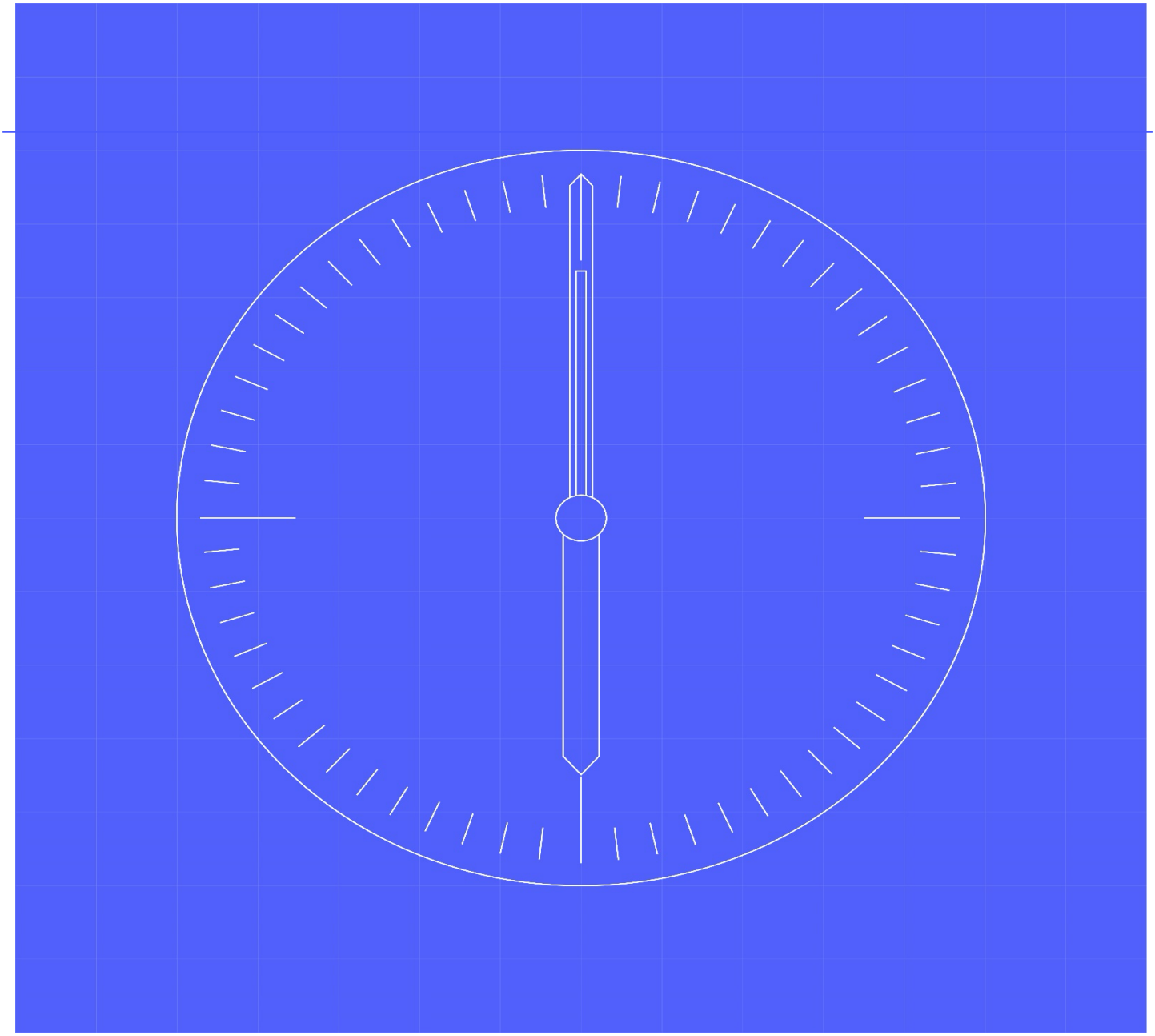
MHHS PROGRAMME
Industry-led, Elexon facilitated

SIT Operational Test Approach & Plan



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1.1 Change Record

Date	Author(s)	Version	Change Detail
14/03/2024	Julia Ledden	0.1	Initial Draft
26/03/2024	Julia Ledden	0.2	Updated to include Review comments from SRO/Code Bodies
12/04/2024	Julia Ledden	0.3	Updated to include comments from Industry review

1.2 Reviewers

Reviewer	Role
Lee Cox	SI Test Manager
Kevin Davis	SI Test Architect
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/Operations Test Manager
Iain Smith	SI NFT Test Lead
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	March 2024	
REF-03	MHHSP-OPC001 Operational Choreography	Design	21st Sept 2023	
REF-04	MHHS-DEL2437 Non-Functional Test Policy	SI Testing	18th March 2024	
REF-05	MHHS-DEL2124 Service Management Strategy v0.3	Design		
REF-06	MHHS-DEL2376 SIT Non-Functional Test Approach and Plan	SI Testing	In development	
REF-07	Business Requirements (functional)			
REF-08	MHHS-E2E001 End-to-End Solution Architecture v3.6	Design		
REF-09	MHHS-DEL1671 DIP E2E Onboarding Guide v1.8			
REF-10	MHHS-DEL2284 CR044 Data Refresh	Design		
REF-11	MHHS-DEL1118 Qualification Test Approach and Plan	Code bodies	March 2024	
REF-12	MHHS-DEL1259 SIT Functional Test Approach and Plan	SI Testing	August 2023	
REF-13	MHHS-DEL2128 NFR categorisation	SI Testing	In development	
REF-14	MHHS-DEL396 MHHS-DIP002 Functional & Non-Functional Requirements		July 2022	
REF-15	MHHS-DEL852 Pre Integration Test Guidance	SI Testing	18th August 2023	
REF-16	MHHS-DEL618 Environment Approach & Plan	SI Testing	13th October 2023	
REF-17	MHHS-DEL813 – Overarching Test data Approach and Plan	SI Testing	5th May 2023	
REF-18	MHHS-DEL2432 SIT Operations Test Data Approach and Plan	SI Data	In development	

REF-19	MHHS DEL1332 Test Management Tool User Guide	SI Testing	16th June 2023	
REF-20	MHHS DEL1064 Placing Reliance Policy	SI Testing	27th April 2023	
REF-21	MHHS DEL466 – Defect Management Plan	SI Testing	23rd May 2023	
REF-22	MHHS DEL1089 Release and Configuration Management Approach & Plan	SI Testing	17th May 2023	
REF-23	MHHS-DEL1139 – MHHS Outline Plan	SI Testing	See MHHS Website	
REF-24	MHHS DEL466 Defect Management Plan	SI Testing	23rd May 2023	
REF-25	MHHS DEL030 Programme Governance Framework	PMO	08th Mar 2023	
REF-26	MHHS DEL1140 Milestone Register	PMO	11th October 2023	

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-01] MHHS-DEL315 - E2E Testing & Integration Strategy describes the overall, end-to-end (E2E) approach to testing - 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). The document describes the major phases of testing:

- **Pre-Integration Testing (PIT)**
- **Systems Integration Testing (SIT)**
- **User Integration Testing (UIT)**

