degree of maturity has been reached on these artefacts, they will be socialised and developed in consultation with the NFTWG and the agreed output, if required, will be formalised in a new full version of this document that will be targeted for approval in the May-24 SITAG.

All updates to this document will follow the review and approval process outlined in section 3.2.

3.4 Summary of Changes

Following workshops with SRO, code bodies, NFTWG and central parties responsible for the delivery of the DIP and Helix systems, this document defines the current approach to delivery of SIT NFT for the MHHS Programme. With updates to this approach and plan covering a revised approach to MHHS IF-021 injection for the DIP-->Helix testing, in addition to a broader approach to phase 2, where targeted message channel is not being delivered for the targeted release, instead, a broader approach to error handling concerning PP roles rather than individual interface is being introduced.

3.5 Assumptions and Dependencies

3.5.1 Assumptions

- Production like environments are stood up for SIT NFT Phase 1 of execution.
- Participants have validated their interface connectivity to SIT-B
- SIT Participants will have conducted E2E connectivity tests to SIT-B and ensured correct PKI certificates are validated prior to commencement of testing.
- Overlap with Operational Testing phase, there will be some overlap with OT in terms of observability and general industry best practice, i.e. interface failure, monitoring, and dashboards in use. To minimise duplication of test effort, SI NFT and Operations teams will work closely to ensure that where there is overlap, there will be no replication of testing between NFT and Ops stages of delivery.
- MHHS SI test teams will support participants with their data requirements and scheduling of specific failures on dependent systems like DIP, Helix etc.

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3.5.2 Dependencies

- Preceding test phases of Functional SIT and Non-Functional PIT, have met their aims and scope.
- DIP and Helix Central Parties are able to stand up a production equivalent, in scale and configuration, test environment within the SIT-B test environment for SIT NFT Phase 1 execution.
- Where a Programme Participant's area of the integrated environment acts as a starting or processing point for business processes, if it is felt that there is a need for automation rather than manual input, then there will be a dependency on the re-use of PIT message injection tools, test stubs/harnesses within the NFT SIT environment. A series of bilateral meetings to discuss the use of these existing tool sets will be setup between the SI and relevant participants once there is a greater understanding of the NFT data plan and NFT Scenarios.

4 Objectives

4.1 Objectives

The objective of the SIT Non-Functional Test stage is to successfully demonstrate that all Non-Functional Requirements, as specified within [REF-02] E2E MHHS E2E Functional & Non-Functional Requirements, have been met, and to conduct Non-Functional Testing within the integrated environments to provide assurance that the overall solution is fit for purpose.

This Test Approach sets out the testing framework, objectives, and approach to both SIT Non-Functional testing, given the approach laid out within section 7. The purpose of the document is to:

- Define testing scope, test management and assurance activities necessary to demonstrate that services can operate effectively with all key services being delivered under the new MHHS arrangements.
- Identify activities and responsibilities of SIT participants to be able to successfully complete SIT Non-Functional testing.
- Deliver an approach to Non-Functional testing that meets the requirements, and is practicable, appropriate, and achievable.
- Provide a robust schedule to implement SIT Non-Functional testing in accordance with the MHHSP implementation timetable.
- Describe governance and change processes, resources, environment, data and tools to underpin SIT Non-Functional testing and effective delivery of the expected outcomes.

The document aims to cover the technical components, i.e. preparation, development and execution of the tests, environments, data, simulators and agreeing the reliance policy and assurance methods.

It also includes the administrative components related to planning, templates design and documentation development.

5 Scope

5.1 In Scope

The objective of the SIT Non-Functional Test stage is to provide assurance that all end-to-end non-functional requirements have been met, in this stage, involving the following roles within the MHHS Programme. Using this scope of roles will enable end-to-end non-functional tests to be conducted, based on non-functional test scenarios to designed to exercise, and “prove” the MHHS E2E Design.

- Data Integration Platform (DIP)
- BSC Central Services
- Smart Data Service (SDS)
- Advanced Data Service (ADS)
- Metering Service Smart (MSS)
- Metering Service Advanced (MSA)
- Electricity Suppliers
- Electricity Enquiry Service (EES)
- Unmetered Supplies Data Service (UMSDS)
- DCC (DSP) – Not within scope of SIT NFT (SEC Mod MP162), however, MHHS will have a stake in the results from the testing carried out by the DCC and would therefore require the DCC to provide a level of assurance to their systems capacity and performance testing results.

- DCC (CSS) – Only a single instance of CSS is to be made available to the integrated SIT environments, this will be provisioned to SIT-A, as such there will be a limitation on business processes involving CSS during SIT NFT, this will be taken into account as the NFT Scenarios are being completed.
- Electralink (DTN) – Production instance will be provided; test flags will be utilised.
- Network Operations, Unmetered Supplies Operator (UMSO) and Registration Service (REGS)/MPRS – Within SIT NFT, we are limited to 2 volunteer LDSO's, the scope for this area of infrastructure under NFT will be further defined once there is a greater understanding of the test data design and volume, alongside NFT Scenarios.

The categories of test types being actioned during SIT Non-Functional Testing can be summarised as follows:

- DIP → Helix Integrated testing at volume (IF-021) – This is a completely new route, and responsible for roughly 90% of the network traffic across this programme, as part of the NFT 'targeted' interface testing, testing of this message processing will form the initial phase of SIT NFT, new systems, new interfaces means that this fits into the overall approach taken to NFT across delivery phases,
- Operational SLAs/ Performance efficiency – Taking each Central Party and Programme Participants systems as individual components within MHHS infrastructure, scaled volume, integrated, testing to be carried out as a means of ensuring areas not under test during PIT, namely E2E interfaces and the transfer of data between them, are not detrimentally affected. Scale and scope of environments that are recommended to be utilised in this phase for NFT can be found within section 6.
- Reliability/Recoverability (event/message buffering when failing to communicate with MHHSP central system) – With the SIT phase of testing treating Programme Participants MHHS systems (as a whole) as a component rather than the internals of the participants solution themselves, this will be a means of exercising areas of the end-to-end infrastructure in a targeted manner, not achievable during PIT due to the inclusion of a physical DIP system. As all solutions will have been tested under volume during PIT stages of NFT, the behaviour of interfaces between systems and subsequent release of messages on these being re-instated will be exercised during this phase of activity. It should be noted that each participants solution will have already validated this area of NFRs, at volume, during PIT stages.
- Security – NFRs around PKI and levels 1 through to 4 validations will take place during SIT NFT delivery, this is the first point in time that these systems will be physically connected to the DIP allowing this validation to take place.
- Compatibility (message or schema validation) – as above
- Migration/Operational Choreography – As detailed above, given the numbers of participants involved within the SIT environment, and physical end points available within the SIT-B environment, settlement and migration processing will be carried out at scaled volumes in order to determine the overall effect of this within an end to end environment, however, we need to note that some areas will not be available, therefore full testing at volume will not be available. To mitigate these factors, the MHHS NFT team believes that carrying out the scheduled processing as defined within both the migration and operational choreography documents referenced within section 1.3 can be utilised during the PIT phase of delivery to determine infrastructure behaviour under load, with the SIT phase targeting how the systems will manage data loss during infrastructure failures not covered during the Operational Phase of test execution.
- Observability – As with PIT, a level of crossover with Operational Testing will occur. In terms of compatibility based NFRs, messages must be traceable via participant/DIP created reference and transaction IDs should any issue occur during E2E processing.