The purpose of Systems Integration Testing (SIT) phase is 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 SIT phase comprises of 5 sub–Test Stages:

- **Component Integration Testing (CIT)**, where all components of the MHHS E2E solution are integrated and tested for compliance with the interface specifications and codes of connection. This includes step-by-step integration of the Data Integration Platform (DIP) (including PKI), central systems, Registration Services, Smart and Advanced Data Services, Metering Services, Suppliers, Network Operations, UMSO services and UMSDS.
- **Functional Test**, where together, the systems and their interfaces are tested E2E for compliance with the E2E MHHS Design, using pre-defined E2E business scenarios.
- **Migration Test**, where the migration process specified in the E2E MHHS Design is tested, starting with the “as is” systems and moving through the migration steps to arrive in the final “to be” state, i.e. moving individual metering points from legacy settlement to MHHS settlement arrangements. Both central (market infrastructure) and Supplier, Data Service and Metering Service provider systems will be needed for Migration SIT.
- **Non-Functional Test**, where the non-functional characteristics (including performance and security requirements) specified in the E2E MHHS Design are tested.
- **Operational Test**, where the 'central systems’ operational functions and processes will be tested (including service management solutions and Business Continuity/Disaster Recovery). There will be obligations on all/most SIT Participants through SIT Operational Testing including Supplier, LDSO, Data Service and Metering Service provider systems where testing will be required for scope items impacting their roles/services this includes the need to demonstrate a limited number of business requirements being met and will need to demonstrate their Operational processes are in place

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 Operational Test stage, describing the associated objectives, scope, approach, schedule, management, governance, and assurance of the test stage. This is a child document of [REF-01] MHHS-DEL315 - E2E Testing & Integration Strategy and therefore it is recommended that for context both documents are read in conjunction.

3 Introduction

3.1 Document Purpose

The SIT Operational 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 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.

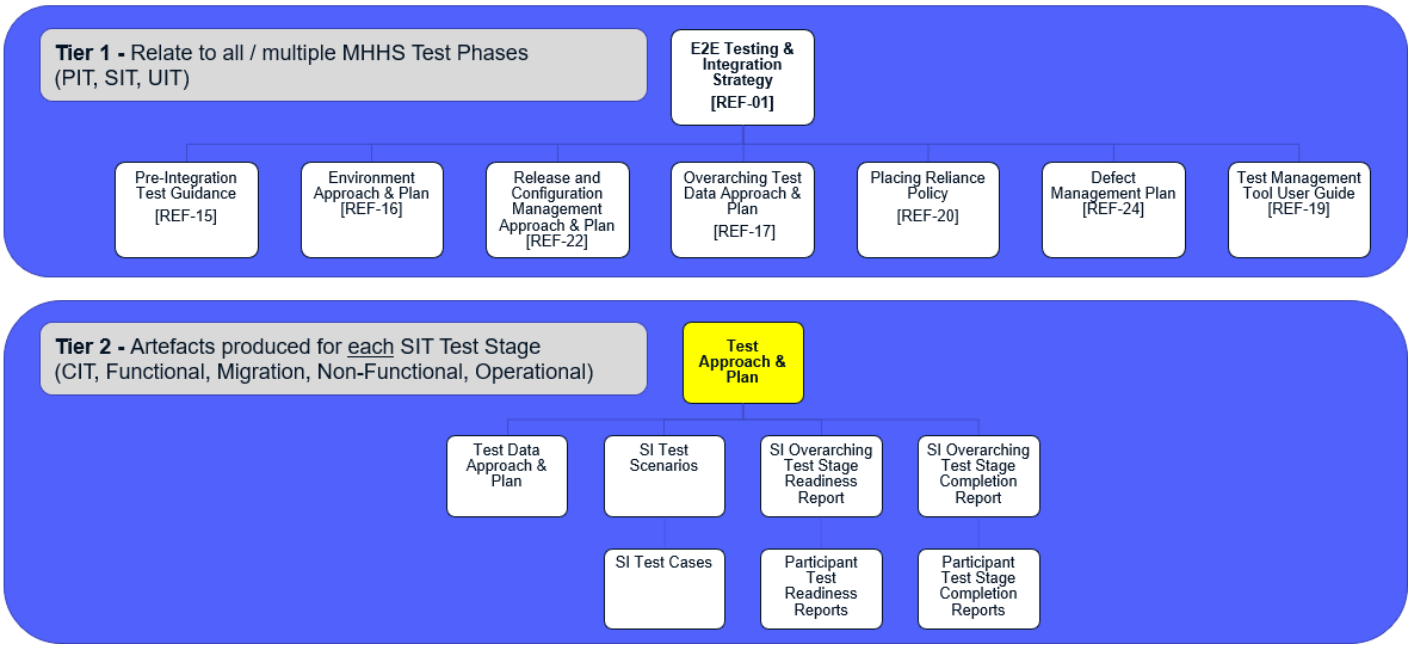


Figure 1 - MHHS two tier test documentation hierarchy

The SIT Operational 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 Operational Test Data Approach and Plan)
    - Stubs and Harnesses
    - Test Management Tool
    - 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)
- SIT Working Group (SITWG)
- SIT Advisory Group (SITAG)
- All Programme party teams and resources involved in SIT Operational execution or support.
- Balancing & Settlement Code (BSC) and Retail Energy Code (REC) Code Body Qualification teams
- Independent Programme Assurance (IPA).

The completion of SIT Operational Testing within the SIT B Test environment which is a defined period of time currently planned for 14 weeks commencing 07 Oct 2024 and concluding 24 Jan 2025 does not equate to the solution being production ready. Operational Readiness will be undertaken separately by the Programme which is not part of the Testing programme. Operational Testing results can be used to inform Operational readiness which would be undertaken on the production landscape

3.2 Reviews and Approvals

The SIT Operational 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
- Simon Berry, SI Environments and Release Manager

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

- Adrian Ackroyd, SRO Client Programme Test Manager,
- Smitha Pichrikat, SRO Function Client Delivery Manager,
- Code Bodies, (BSC and REC)
- Nicola Farley, SRO Qualification Test Manager
- Phil Heiton, SRO SIT NFT/Operations Test Manager

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

Approval will then be requested from:

- SIT Advisory Group (SITAG).

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

3.3 Change Forecast

The SI Operational Test 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.

At the time of writing the SIT Operational test scenarios and cases have not been authored, once a greater degree of maturity has been reached on these artefacts, they will be analysed to determine the sequencing and timing of SIT Operational Testing. This will be socialised and developed in consultation with the SITWG 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 SRO, Code Bodies and industry consultation the document has been updated to provide details in line with review comments

3.5 Assumptions and Dependencies

3.5.1 Assumptions

- Any changes to scope from the point this approach has been approved will be subject to an impact assessment by the SI Operational Test team and code bodies and may result in impacts to approach and schedules
- There will be overlap between SIT Operational and SIT Non-Functional Test Phases in terms of Observability and general best practice e.g. Interface failures and monitoring. The SI Operational Test team and the Non-Functional Test teams will work closely to ensure that there is no duplication of Testing between NFT and Ops Testing
- An instance of the Service Management tool will be available to support Operational Testing in SITB

3.5.2 Dependencies

- That Service Management, Operational processes, DIP onboarding and Offboarding, BCDR Processes and Workflows with any supporting Data set up are available to the SI Operational Test team within the timeframe required to support Test preparation activities
- SIT Operational Testing is executed in a suitable, fit for purpose ideally production like environment

4 Objectives

4.1 Objectives

The objective of the SIT Operational Test stage is to validate through a variety of Test techniques that Operational processes are in place that support the MHHS Design including Service Management and Business Continuity/Disaster Recovery.