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5.2 Out of Scope

- Pre-Integration Test (PIT) associated with and in advance of SIT Non-Functional Testing, which takes place on the Programme participant's own standalone test environment and is a pre-requisite for entry into SIT Non-Functional. Guidance for this test phase can be found in [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance and [REF-22] MHHS Non-Functional Test Policy documents
- All the other SIT Stages – these will be the subject of separate Test Approach and Plan documents:
    - Component Integration Test

    - Functional Test
    - Operational Test
    - Migration Test (Functional Test)
- Qualification Test Stages:
    - Qualification Test
    - E2E Sandbox.
- Data cleansing activities and processes prior to Go Live

6 Test Architecture & Coverage

6.1 MHHS Architecture and Coverage

SIT Non-Functional Testing will be achieved by establishing a test environment where all roles listed within section 5 are connected via to the Data Integration Platform (DIP). Connectivity proving to SIT-B ahead of SIT Non-Functional test execution will be required for all Participants on commencement of the SIT Non-Functional phase, tests will then be conducted based on the test scenarios and cases in scope. It should be noted that metering components fall outside of the MHHS design scope, and for this reason consumption data generators will be used for the purposes of testing.

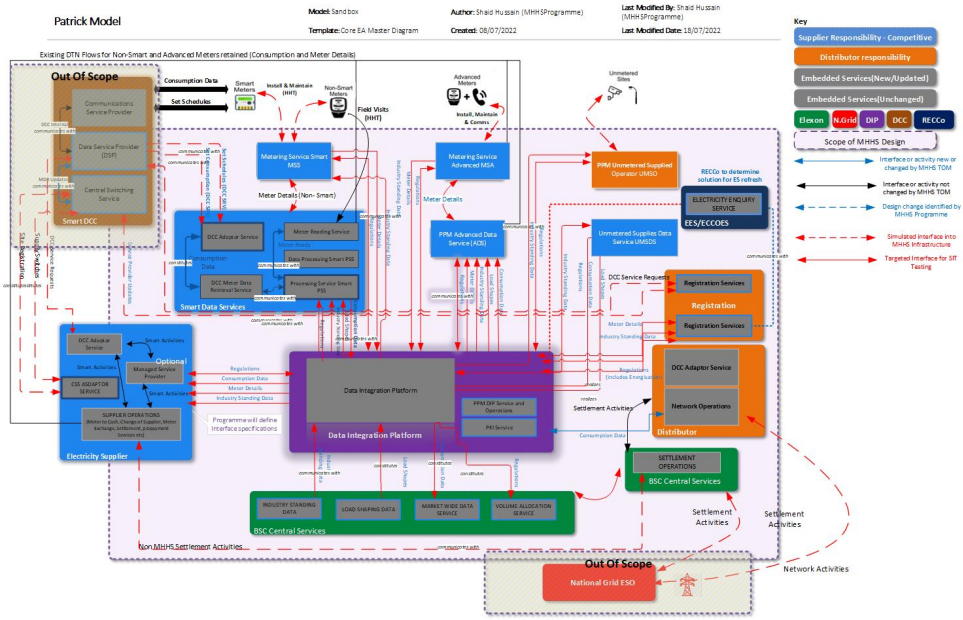

Figure 2 - TOM Illustration.

As covered within the [REF-22] MHHS-DEL2437 Non-Functional Test Policy, the proposal is to split execution within SIT-B into two phases of delivery:

- Phase 1 – IF-021 (Consumption Data Processing), a new route of message processing, and accountable for roughly 90% of overall traffic that is expected to be processed. Given the 'new systems' route to testing defined within the NFT Policy document, the focus on testing at this point would be targeted at the DIP and Helix systems. Details of message injection and stubbed/harnessed areas to be used during this test run are detailed within section 6.2
- Phase 2 – As detailed earlier within this section, this phase will consist of all roles, Programme Participants NFT SIT environments being stood up for integrated testing targeted at the remaining layer of untested infrastructure, the interfaces between Participants themselves. Tests that are planned to be carried out are summarised within section 7.

6.2 MHHS Environment Requirements

The SIT Non-Functional stage testing will be undertaken within the MHHS SIT-B test environment. SIT participants will be required to connect their SIT B supporting Test Environment. This is set out in [REF-04] MHHS-DEL618 - Environment Approach & Plan, please refer to this document for the details on:

- Management and tracking environment builds, and associated reference data.
- Planning and allocation in the use of environments for relevant participants, including user access permissions and control.
- Environment Connectivity Proving.
- Maintenance, availability, and monitoring of environments, including the specification of back-ups, exports, refreshes, or roll backs.
- Controlling deployments into environments, including data configuration, version control and release notes.
- Tracking and coordination in resolving environment issues using the defect management workflow.
- Environment requirements for the various stages within PIT, SIT and UIT phases.

With the bulk of performance testing, at volume being carried out during the PIT NFT Phase, we would still expect there to be a suitable level of messaging concurrency utilised to provide a level of assurance to solutions during the NFT SIT tests defined within section 7.4 Given the lack of current knowledge of all Participants expected SIT-B environment scales (this will be determined via bilaterals with all involved parties on the release of this document), the MHHS SI is proposing that, as a minimum, they should be scaled to 25% of the size of environment that would be expected to be implemented into production. Previous testing during PIT will have provided a level of assurance around load profiles, with the E2E style testing planned to be exercised during SIT showing that:

- Scaled volumes of processing within SIT-B show no degradation of processing times induced via interface latency.
- Error handling around interface availability, while not a direct repeat of resilience and buffering NFRs previously exercised within the PIT phase, these types of tests will provide an additional level of assurance around the behaviour of integrated systems once previously unavailable interfaces are bought back up online.

In terms of Participant requirements for Phase 1 of NFT SIT, simulation of a Smart Data Service will be carried out by the LDP, simulating the injection of IF-021 messages into the DIP at expected peak rates. Suppliers and LDSO systems will effectively be stubbed for this phase of testing, as the main focus are the new systems being implemented as part of the MHHS Programme. The programme are assuming that existing stubs/harness utilised during DIP PIT execution can be re-used for these areas. As stated earlier within this section, all relevant NFT teams will determine the viable routes for the generation and processing of all input/output from DIP for this stage of execution.

Post Phase 1 completion, the focus for Phase 2 moves to end to end timings under suitably scaled volumes of traffic and interface behaviour. Where DIP Adapters are utilised by Programme Participants, these will form the boundary points within each participant's environment segment within SIT-B, and so form the start or end timing points for message processing reporting. Where this part of the environment is either the start or end point of a business process, the programme would expect to see evidence of message creation or successful processing of received messages as a form of test evidence. Where error handing and interface availability is also managed at this layer, these would also fall into the scope of Phase 2 SIT. As a means of exercising error handling and message processing profiles (E2E timings and Operational Choreography windows) within this stage of execution, the support of all involved participants will be required. Scheduling and the type of issues that will be simulated during execution will be detailed within the SIT NFT Test Scenarios and Test Cases (these are still a WIP and will be issued for review once the NFT Approach document pack becomes more stable post SRO, Code Body and Industry reviews).

In terms of process start/injection points, these will be identified within the SIT NFT Test Scenarios and Test Case creation process. Participant support will be required in the replication of message injection/start point tests under scaled the levels of load (tbd). Where required, the re-use of load injection toolsets from Participant PIT NFT test execution is the preferred option to carry out these scaled volume simulations.

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7 Test Approach

7.1 Fundamental Principles

- Where NFRs have an impact on interfaces, participants should seek to demonstrate them in SIT (e.g. interface payload in requirement E2E0101)
- Where an NFRs stipulated test conditions impact multiple parties, participants should seek to demonstrate them in SIT (e.g. failure / resiliency tests impacting multiple parties mentioned in requirement E2E0206 in [REF-02] E2E MHHS E2E Functional & Non-Functional Requirements)
- Where NFRs describe a fundamental pre-requisite e.g. message validation, security & digital signing requirements the participants could use Functional test evidence from SIT functional to demonstrate coverage if these are within the scope of functional SIT, otherwise, these can be consumed for assurance as part of the E2E testing carried out in Phase 2 NFT SIT.

The [REF-14] NFTWG - NFR Categorisation document states which NFRs the MHHS Programme believe should be validated at which stage of test delivery.

7.2 NFT SIT – Planned Tests

The following table lists out the tests planned to be carried out during NFT SIT, we should note that discussion is still to start between the programme and the DIP & Helix Participants around environment selection for Phase 1.

NFT SIT Phase	Test	Comments
Phase 1	DIP → Helix	Full or suitably scaled volume testing if IF-021 processing.
Phase 2	Lifecycle Processing	Replication of daily processing across the MHHS eco system (the length of this test and messaging volumes are to be determined, via Test Scenario and available data creation/sync processes). This will include a form of Operational Choreography, albeit with the focus on windows of processing rather than volumes of processing.
Phase 2	E2E	Where interfaces/requirements have not been exercised as part of the above tests, these will be targeted at this stage.
Phase 2	Targeted Interface	Solution behaviour under error conditions/unavailability. Additional assurance of participant solutions ability to buffer messages when there are connectivity issues, and the successful processing of these E2E once interfaces are available again.

Table 1 - NFT SIT Test Types

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7.3 Phase 1 NFT SIT

The main factor behind this phase of NFT is to identify and exercise new areas of infrastructure, these will have already been assured during PIT NFT, but as means of further reducing the risk for successful delivery, a cycle of NFT will be carried out against the processing of IF-021 messages (Meter Consumption Data Processing) where the various parties involved in this processing being integrated. This message processing was selected as it accounts for roughly 90% of the overall traffic expected within this programme (as detailed within MHHS-DEL2324 Initial BAU Volume Model)

To fully understand the processing involved, the proposal is to exercise this process at a scaled volume of traffic relative to the participants test environments within the SIT-B infrastructure. The LDP will be responsible for the simulation of IF-021 traffic from SDS to DIP. Test data alignment will need to be matched by all involved parties, DIP and Helix. Given the end points for consumption data are the supplier and LDSO roles, i.e. existing systems, we believe that these areas can effectively be stubbed, and so for this phase of SIT, will make the creation of the required amounts of MPANs for processing a little less complex than for complete E2E execution as in Phase 2.

We are not exercising the performance of the end points, focusing on the message journey for processing within the MHHS TOM.

To gain enough data points for analysis of the results, we would expect to carry out at least 3 cycles of scaled load testing across this configuration. The load will be based around the injection of Smart and Traditional Meter data simulating peak message transfer from meter data services into DIP.

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7.4 Phase 2 NFT SIT

Following on from Phase 1, the final areas remaining un-validated, are the interfaces between all involved programme parties. In terms of what has been achieved in terms of assurance up to this point, we have:

- Assured the performance of participant systems under volume/load (PIT)
- Assured against the relevant NFRs for message processing, error handling and buffering at volume (PIT)
- Windows of processing for Operational Choreography at volume (PIT)
- Resilience within a participants own infrastructure (PIT)
- E2E simulation of Meter Consumption Data Processing (SIT)

The planned approach to testing within this phase of SIT, will focus on:

- The end-to-end processing times of suitably scaled volume of messages – a comparison can be made against the initial low volume message processing times captured during PIT NFT. Additionally, where we have interconnected processes, i.e. Operational Choreography, this will be exercised as part of the daily processing test cycles (Table 1 - NFT SIT Test Types). Analysis of the data required to carry out this level of testing is currently being carried out, the level of data available, will be the main driver for the duration of this test, i.e. day(s).
- The behaviour of message handling within integrated environments should issues occur with the DIP system itself. Unlike similar testing carried out during PIT, testing of this type will focus on the behaviour of PP's connected systems when the central DIP system is made unavailable (a controlled disaster recovery, minus the recovery factor) enabling us to determine PP system behaviour in this area, i.e. message buffering NFRs, and the successful processing of messages by the subsequent systems down the line of the business process.
- Additionally, where interface behaviour is being exercised, a level of Observability can be assured in terms of tracing buffered messages, through to successful processing at their expected end points.

There will be a level of reliance on the support of programme participants in terms of generating the required level of scaled volumes of traffic from specific ingress points into the overall infrastructure. Additionally, due to the automated methods of processing being utilised by PP systems, there may be a need of support, in terms of suspending PP's processing of messages, as a means of pausing these test steps to enable PPs to receive messages and then carry out processing of these while communications to the DIP are down.

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8 Assurance Approach

Non-Functional assurance will be achieved through 2 types of verification mechanisms:

- Verify by Design &
- Verify by Test

The principles behind the above selection for respective NFRs are below:

NFR Type	Verification Mechanism		Evidence Requirements
	By Design	By Testing	
Fundamental functional pre-requisites	N	Y	Standard Functional test evidence (test steps, snapshots of actual results) from NFT SIT Phase 2

Non testable NFRs due to test conditions, insufficient details or data / time constraints	Y	N	Statement on how this achieved from an architecture and design perspective. Summary of key design decisions and technology choices to enable this, including manual and automated processes. Links and annotation of diagrams above.
Architecture or Environment validation	Y	Y	Self-declaration by participant in their Non-Functional test approach or suitable template. Additionally assured during PIT (at expected volume) and SIT (suitably scaled volume) execution
Failure, Capacity & Throughput related	Y	Y	Statement on how this achieved from an architecture and design perspective. Summary of key design decisions and technology choices to enable this, including how this might scale and flex to support changing volumes throughout the day. Description of automated / manual processes in place. Links and annotation of diagrams above. Additionally assured during PIT (at expected volume) and SIT (suitably scaled volume) execution

Table 2 - NFR Test Types

8.1 Test Preparation

8.1.1 SIT Non-Functional Test Scenarios & Non-Functional Test Cases

The SI Test Team will use the MHHS Design repositories to inform MHHS test scenario and test case design. Test Authoring will be aligned to the E2E Design and NFRs listed in [REF-02] MHHS-E2E002 Requirements

SIT Non-Functional Scenarios and Test Cases will be developed by the SI Test Team and undergo the following review, consultation, and approval process:

1. LDP Peer Review.
2. SRO, Design Team, and Code Body Review.
3. SITWG Review / Consultation.
4. SITAG Approval.

At the time of writing, SIT Non-Functional Test Scenarios and Test Cases are still under development forecast for SITAG Approval:

- SIT NFT Test Scenarios – To be Approved at SITAG May-2024
- SIT NFT Test Cases – To be Approved at SITAG June-2024

8.1.2 Test Data

[REF-05] MHHS-DEL813 - Overarching Test Data Approach and Plan describes how an aligned set of data for Systems Integration Testing (SIT) will be delivered. Please refer to this document for the details of the overall approach to data cuts, data management, allocation, cleansing, storage, archiving and maintenance.