This Test Phase will be executed in order to prove that the solution can be operated and supported using supporting processes in a production like Test environment.

Operational Testing will through various testing techniques exercise, validate and provide evidence of the test execution results for the following areas which in turn informs and enables Operational Readiness Testing to start before its released into production

Operational Testing is primarily a type of Non-Functional Testing where the Non-Functional Requirements along with Operations processes are tested and validated, however this does not where applicable exclude the inclusion of Functional requirements

The purpose of the document is to

- Define testing scope, test management and assurance activities necessary to demonstrate that services can operate under the new MHHS arrangements.
- Provide a robust schedule for Operational Testing in accordance with the MHHS implementation timeline
- Describe the governance, change process, resource, environment, data and tools to underpin and support SIT Operational Testing and the effective delivery of outcomes
- Identify activities and responsibilities of SIT participants to be able to successfully complete SIT Operational testing.
- Deliver an appropriate and achievable approach to Operational Testing that meets the requirements and satisfies the pre-defined Exit Criteria for the Test Phase

The document aims to cover the Test Lifecycle components, i.e. preparation, development and execution of the tests, it also discusses environments, data, simulators, reliance policy and assurance methods.

The Test techniques to be adopted for Operational Testing are:

- Documentation reviews e.g. process docs (static testing)
- Test Execution / Results assurance
- Participant self-assessment
- Leverage from other Test Phases results assured and validated to be appropriate and therefore not duplicated in Operations Testing

5 Scope

5.1 In Scope

The scope of the MHHS SIT Operational Testing is summarised as follows:

- Operational Processes impacted as a result of MHHS inclusive DIP Onboarding and Offboarding
- Business Continuity / Disaster Recovery
- Service Management – processes/workflows
- Operational Choreography
- Demonstrate LDSO operability with MPRS (in own target infrastructure)
- Business Requirements (limited)
- Security
- CR044 – implementation of Data 'Refresh' message IF-051 – Note, this CR has not yet been approved and therefore is TBC as to whether remains in scope

The table below details the roles expected to be involved

	LSS	MDS	VAS	ISD	DIP	Supplier	Data	Metering	REGS	LDSO	EES
Business Requirements	x	x	x	x	x	x	x	x	x	x	
MPRS in LDSO Target		x		x	x	x	x		x	x	
CR044		x			x				x		x
Security	x	x	x	x	x	x	x	x	x	x	x
Op Choreography						x	x	x	x		
Operational Processes	x	x	x	x	x	x	x	x	x	x	x
Service Management	x	x	x	x	x	x	x	x	x	x	x
BCDR	x	x	x	x	x						
DIP On/Offboarding				x	x						

5.2 Operational Processes

During Operational Testing any new, changed or key Operations processes will be exercised in conjunction with the applicable systems to ensure processes are aligned to system steps and the MHHS Design. This testing should include both happy path and negative testing where applicable e.g. Error handling and fault management.

Operational processes expected to be covered are: (not exhaustive and tbc once processes available)

- Maintenance (e.g. systems access and patching, process changes)
- Fault Management / error handling processes with limited Test execution where required to cover Functional Testing for Business Requirements (deemed as applicable to Operational Testing)
- Reporting (Performance, Monitoring)
- DIP Onboarding / Offboarding
- Service Management – covered in 5.4
- BCDR – covered in 5.3

DIP Onboarding / Offboarding

Operational Testing will exercise Tests to validate the both the DIP onboarding and the DIP offboarding process.

In order not to disrupt, adversely impact in-flight Testing across the Programme, it may be prudent to use a Pseudo new player/role to Test the processes

Operational Testing for DIP Onboarding / Offboarding will focus on the following areas: (to be confirmed once processes are available)

- E2E Testing of the DIP Onboarding Process, inclusive of ISD publication process, updates and receipt of ISD data by the newly onboarded player/role
- E2E Testing of the DIP Onboarding where errors are encountered during the Onboard process to assure the error handling, fault management processes concluding in a successful Onboard
- Testing of the in-life Certificate Management Process for both Certificate renewals and replacements
- E2E Testing of the DIP Offboarding process, inclusive of Certification revocation and subsequent negative Test to ensure access is no longer possible for the Offboarded party

The impacted Operational processes are not available at the time of writing this document. Once available they will be assessed, further detail added, and the correct Test technique will be assigned.

5.3 Business Continuity and Disaster Recovery

BCDR is made up of 2 components Business Continuity and Disaster Recovery.

The purpose of BCDR is so that Organisations have ability to remain operational after an incident which relies on both BC and DR procedures having BCDR in place reduces the risk of data loss and reputational harm

BC and DR both need to consider and accommodate for various unplanned events examples being Power Outages, IT outages, cyberattacks, supply chain disruptions to name a few. The goal BCDR is to minimise the effects of disruptions and outages on business operations.

During Operational Testing BCDR will be validated through various test techniques. Testing of BCDR provides assurance that recovery procedures work as expected in order to preserve business operations. Testing will assess what DR scenarios are viable, practical and achievable with the Operational Test environment SIT B and will take into consideration other Testing that may be occurring in parallel within the same environment so as not to adversely impact expected results for other Phases

At the time of writing this document the BCDR procedures and processes are not available, once available they will be assessed and the correct Test Techniques assigned

It is likely due to the nature of DR that Test Execution against identified scenarios may not be viable, practical and achievable where this is the case processes will be verified through assurance processes (static testing)

5.4 Service Management

With existing BSC services being integrated into a new single SM tool instance along with any new MHHS Service Management requirements, then during Operational Testing any new customisations or configuration changes against the off the shelf capability within any of the following functions will be tested - Service management modules are identified as

- Service Desk Support
- Incident Management
- Change Management
- Problem Management
- Capacity Management
- Knowledge Management

Note – Off the Shelf capability and/or customised /config functions that have not change for MHHS will not be subject to test but may be required as part of any agreed scenarios

At the time of writing this document Service Management processes are not available. Once these processes are defined and available to the SI Operations Test team they will be assessed, and the correct Test techniques and methods will be assigned and where required Test Scenarios will be created.

5.5 Operational Choreography

During SIT Operational Testing elements of the Operational Choreography will be subject to test, it should be noted that due to the nature of Operational Choreography and the focus being on timing the bulk of this testing will be covered in the Non-Functional Testing [REF 06] SIT Non-Functional Test Approach and Plan.