Prior to SIT Non-Functional Test commencement the SI will ensure all necessary data pre-requisites have been implemented and identify sets of suitable data and data generators that participants can use for each of their SIT test cases in scope. Details on process and mechanisms for this are to be documented in MHHS-DEL1662 - SIT Non-Functional Test Data Approach & Plan, which will be developed and will eventually be uploaded on the SIT Non-Functional Test & Test Data Approaches & Plans page of the MHHS Website, and is yet to be published in conjunction with this document.

8.1.3 Test Toolsets

The SI will hold a series of bilateral meetings relating to the re-use of performance testing tools, and test harnesses/stubs that have been used during the PIT phase of delivery, for re-use within both phases of SIT:

- Phase 1 regarding the DIP toolset for injection and effectively stubbing outbound messages from the DIP to Electricity Suppliers and LDSOs.
- Phase 2 regarding the scaled volume of message injection from all points of ingress into the MHHS eco system.

8.1.4 Test Management Tool

All SIT Non-Functional Test execution and defects will be managed within the MHHS Azure DevOps (ADO) Test Management Tool.

In preparation for SIT Non-Functional Test all test cases applicable to a participants' role in the test stage will be loaded into their individual ADO test project ready for execution.

8.1.4.1 Test Management Tool Onboarding

The SI will set up all nominated test resources for each SIT participant within ADO and provide the necessary access and user guidance tutorial material, ahead of a participant's entry in the overall SIT Test Phase. At SIT Non-Functional Test start, all Participants will have been active users of the ADO throughout CIT and during the first cycle of SIT Functional Testing. As such, no additional onboarding support is envisaged ahead of SIT Non-Functional Testing.

For reference, details of ADO set up, onboarding and usage is published within [REF-06] MHHS-DEL1332 - Test Management Tool User Guide.

8.1.5 Participant Preparation

In preparation for the SIT Non-Functional Test stage, participants will be required to plan, execute and complete the following activities:

- Pre-Integration Testing relevant to the SIT Non-Functional Test stage – please refer to the [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance
- Environment Connectivity proving associated with the MHHS SIT-B test environment - please refer to the [REF-04] MHHS-DEL618 - Environment Approach & Plan
- Test Data allocation has been loaded and verified – please refer to the [REF-05] MHHS-DEL813 - Overarching Test Data Approach and Plan and [REF-23] SIT Non-Functional Test Data Approach & Plan which can be found on the MHHS Collaboration Website.
- Participants have confirmed they have resources with the requisite skills and system access to support the test stage execution and defect management process – note this will be subject to assurance.

8.1.5.1 Participants adopting the Placing Reliance Policy

SIT Participants choosing to place reliance as per the [REF-07] MHHS-DEL1064 - Placing Reliance Policy will have been processed ahead of CIT commencement. An agreement will need to be made between the Programme, Code Bodies and the Participant for CIT, this will be re-assessed prior to entry in each subsequent SIT Test Stage.

This re-assessment will take place ahead of SIT Non-Functional Testing, and a decision regarding the appropriateness to continue with the same approach through SIT Non-Functional will be communicated prior to SIT Non-Functional Test Execution commencement.

When the SI-specified SIT Non-Functional Scenarios and Test Cases have been confirmed for SIT Non-Functional, if a Participant has elected to adopt the placing reliance policy in SIT, the Programme will request confirmation that the policy includes SIT Non-Functional.

If yes, the programme will assure this is in line with the original proposals, with any changes being highlighted to the Code Bodies for assessment and agreement.

Please note, any reviews for placing reliance will be undertaken as part of SIT readiness requirement for SIT Non-Functional, occurring circa 2 months ahead of SIT Non-Functional test execution (circa the end of June 2024).

8.1.5.2 Participant SIT NFT Test Readiness Report

Prior to SIT Non-Functional Test commencement each participant will be required to provide a Participant SIT Non-Functional Test Readiness Report as a self-declaration of their completion status in relation to preparation activities outlined in section 8.1.5, this will need to include any exceptions and work off plans that have been agreed and must be signed by senior stakeholders within the participant's organisation. Please note the SI will provide a report pro-forma for participants to complete.

The SI will be engaged in Test Assurance engagement and monitoring throughout these preparation activities; however, the report serves as a formal position at the point of SIT Non-Functional Test entry governance.

Participant SIT Non-Functional Test Readiness Reports will be required ahead of SIT Non-Functional Test commencement.

8.2 Test Entry Criteria

The following deliverables have been produced by the SI, reviewed, assured, and approved as appropriate for the SIT Non-Functional Test Stage:

- Test Approach and Plan – this document.
- Test Data Approach and Plan – March 2024.
- Test Scenarios – May 2024
- Test Cases – June 2024
- Requirements Traceability Matrix. – May 2024
- Test execution schedule (SIT participants will be consulted).

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The following have been set up and confirmed by the SI as ready for test commencement:

- Test tools relevant the selected test types and scope are available for use.
- Test data generators have been made available to relevant test participants.
- Test data has been allocated to participants.
- Test Management Tool
    - Tests have been loaded.

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    - Tests have been assigned to relevant participants.
- Defect Management process.
- Environment Management process.
- Release Management process.
- Test governance.
- Test meetings.
- Test Reporting.

For Participants entering SIT Non-Functional Test:

- Evidence of successful PIT Completion for the SIT Non-Functional Test stage has been submitted, assured by the SI and any work off plans agreed and tracked - please refer to [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance for full details of the PIT exit criteria.
- MHHS SIT-B Test Environment Connectivity proving has been successfully completed and evidence assured by the SI.
- Test Data allocation has been loaded, verified, and assured by the SI.
- Participant users have been onboarded to the MHHS Test Management Tool.
- Participants have confirmed they have resources with the requisite skills and system access to support the test stage execution and defect management process.
- Participants that are adopting the [REF-07] MHHS-DEL1064 - Placing Reliance Policy in SIT Non-Functional have a confirmed RACI.

8.2.1 SI Test Readiness Report

Prior to SIT Non-Functional Test entry the SI will compile an overarching SIT Non-Functional Test Readiness report on the status of these entry criteria, which will note any exceptions or work off plans that have been agreed and include the SI recommendation to proceed or pause. This report will form the basis on which governance approval to commence SIT Non-Functional Test execution will be sought via the MHHS Governance Framework – please see section 10.1.

8.3 Test Execution

Test execution will be conducted within a single test cycle for individual cohorts, retaining the ability for final regression testing ahead of the M10 Milestone.

During test execution the SI Test Team will coordinate and support the execution, in particular where hand offs of test cases are required between participants and re-scheduling of execution where there is either slippage or overlap conflicts with SIT functional testing.