As such, SIT Operational Testing will focus on the following:

- Interfaces where manual work may be required e.g. IF-031/IF-032 to validate that in these cases processes are in place to enable any residual requests that have required manual corrections are being processed by the end of the next working day
- Error handling and fault management processes

5.6 Demonstrate LDSO operability with MPRS (in their own target infrastructure)

During Operational Testing there is a need to perform a level of confidence testing to test that MPRS is working within the LDSO target infrastructure. For the purposes of Operational Testing this will include SSEN and BUUK only.

MPRS will be provided for LDSO's in scope for Operational Testing which are SSEN and BUUK only. SSEN and BUUK will then load into their infrastructure for their MPANs and be able to support their MPAN estate accordingly

Operational Testing will provide a level of confidence testing to validate that BUUK and SSEN are able to receive, load and operate MPRS aligned with IR8 in their own environments. Operational Testing will seek to achieve this by triggering and/or receiving a subset of IF / PUB messages.

The IF/PUB messages required to support this testing will be identified and agreed during Test Scenario creation

5.7 Security

Security testing relating to System Access will be covered as part of other Operational processes for example DIP Onboarding / Offboarding

It is assumed that Programme Participants Self declarations conducted during population of their Qualification Assessment Document (where applicable) will validate that necessary Security controls, processes, tools and any Security accreditations are in place which meet the necessary requirements and confirm compliance to standards.

5.8 CR044 Implementation of Data 'Refresh' message IF-051

CR044 has been raised into the Programme to implement a new interface/message – IF-051 "Data Refresh" which would, following an incident resulting in Data loss, be created by the Registration Service and passed to the DIP and/or Electricity Enquiry Service (EES) and/or Market-wide Data Service (MDS), so as to allow the resetting or realignment of data between those parties and as such forms part of the Operational Test scope.

Operational Testing will through execution of Test Cases and assurance activities validate the following (tbc once Interface Design is complete as to whether IF-051 always sent to both MDS / EES as part of secondary routing)

- Triggering/sending of IF-051 from Registration Service via the DIP and successfully received by MDS
- Triggering/sending of IF-051 from Registration Service via the DIP and successfully received by EES
- Triggering/sending of IF-051 from Registration Service via the DIP and successfully received by both MDS and EES
- Triggering/sending of IF-051 from Registration Service via Password protected, zipped JSON files (directly between parties) to MDS
- Triggering/sending of IF-051 from Registration Service via Password protected, zipped JSON files (directly between parties) to EES
- Triggering/sending of IF-051 from Registration Service via Password protected, zipped JSON files (directly between parties) to MDS and EES
- Error handling as applicable

5.9 Business Requirements

As mentioned in section 4.1 Operational Testing will assess any Business Requirements identified during the SIT Functional requirements traceability exercise Where these requirements are deemed as applicable to Operational

Testing whether as partial or full coverage to satisfy the requirement and where the Requirements have not been fully proven / covered by other Test Phases (e.g. due to elements of the Requirement being outside the remit of Functional Testing scope) have been considered for inclusion in the Operational Test scope.

Analysis has identified Business Requirements across Data, Metering, Registration, Supplier, LDSO, VAS, MDS, LSS and ISD services that through Test execution and/or process review and/or owning party self-declaration will form part of Operation Testing scope.

The main topics for these Business Requirements can be broken down as follows:

- Maintenance of records (e.g. data updates and data deletion)
- Supporting of Investigation and resolution of issues from Central systems and other Participants
- Escalation processes
- Managing a Proving Test process in line with Half Hourly collection process as outlined in BSCP-502 section 3.5. Operational Testing will be executing the D flow messages between MSA and ADS for Adv meter proving only (i.e. not extracting data from the actual meters therefore message flows can be proven with manufactured test data)
- Implementation Data validation steps and techniques to ensure accurate and efficient delivery of the respective service
- Implementation of Monitoring processes / tools

The Test technique adopted for the above will largely fall into document reviews and assurance activities and where Test execution is required these may be incorporated within other scenarios.

The table below details Business Requirements deemed as in scope for Operational Testing

Requirement	Requirement Description
MHHS-BR-DS-097	Data Service must support investigations and resolution of issues highlighted by Central Settlements reporting and feedback from other participants
MHHS-BR-DS-157	SDS Services must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-DS-157	ADS Services must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-DS-157	UMSDS Services must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-DS-154.2	ADS must, on receipt of updated customer details, delete or obfuscate the previously held customer details (Check how received assume not IF/PUB and that this is address, contacts etc rather the service updates e.g. customer contact)
MHHS-BR-DS-154.2	SDS must, on receipt of updated customer details, delete or obfuscate the previously held customer details (Check how received assume not IF/PUB and that this is address, contacts etc rather the service updates e.g. customer contact)
MHHS-BR-DS-020	SDS must, via the Meter Data Retrieval Service (MDR), delete any active DSP Schedules, as defined in the Smart Energy Code, in line with the de-appointment date
MHHS-BR-DS-048	SDS must, via a third party where required, record the reason why a meter cannot be read and maintain records accordingly
MHHS-BR-DS-107	Data Service must escalate to the Supplier or UMSO (UMSDS only) where it is identified that consumption is occurring on a MPAN that is de-energised. However, this should not prevent it's submission into settlements.
MHHS-BR-DS-147	ADS must investigate and provide feedback on any faulty equipment identified, or notified by the Supplier, via the appropriate interfaces as outlined in the relevant BSCP.
MHHS-BR-DS-147.1	SDS must notify any faulty equipment to the Supplier via a D0001 or bilaterally agreed interface as outlined in the relevant BSCP
MHHS-BR-DS-147.2	UMSDS must investigate any faulty equipment notified by an agreed communication method, as outlined in the relevant BSCP
MHHS-BR-DS-148	ADS must manage proving test processes in line with the existing Half Hourly Data Collection processes as outlined in BSCP-502 section 3.5
MHHS-BR-DS-149	Some MHHS processes require the continued use of DTC flows, Services should ensure that if they plan to service customer types that utilise these processes then a mechanism will be required for transmitting/receiving DTC flows.
MHHS-BR-MS-022	MSA/MSS must be able to investigate any discrepancies in Meter Technical Details received from the incumbent Metering Service and those received from the Registration Service. This should identify if Meter Technical Details have been updated between the Metering Service originally receiving the MTDs from the incumbent Metering Service and the time the appointment is confirmed by the Registration Service. In these circumstances the new Metering Service should request a refresh of the MTDs from the incumbent Metering Service.
MHHS-BR-MS-074	All services, when transacting via the DIP, must ensure that they implement monitoring so as to identify where expected responses are not received within standard DIP SLA's, as outlined in the

	Operational Choreography, so that the appropriate investigative/ resolution activity can be undertaken.
MHHS-BR-MS-075	All services must have familiarity with and actively monitor any Data Integration Platform tools for tracking flows, as outlined in the End to End Solution Architecture, so that the necessary investigative action can be taken when required.
MHHS-BR-MS-079	MSS must investigate any faulty equipment notified by the Supplier via the appropriate interface as outlined in Retail Energy Code (REC) Schedule 14 – Metering Operations
MHHS-BR-MS-080	UMSO must receive notification of any fault resolution by the UMSDS via an agreed communication method, as outlined in the relevant BSCP
MHHS-BR-MS-080.1	MSA must manage proving test processes in line with the existing Half Hourly Data Collection processes as outlined in BSCP-502 section 3.5
MHHS-BR-MS-091	All Services must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-MS-081	Some MHHS processes require the continued use of DTC flows, Services should ensure that if they plan to service customer types that utilise these processes then a mechanism will be required for transmitting/receiving DTC flows.
MHHS-BR-RS-140	All services must have familiarity with and actively monitor any Data Integration Platform tools for tracking messages, as outlined in the End to End Solution Architecture, so that the necessary investigative action can be taken when required.
MHHS-BR-RS-145	All Services must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-SU-052	Supplier must, where required, request that any existing metering equipment is removed in line with the Change of Metering process.
MHHS-BR-SU-100	Supplier must receive confirmation from the LDSO of the agreed target work date for any Change to Connection Type requests via a bilaterally agreed communication method.
MHHS-BR-SU-101	Supplier must receive confirmation from the Proposed Metering Service of the agreed target work date for any Change to Market Segment requests via a bilaterally agreed communication method.
MHHS-BR-SU-103	Supplier must work closely with all parties involved to ensure that the Target Date will be achieved. If Supplier is informed that the date has had to be moved Supplier should re-submit any Service Appointments for the new Target Date
MHHS-BR-SU-126	All Parties must obtain Data Integration Platform error messages in line with the End to End Solution Architecture Document, review the impacted data and re-issue corrected messages/transactions as required
MHHS-BR-SU-127	All Parties must return Data Integration Platform error messages in line with the End to End Solution Architecture. Unexpected and/or un-processable messages should be returned to the DIP/ originating party
MHHS-BR-SU-128	All Parties, when transacting via the DIP, must ensure that they implement monitoring so as to identify where expected responses are not received within standard DIP SLA's, as outlined in the Operational Choreography, so that the appropriate investigative/ resolution activity can be undertaken.
MHHS-BR-SU-132	Supplier must notify faulty equipment it identifies to the ADS and receive updates via the appropriate interfaces as outlined in the relevant BSCP
MHHS-BR-SU-133	Supplier must receive notification of any faulty equipment from the SDS via a D0001 or bilaterally agreed interface as outlined in the relevant BSCP. For Smart and Traditional meters the Supplier will take the lead investigating faults. The Supplier will be responsible for notifying the Data Service if they require data to be resubmitted as a result of a fault.
MHHS-BR-SU-134	Supplier must notify any faulty equipment for the UMSDS to investigate via an agreed communication method, as outlined in the relevant BSCP
MHHS-BR-SU-137	Some MHHS processes require the continued use of DTC flows, Services should ensure that if they plan to service customer types that utilise these processes then a mechanism will be required for transmitting/receiving DTC flows.
MHHS-BR-SU-140	All Parties must maintain and update their records with any data received on interfaces to ensure the most accurate and efficient delivery of the service.
MHHS-BR-SU-165	Supplier must, where required for switched load tariff (eg. Economy 7/ Economy 10) sites, maintain records of the basis for their Off-peak declaration for each day, for audit purposes.
MHHS-BR-LD-064	All Parties, when transacting via the DIP, must ensure that they implement monitoring so as to identify where expected responses are not received within standard DIP SLA's, as outlined in the Operational Choreography, so that the appropriate investigative/ resolution activity can be undertaken.
MHHS-BR-LD-065	All Parties must have familiarity with and actively monitor any Data Integration Platform tools for tracking messages, as outlined in the End to End Solution Architecture, so that the necessary investigative action can be taken when required.
MHHS-BR-EES-021	SDEP should have existing processes updated where reference is made to an existing data flow that is removed by MHHS
MHHSP-29	The LSS shall store a date/time defining when the Load Shape run was undertaken and stored
MHHSP-31	The LSS must provide Load Shaping data for ad-hoc requests.
MHHSP-35	If validation fails an investigation into the cause of failure must be undertaken to correct the validation failure and Load Shape. If no error is identified data is assumed to be correct.
MHHSP-37	The LSS shall publish Load Shape Data, on the BSC website in a manner that is available to the public to access
MHHSP-47	VAS must capture and retain all data required for use in the Performance Assurance Framework as defined by the BSC Panel.

MHHSP-54	VAS shall store a date/time defining when the VAS run was undertaken and stored. VAS must set and store the Run Number

5.10 Out of Scope

Pre-Integration Test (PIT) associated with and in advance of SIT Operational Testing, which takes place on the Programme participant's own standalone test environment and is a pre-requisite for entry into SIT Operational. Guidance for this test phase can be found in [REF-15] MHHS-DEL852 - Pre-Integration Test Guidance_Please note that the PIT guidance containing any relevant PIT Operational content, will be made available in the first 2 weeks of May 2024

- All the other SIT Stages – these will be the subject of separate Test Approach and Plan documents:
  - Component Integration Test
  - Functional Test
  - Non-Functional Test
  - Migration Test
- UIT Test Stages:
  - Qualification Test
  - E2E Sandbox.
- Data cleansing activities and processes prior to Go Live
- Operational Readiness activities are not included in this Test Phase. Operational Readiness is performed on production infrastructure and considers all areas of readiness required to commence Migration.
- Testing of the Transition Design e.g. how Elexon Settlement Systems will dual run during the period of migration

6 Test Architecture & Coverage

MHHS Architecture and Coverage

SIT Operational Testing will be achieved by establishing a test environment that supports Operational Testing and includes all systems required to be in place. Service Management tool is not currently shown with the diagram and will be added once Service Design deliverables are available. Note that SIT Participants will have proven DIP connectivity to SIT- A prior to the commencement of CIT/SIT Functional. Connectivity proving to SIT-B ahead of SIT Operational test execution will be required for all Participants. On commencement of SIT Operational 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.