It should be noted that as a condition of participation each SIT PP will be required and obligated to support other participants' testing, so a participant should look at the tests for all Roles and be prepared to support those tests where involvement is needed to ensure the test can be run in end-to-end. For core capability providers (Elexon (Helix), DIP, LDSOs and St Clements, RECCo,) this will be up until the end of all SIT testing, some none-core capability PPs may be required to continue involvement beyond the completion of their own tests to maintain a minimum viable cohort for the purpose of supporting the remaining participants to complete their SIT testing.

8.4 Test Prioritisation

Test prioritisation will be carried out according to:

- Significance of message content for processing of larger amounts of data, namely forming tasks within the Operational Choreography processing
- Priority to the Programme Participants, in terms of categorisation of tests that, if not executed, would prevent the day to day running of their systems.

For the risk-based prioritisation, each test will be prioritised by the relevant stakeholders in terms of its market impact (i.e., if the solution element covered by the test failed in live use, what would be the impact on the solution) and technical probability (i.e., how likely is it that test issues will be present in the solution element). This prioritisation will use a High, Medium, Low scale to group tests into three categories:

1. tests which cover solution elements that a) are very likely to contain test defects and/or b) would cause major market impact if they failed.
2. tests which cover solution elements that a) are likely to contain test defects and/or b) would cause significant market impact if they failed.
3. tests which cover solution elements that a) are unlikely to contain test defects and/or b) would cause only minor market impact if they failed.

Please note consideration will also be given to tests based against the complexity of set-up that is required for them, in terms of test data and status. This will be assessed during the Test Scenario/Test Data Design phases.

8.5 Test Pass and Fail

A test will pass if the actual result matches the expected result. Where this is not the case, an appropriate defect will be raised.

If the subsequent triage process determines that the defect has been raised in error (e.g. due to a misunderstanding), if the test can then be concluded successfully the test will be reset from “fail” to “pass”.

There is also the possibility of marking a test “descoped” by agreement of all parties concerned, including Code Bodies, and on recording of a valid reason.

Where a test has failed, but during triage a workaround for the associated defect has been identified, which in turn reduces the severity of that defect, the associated failed test can be re-executed using the recommended workaround, if this enables the test to be concluded successfully then the test can be set to “passed with workaround(s)”. Special attention will be given to any tests that have been set to this status during execution, and where a full fix becomes available during the SIT test stage the test will be scheduled for re-testing. If any tests remain in this state at the end of testing, then they will be clearly marked in the test completion report and agreement sought by all concerned parties (including Code Bodies) that this acceptable for go-live and that an agreed work off plan is in place. Please refer to the exit criteria defined within the Test Exit Criteria and Test Exit Defect Thresholds sections for how failed tests may affect SIT NFT completion.

Under some circumstances tests will be marked as “blocked” if they were due to be executed in the schedule but are unable to be due to a known defect. This status will be used appropriately where it assists in informing management stakeholders of the impact of open defects on testing progress or completion.

Some tests may be set to “deferred” if it has been agreed by all concerned parties that they will be executed in a later cycle, release, or test phase.

8.6 Test Data Usage

Each SIT Non-Functional Test participant will be allocated a set of suitable test data for each test case in scope for their role. All MPANs records used in testing will be allocated a unique reference ID that will be used in all communications including test result and defect logging in ADO.

Full details of how test data will be generated and managed during test execution are to be documented in [REF-23] MHHS-DEL1662 - SIT Non-Functional Test Data Approach & Plan which can be found on the SIT Non-Functional Test & Test Data Approaches & Plans page of the MHHS Website and has been published in conjunction with this document.

8.7 ADO

ADO will be used for:

- Managing test case execution, hand-offs between SIT Participants and evidence capture.
- Tracking and reporting test execution progress and coverage.
- Raising and managing defects (including Environment issues).
- Tracking and reporting defect status and progress.
- Release Management.
- Maintaining requirements to test traceability.
- Tracking and reporting test coverage status.

SIT participants will be expected to keep ADO updated in real time as execution is carried out.

Details of the ADO set up are published within [REF-06] MHHS-DEL1332 - Test Management Tool User Guide.

8.8 Test Evidence Capture

Programme participants conducting SIT Non-Functional Test will need to provide test evidence for the test steps in ADO where it has been indicated as required, note that this will be expected to be captured and uploaded into ADO at the point of test execution, or no later than the end of the business day, any exceptions to this timing of evidence upload will need to be specifically agreed with the SI. This evidence will be used during test assurance to validate actual vs. expected result of the test. In addition, test evidence will be critical for triaging defects, and this may require both the evidence of the failure event, and where it is deemed necessary by the SI, upstream/downstream test step evidence to assist in analysing the failure.

Test Evidence may also be used by Programme participants when responding to the Qualification Assessment Document, to demonstrate adherence to relevant Qualification Requirements.

Screenshots of the test system, messages and or electronic logs of messages must be provided as appropriate and should be annotated with the Test Case reference and test step that they apply to. The evidence requested is standard for any test assurance process and should be like that required by the Programme participant's own quality gate and internal audit.

8.9 Defect Management

The MHHS programme defines a defect, in respect of any tests, as:

a) Anything that is preventing the execution of the tests; or
b) Once commenced or executed, the test has an unexpected or unexplained outcome or response.

A defect is raised in respect of any of the following:

- Failure in the way systems (or system components) operate (both functionally and non-functionally).
- Failure in the way systems have been integrated and/or communications between these systems.
- Failure in the performance of test emulators, simulators, or data generators.

- Failure in relation to different Test environments.
- Failure in relation to the Test specifications, cases, data or expected results.
- Documentation Issue.

All defects will be raised and managed within MHHS Test Management Tool (ADO) and will follow the process depicted below.

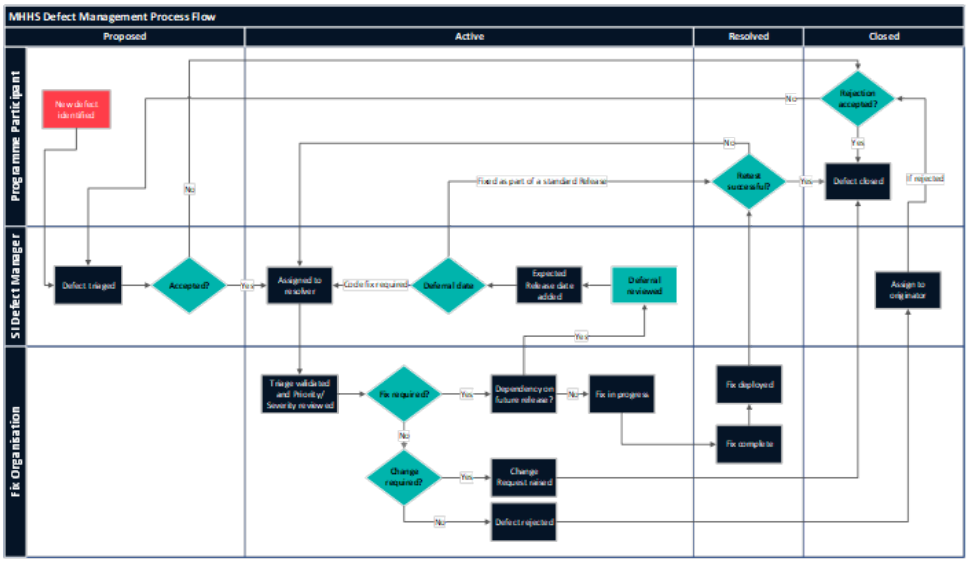


Figure 3 - ADO Defect Process Flow

Defects arising within the SIT Non-Functional Test stage will be managed in accordance with the [REF-08] MHHS-DEL466 - Defect Management Plan.