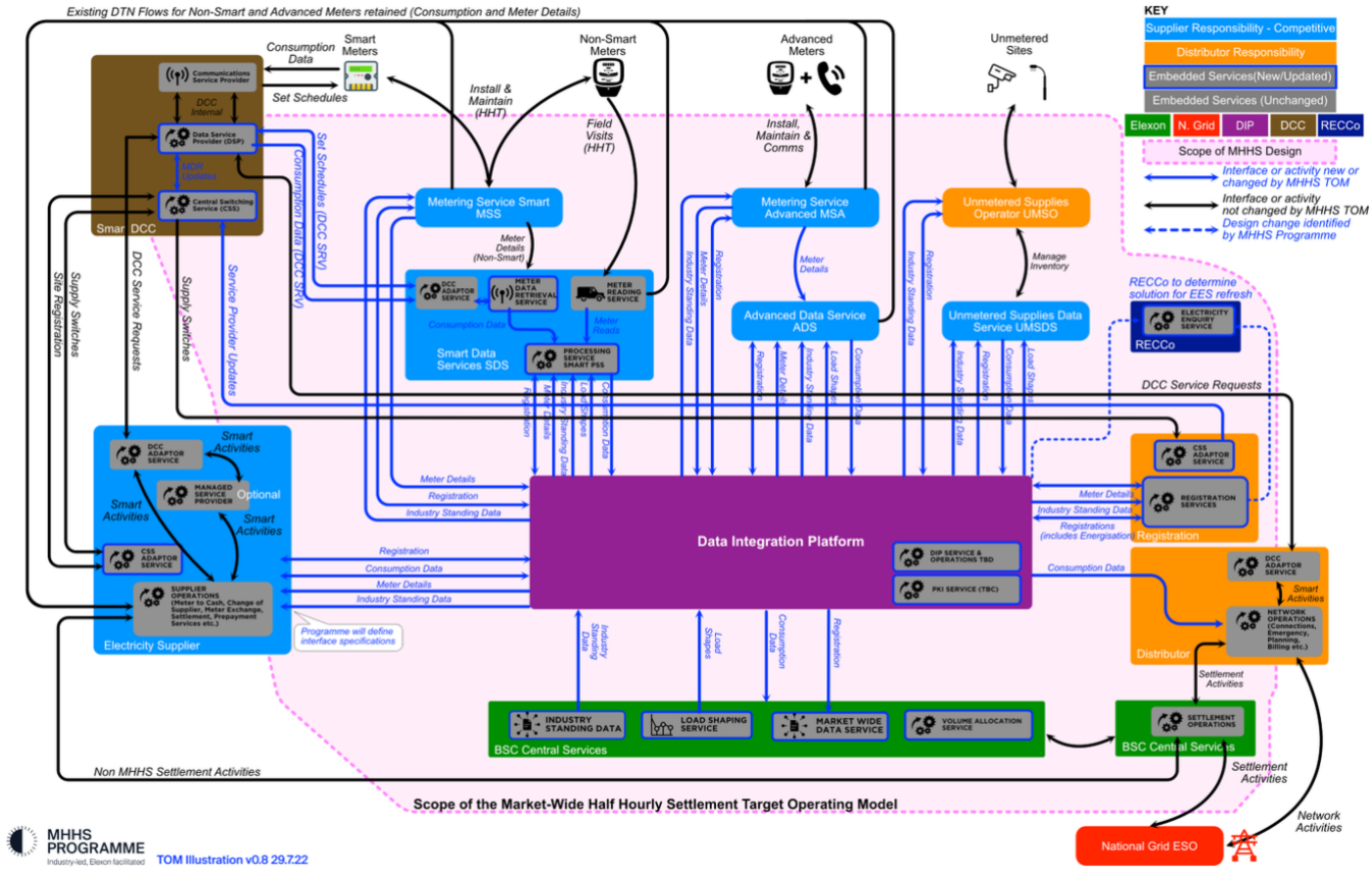


Figure 2 - TOM illustration

6.1 MHHS Environment Requirements

The SIT Operational Test 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 (in parallel with retaining connectivity to SIT-A to continue SIT Functional Testing). This is set out in [REF-16] 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.

7 Test Approach

7.1 Test Preparation

7.1.1 SI Operational Test Scenarios & Operational Test Cases

The SI Test Team will utilise the MHHS Design repositories and processes to inform MHHS test scenario and test case design.

Each participant role can be mapped to its' flows, in relation to each service's participation with the Operational processes, as well as interactions with other roles and participants (process handoffs) across Operations.

SIT Operational 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 Operational Test Scenarios and Test Cases are under development forecast for SITAG Approval:

Operational Testing will be delivered using Themes where Operational capability has been compartmentalised into themes (scenarios and Test Cases). Three themes have been identified and will be delivered in batches with all themes being approved by August 2024.

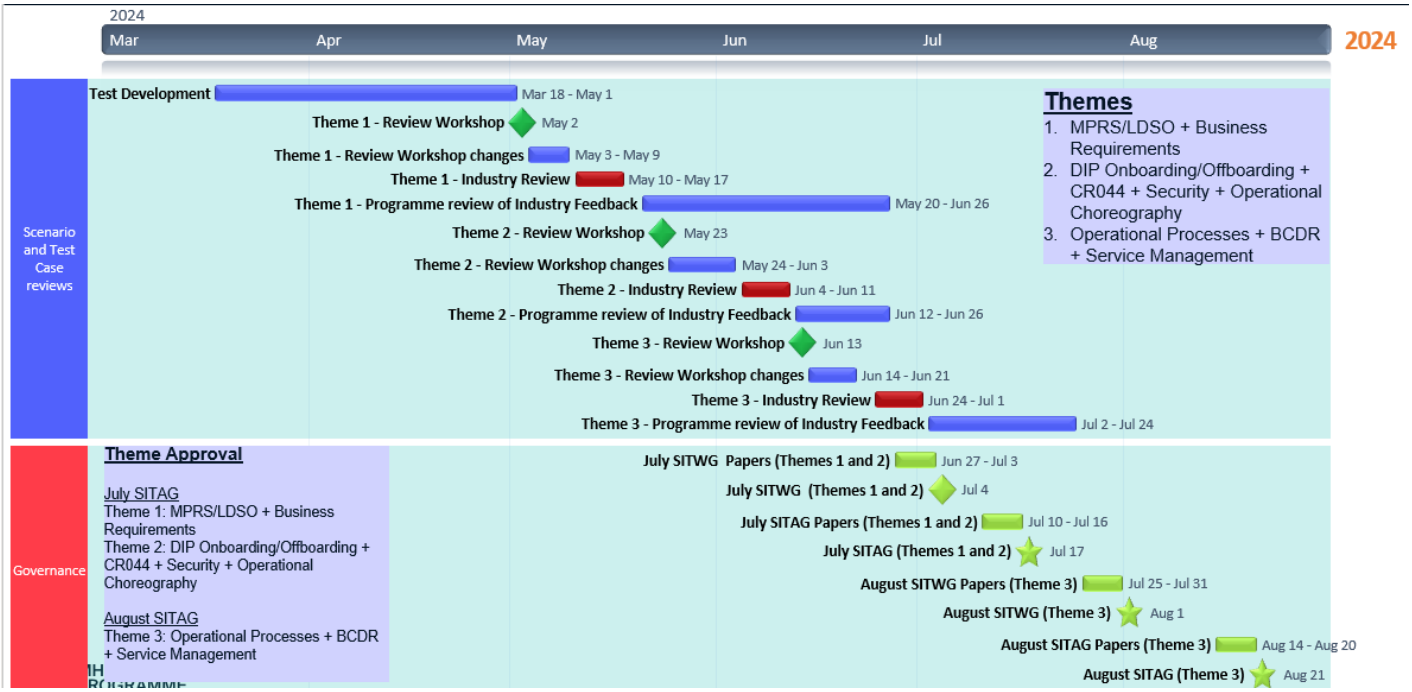
Theme 1 – Business Requirements and LDSO Operability with MPRS in their target infrastructure

Theme 2 – DIP Onboarding / Offboarding, CR044 and Security

Theme 3 – Operational Processes, Service Management and BCDR

- SIT Operational Test Scenarios & Test Cases – To be Approved at SITAG by Aug-24

These artefacts will be developed in collaboration with the Code Bodies in support of Operational Testing.