8.10 Release & Configuration Management

When defects arise that require a code fix, code releases will be managed in accordance with the [REF-09] MHHS-DEL1089 - Release and Configuration Management Approach & Plan.

During the assessment of any release, the appropriate level of retesting and regression will be identified, and the schedule amended to accommodate the changes.

Each participant will be expected to maintain a test environment for the purposes of testing releases ahead of deployment into the MHHS SIT-B test environment (this will be a PIT type environment managed in the participants' own network domain). A condition of release deployment will be evidence of release testing and regression testing having been undertaken which will be reviewed by the SI test assurance team.

8.11 Regression Testing

Test cases will be identified as candidates for a core regression pack during test preparation.

During SIT Non-Functional test execution, regression testing requirements will be assessed throughout on a case-by-case basis in relation to any defects that have been fixed with a code release, including assessment of the impact the release may have on testing that had been previously executed within the test stage.

8.12 Test Suspension and Resumption Criteria

During SIT, any PP has the right to suspend testing where it considers necessary, by agreement with the SI team. Testing will only recommence when agreed between the PP and SI team. Where the SI team believes there are reasonable grounds to suspend all testing, this can be done by agreement with the SRO. In the case of any suspension the IPA, Code Bodies and OFGEM would also be informed.

Reasonable grounds for suspending testing may include any of the following:

- Application components are not available as scheduled.
- A testing issue prevents further useful testing from proceeding.
- A large percentage of planned test cases for a given day fail and significant root cause analysis needs to be undertaken to establish the cause. The outcome of any root cause analysis activity may result in testing being suspended; or
- Test cases to be executed are in a “blocked” status due to an identified testing issue.

Where testing has been suspended, either the SI team or the PP (as appropriate) will produce a test suspension report reflecting the cause of the suspension and the actions to be taken by whom and when, for testing to resume – the test resumption criteria. Testing will only resume once the PP has demonstrated to the SI team or the SI team to the SRO that the test resumption criteria have been met.

8.13 Participant Test Completion Reports

As each SIT participant concludes their testing within the SIT Non-Functional Test stage, they will be required to provide an individual Test Completion Report, this will need to include any exceptions and work off plans that have been agreed.

Please note the SI will provide the test completion report format for all participants to complete, the expectation is that participants will provide test completion reports within 5 working days of when they have completed their stage testing.

The SI will be engaged in Test Assurance engagement and monitoring throughout the execution activities; however, the report serves as a formal position at the point of SIT Non-Functional Test exit governance.

8.14 Test Exit Criteria

- All tests have been run to completion or any exceptions are documented and agreed.
- All priority 1 and 2 tests have passed, and the overall test pass rate is 85% or above or any exceptions are documented and agreed.
- There are no outstanding severity 1 or 2 defects, or any exceptions are documented and agreed.
- Severity 3 and 4 defect, exit thresholds:
    - 10% of test cases allocated x Severity 3 Defects
    - 20% of test cases allocated x Severity 4 Defects
- Work-off plan for any outstanding defects has been produced and agreed.
- Test results and evidence has been captured in the test management tool.
- Defects have been captured in the defect management tool.
- Any required regression testing has been successfully completed.

8.15 Test Exit Defect Thresholds

The following Test Exit Defect Threshold rules will be applied to the SIT Non-Functional Test Stage:

- 0 x Severity 1 Defects
- 0 x Severity 2 Defects
- 10% of test cases allocated x Severity 3 Defects
- 20% of test cases allocated x Severity 4 Defects

Each participant, based on their Market Role, will be allocated a subset of SIT Non-Functional Test Cases for execution.

The 10% and 20% calculations will be based on this allocation, e.g. a participant is allocated 150 SIT Non-Functional Test Cases to execute (Tests where the participant is the subject of the Test and where they are involved in the test), which would result in Defect Test Exit Thresholds being set for that specific Programme participant as:

- 0 x Severity 1 Defects
- 0 x Severity 2 Defects
- 15 x Severity 3 Defects
- 30 x Severity 4 Defects
- Any exceptions to this would need to be documented and agreed.

Each SIT Participant will be informed of their Threshold figures prior to Non-Functional Test Execution commencement.

8.16 SI Non-Functional Test Completion Report

At the end of the SIT Non-Functional Test for both the 'MVC' and 'Other SIT PP' cohorts, the SI will produce an overarching test stage completion report which will cover:

- Test Execution Results (Anonymised as appropriate i.e., identified by market role rather than organisation).
- Summary of Test Status (Planned vs. Actual).
- Passed with Workarounds (If applicable).
- Failed Tests (If applicable).
- Descoped or Deferred Tests (If applicable).
- Status of work off plan from previous phase / stage (If applicable).
- Defects Summary (Anonymised as appropriate i.e., identified by market role rather than organisation).
- Raised and closed (Inc closure reason analysis).
- Outstanding Defects with their status and work off plan.
- Outstanding Defects (By Priority and Severity).
- Outstanding Defects (By Test Participant - identified by market role rather than organisation).
- Defects Analysis (Anonymised as appropriate i.e., identified by market role rather than organisation)
    - By Category.
    - By Closure Reason.
- Defect Lessons Learned and Improvement Plans for the next phase / stage.
- Test Exit
    - Exit Criteria Status.

    - Work Off Plan (Note Code Bodies will be consulted in ref to role-based Qualification requirements).
- Overall Test Execution Observations, Lessons Learned and Improvement Plans for the next phase / stage (If applicable).
- Conclusion and Recommendation.

This report will form the basis on which governance approval of the completion of the SIT Non-Functional Test stage for both the 'MVC' and 'Other SIT PP' cohorts will be sought via the MHHS Programme Governance Framework – please see section 10.

9 Test Schedule

9.1 SIT Non-Functional Test

SIT Non-Functional Test is the 4th stage within the System Integration Test schedule.

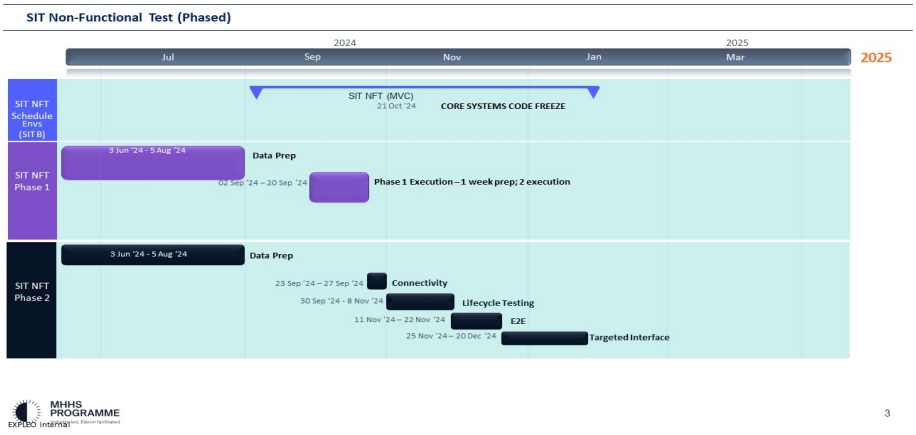


Figure 4 - SIT Stages Plan on a Page

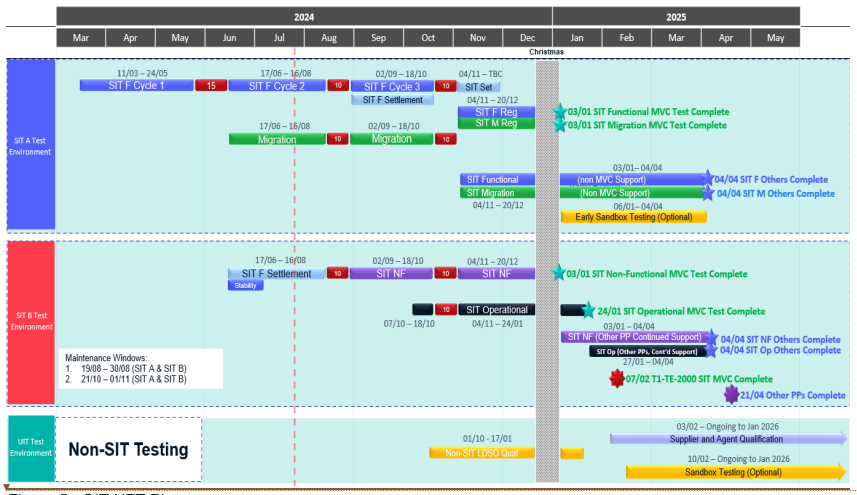
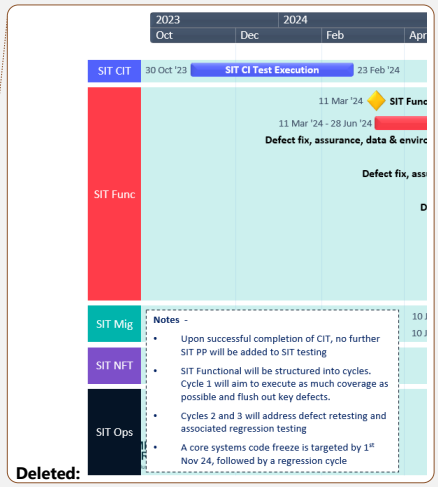


Figure 5 - SIT NFT Phases



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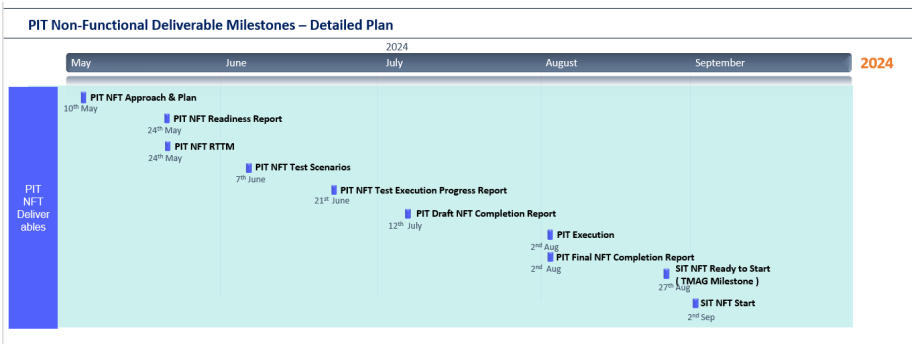
9.2 SIT Non-Functional Test Preparation Schedule

SIT Non-Functional readiness dates that all PP's will be required to meet ahead of test execution commencement can be found below. Please note that this also includes the schedule for test assurance and governance activities. It is recommended that participants refer to [REF-10] MHHS-DEL1139 - MHHS Outline Plan as the primary up to date source to confirm MHHS programme tasks and dates.



For details of activities, deliverables and assurance associated to PIT please refer to [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance.

10 Test Management & Organisation

The following resources will be required to prepare and execute the SIT Non-Functional Test stage. The table below is a guideline to the types of resource required by organisations participating in the day-to-day activities of Non-Functional Testing. It is the responsibility of each Participant to provide sufficient and appropriate resources to support the Test Stage.

Organisation	Role/Resource Type
SIT Participants	• Test Manager • Test Analyst • Defect Manager / Analyst • Programme Management • Infrastructure, application, and network support • Release and configuration management support • Environment Management support
SI Team	• Test Manager • Test Lead / Analyst(s) • Test Data Lead / Analyst(s) • Defect Manager / Analyst(s) • Programme Management • Environment Manager • Release Manager • Test Architect / Assurance Manager • Test Assurance Lead / Analyst(s) • Test Management Tool Lead / Analyst(s)

Table 3 - Test Teams & Roles

10.1 Test Meetings

Daily Test Meetings

During Test Execution, the SI will hold regular stand-up meetings with each individual test Participant (and / or their delegated 3rd Party testing provider) to:

- Review the status of testing for the previous day.
- Review planned testing for the day.
- Review any changes required to scheduled testing e.g. for blocking Defects.

Where appropriate both the Participant and other party representatives who are engaged in testing together at the time may be invited into joint stand-ups where there is requirement to discuss and coordinate on cross party activities or blockers.

The SI may also invite SME's both from within the central programme or from SIT Participant organisations to discuss specific topics concerning defects, environmental or data issues or releases.

Weekly Test Execution Progress Meetings

The SI will conduct weekly Test Progress meetings with all test participants engaged in testing at that point in the schedule, to:

- Collaborate with all Test Participants on matters relating to Test Execution
- Review testing progress for the week to date.
- Review planned testing for the following week.
- Review any changes required to scheduled testing e.g. for blocking Defects.

This meeting will also involve representatives from the Environments, Data, Defect Resolution, Release Management and Code Bodies.

Note that the default period for reporting will be from Friday to Thursday to allow for collation and distribution of reports. The meeting will be conducted using Microsoft Teams.

Defect Management Meetings

Please refer to the [REF-08] MHHS-DEL466 - Defect Management Plan.

Environments and Release Management Meetings

Please refer to:

- [REF-04] MHHS-DEL618 - Environment Approach & Plan
- [REF-09] MHHS-DEL1089 - Release and Configuration Management Approach & Plan.

Fast Track Implementation Group

The SI will provide status updates within the FTIG forum and escalate any blocking issues which may need collaboration at this forum in order to resolve.