7.1.2 Test Data

[REF-17] 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 Operational 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 [REF-18] MHHS-DEL2432 - SIT Operational Test Data Approach & Plan.

7.1.3 Test Management Tool

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

In preparation for SIT Operational 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.

7.1.3.1 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 Operational 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 Operational Testing.

For reference, details of ADO set up, onboarding and usage is published within [REF-19] MHHS-DEL1332 - Test Management Tool User Guide.

7.1.4 Participant Preparation

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

- Pre-Integration Testing relevant to the SIT Operational Test stage – please refer to the [REF-15] MHHS-DEL852 - Pre-Integration Test Guidance. Please note that the PIT guidance containing any relevant PIT Operational content, will be made available in the first 2 weeks of May 2024
- Environment Connectivity proving associated with the MHHS SIT-B test environment - please refer to the [REF-16] MHHS-DEL618 - Environment Approach & Plan
- 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.

7.1.4.1 Participant's adopting the Placing Reliance Policy

SIT Participants choosing to place reliance as per the [REF-20] MHHS-DEL1064 - Placing Reliance Policy will have been processed ahead of CIT commencement. Any agreement made between the Programme/Code Bodies and the Participant for CIT, will be re-assessed prior to entry in each subsequent SIT Test Stage.

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

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

If yes, the programme will assure this is in line with the original CIT/Stage 1 proposals, with any changes being highlighted to the Code Bodies for assessment and agreement.

Please note this review will be undertaken as part of the SIT readiness requirement for SIT Operational, occurring circa 2 months ahead currently expected to be August 2024 of SIT Operational test execution and will be performed in conjunction with Code bodies

7.1.4.2 Participant's SIT Operational Test Readiness Report

Prior to SIT Operational Test commencement each participant will be required to provide a Participant SIT Operational Test Readiness Report as a self-declaration of their completion status in relation to preparation activities outlined in section 7.1.4, this will need to include any exceptions and work off plans that have been agreed and must be signed by senior stakeholders within the participants' 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 Operational Test entry governance.

Participant SIT Operational Test Readiness Reports will be required ahead of SIT Operational Test commencement.

7.2 Test Entry Criteria

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

- Test Approach and Plan.
- Test Data Approach and Plan.
- Test Scenarios.
- Test Cases.
- Requirements Traceability Matrix.
- Test execution schedule (SIT participants will be consulted).

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

- 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.
    - 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 Operational Test:

- Evidence of successful PIT Completion for the SIT Operational Test stage has been submitted, assured by the SI and any work off plans agreed and tracked - please refer to [REF-15] 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 Team.
- 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-20] MHHS-DEL1064 - Placing Reliance Policy in SIT Operational have a confirmed RACI.

7.2.1 SI Test Readiness Report

Prior to SIT Operational Test entry the SI, in line with the Programme plan will compile and issue an overarching SIT Operational 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 Operational Test execution will be sought via the MHHS Governance Framework

7.3 Test Execution

Operational Test execution is expected to be conducted within a single test cycle, 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.

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 an end-to-end manner. For core capability providers 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.

7.4 Test Prioritisation

Test prioritisation will be carried out according to:

- The risk inherent in the processes being tested.
- The complexity of the processes being tested
- The expected duration to complete the Scenario/Test cases

Tests for highest risk areas will be written and executed first and then the risk assessment will be used to prioritise test preparation and test execution activities for the remaining tests. 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 that are required to "prove" the overall design i.e. MVC vs. tests that do not fall into this category but are required for individual participants to meet their Qualification requirements.

7.5 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 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.

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.

7.6 Test Data Usage

Each SIT Operational 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-18] MHHS-DEL2432 - SIT Operational Test Data Approach (in Development)

7.7 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-19] MHHS-DEL1332 - Test Management Tool User Guide.

7.8 Test Evidence Capture

Programme participants conducting SIT Operational Tests 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 upstream 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 participants’ own quality gate and internal audit.

7.9 Placing Reliance

Where applicable, day-to-day test execution will be managed and coordinated in accordance with the Placing Reliance RACI that will be re-validated during SIT Operational preparation with those participants that have chosen to adopt the policy to meet their test requirement.

Please note that if during test execution a SIT Participant wishes to execute testing differently to what was agreed in their SIT Placing Reliance proposals (please see [REF-20] MHHS-DEL1064 - Placing Reliance Policy for details), then they must notify the Programme (the Programme will then co-ordinate with Code Bodies), and if deemed necessary this may require them to meet additional SIT-exit or Qualification requirements.

7.10 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.