10.2 Test Roles & Responsibilities

10.2.1 SIT Non-Functional Test RACI

Activity	Participant	SI	SI Test Assurance	Code Bodies	SITWG	SITAG
SIT Non-Functional Test Scenarios	I	R,A	C	C	C	I
SIT Non-Functional Test Scenarios Approval	I	C	C	C	C	R,A
SIT Non-Functional Test Cases	I	R,A	C	C	C	I
SIT Non-Functional Test Cases Approval	I	C	C	C	C	R,A
SIT Non-Functional Test Approach and Plan	I	R,A	C	C	C	I
SIT Non-Functional Test Approach and Plan Approval	I	C	C	C	C	R,A
Test Data Allocation	C	R,A	C	I	C	I

Loading and assigning of Test Cases in ADO	I	R,A	I	I	I	I
PIT Preparation, Execution and Completion	R,A	C	I	I	I	I
Coordination of SIT-B Environment Connectivity Proving	C	R,A	I	I	I	I
SIT-B Environment Connectivity Proving	R,A	C	I	I	I	I
Test Data Load and Verification	R,A	C	I	I	I	I
Participant mobilisation of appropriate Test and Support Resources	R,A	C	I	I	I	I
Participant SIT Non-Functional Test Readiness Report	R,A	C	I	I	I	I
SI SIT Non-Functional Test Case Prioritisation	I	R,A	C	C	C	I
SI SIT Non-Functional Test Readiness Report	C	R,A	C	I	I	I
SI SIT Non-Functional Test Readiness Report Approval	I	C	C	I	C	R,A
Decision to commence SIT Non-Functional Test Execution	I	C	C	I	C	R,A
Completion of assigned SIT Non-Functional Test Case Execution within ADO (inc. evidence capture)	R,A	C	I	I	I	I
SIT Non-Functional Test Case Execution Coordination and Support	C	R,A	I	I	I	I
Defect Management Coordination	C	R,A	I	I	I	I
Fixing assigned Defects (inc. Environment Defects)	R,A	C	I	I	I	I
Coordinating Releases & Code Deployments	C	R,A	I	I	I	I
Deployment of Releases	R,A	C	I	I	I	I
Chairing Test Meetings	C	R,A	I	I	I	I
Participant Test Meeting Attendance	R,A	C	I	I	I	I

Reporting on Overall Test Execution and Completion Progress and RAG status	C	R,A	C	I	I	I
Participant SIT Non-Functional Test Completion Report	R,A	C	I	I	I	I
Participant SIT Non-Functional Work Off Plan	R,A	C	I	I	I	I
SI Participant Test Completion Assurance	C,A	C	R	C	I	I
SI SIT Non-Functional Test Completion Report	C	R,A	C	C	I	I
SI SIT Non-Functional Test Completion Report Approval	I	C	C	C	C	R,A

Table 4 – SIT Non-Functional Test RACI (R = Responsible, A = Accountable, C = Consulted, I = Informed)

11 Test Governance & Reporting

11.1 Governance

SIT Non-Functional Testing will operate in accordance with [REF-12] MHHS-DEL030 - Programme Governance Framework adhering to the decision making and escalation principles set out within.

The table below is an extract from the [REF-26] MHHS-DEL1140 - Milestone Register identifying SIT Non-Functional Test milestones and the decision-making authority (governance group). The SI will be responsible for reporting status and RAG for all Tier 2 and 3 SITAG milestones.

Milestone Tier	Level 1 Milestone	Milestone ID	Milestone Title	Milestone Date
T3		T3-TE-0028	SIT Non-Functional Testing Test scenarios approved	May 2024
T3		T3-TE-0057	SIT Non-Functional Testing Test Completion Report (Other Participants) Approved	April 2025
T2		T2-TE-0900	SIT Non-Functional Testing Test Completion Report (Minimum Viable Cohort) Approved	January 2025
T3		T3-TE-0036	SIT Non-Functional Testing Test Cases Approved	June 2024
T3		T3-TE-0026	SIT Non-Functional Testing Test Approach & Plan approved	May 2024
T3		T3-TE-0040	SIT Non-Functional Testing Start	September 2024
T2		T2-TE-0700	SIT Non-Functional Testing Preparation Complete	September 2024
T3		T3-TE-0053	SIT Non-Functional Testing End (Other Participants) (incl. confirmation that PPs have submitted their Test Completion Reports to Programme for assurance)	April 2025
T3		T3-TE-0047	SIT Non-Functional Testing End (Minimum Viable Cohort) (incl. confirmation that PPs have submitted their Test Completion Reports to Programme for assurance)	January 2025

Table 5 – SIT Non-Functional Test Milestones

11.2 Reporting

Once test execution for the test stage has started, the responsible party will ensure that test execution progress is kept up to date in ADO and tracked within configurable ADO dashboards (See below for an ADO dashboard example). The SI team will then produce regular aggregate progress reports based on this information. The reports will be collated by the SI team for use within Test progress, Defect Management and Release Meetings and for upward reporting to the SRO, Code Bodies, NFTWG and SITAG. Reports are configurable but will generally show:

- Actual number of test cases executed vs. planned, cumulative trend.
- Actual number of test cases passed vs. planned, cumulative trend.
- Actual number of open and closed test defects vs. cumulative trend.
- Actual number of test defects outstanding, split by severity / priority.

- Test and requirement coverage by priority.
- Test and requirement coverage across MVC and all SIT Participants.
- Progress against test exit criteria.
- Progress against any work-off plan from previous test stage.
- Risk, dependency and assumption status.
- Overall RAG status.

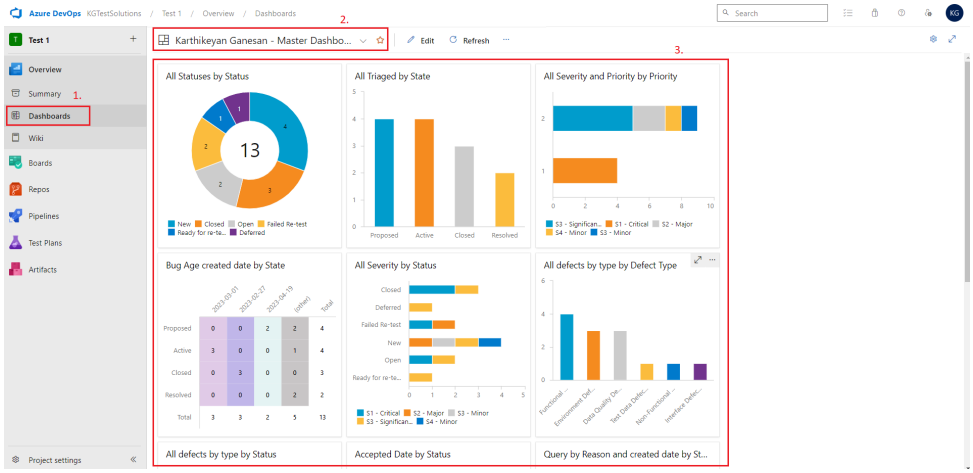


Figure 6 - ADO Dashboards

12 Test Assurance

12.1 Approach

SI Team will carry out monitoring and outcome assurance throughout PIT, details of this approach can be found within the [REF-03] MHHS-DEL852 - Pre-Integration Test Guidance with additional relevant information relating to the types of evidence that is required found within [REF-14] MHH**S**-DEL2128 NFR Categorisation.

In addition to this SI will engage in assurance of Programme participant SIT readiness activities i.e.

- Environments.
- Test Data.
- Test and Support Resource mobilisation.
- Test Resource readiness for execution.

During and following SIT Non-Functional Test execution the SI will undertake assurance of test execution results with a specific focus on:

- Validating evidence of actual vs. expected results of tests.
- The quality of supporting information and evidence within defects.
- Evidence of local defect retesting prior to fix release deployment to the SIT-B environment.
- Test Stage Exit Criteria and Completion Status.