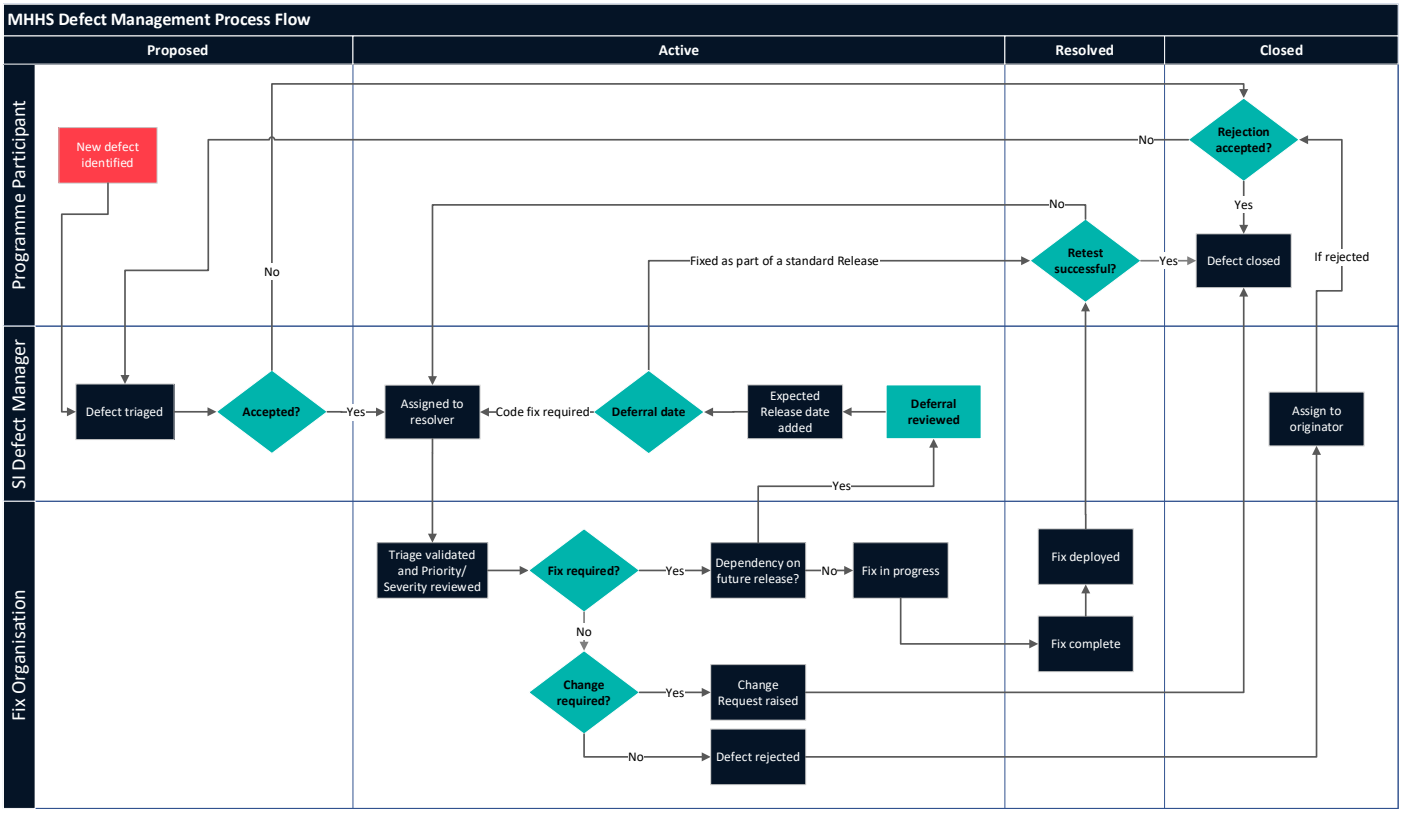


Figure 3 - ADO Defect Process Flow

Defects arising within the SIT Operational Test stage will be managed in accordance with the [REF-21] MHHS-DEL466 - Defect Management Plan.

7.11 Release & Configuration Management

When defects arise that require a technical code fix, code releases will be managed in accordance with the [REF-22] 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.

7.12 Regression Testing

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

During SIT Operational 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.

7.13 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.

7.14 Participant Test Completion Reports

As each SIT participant concludes their testing within the SIT Operational 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 Operational Test exit governance.

7.15 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 with code bodies.
- 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.

7.16 Test Exit Defect Thresholds

The following Test Exit Defect Threshold rules will be applied to the SIT Operational 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

The 10% and 20% calculations will be based on this allocation, e.g. a participant is allocated 150 SIT Operational 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 Operational Test Execution commencement.

7.17 SI Test Completion Report

At the end of the SIT Operational 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 Operational Test stage for both the ‘MVC’ and ‘Other SIT PP’ cohorts will be sought via the MHHS Programme Governance Framework – please see section 10.1.

8 Test Schedule

8.1 SIT Operational Test

SIT Operational Test is the 5th stage within the System Integration Test schedule.

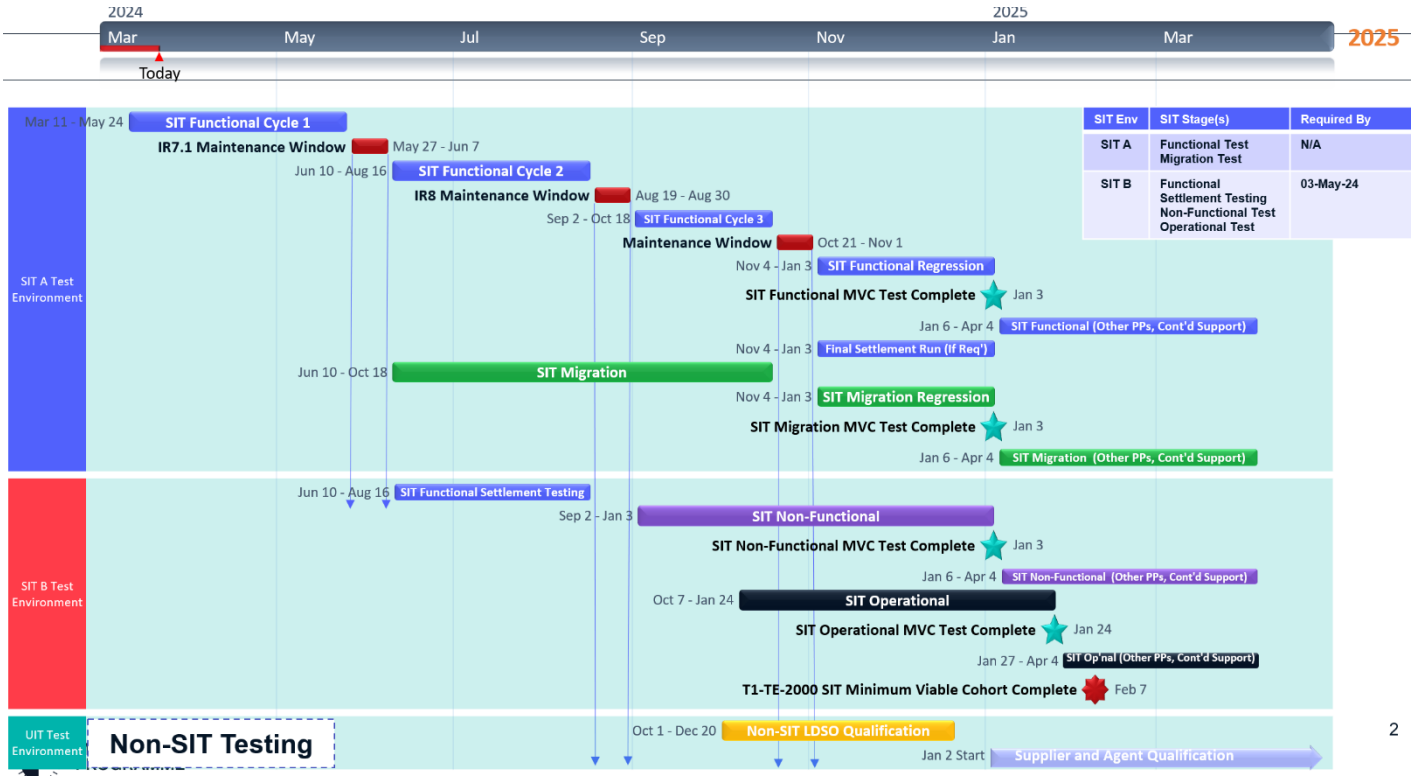


Figure 4 - SIT Stages Plan on a Page

8.2 SIT Operational Test Preparation Schedule

SIT Operational 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 goverance activities. It is recommended that participants refer to [REF-23] 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-15] MHHS-DEL852 - Pre-Integration Test Guidance.

9 Test Management & Organisation

The following resources will be required to prepare and execute the SIT Operational Test stage. The resources below is a guideline to the types of resource required by organisations participating in the day-to-day activities of Operational 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 1 - Test Teams & Roles

9.1 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 representivies 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 representatvies 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-21] MHHS-DEL466 - Defect Management Plan.

Environments and Release Management Meetings

Please refer to:

- [REF-16] MHHS-DEL618 - Environment Approach & Plan
- [REF-22] 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.

9.2 Test Roles & Responsibilities

9.2.1 SIT Operational Test RACI

Activity	Participant	SI	SI Test Assurance	Code Bodies	SITWG	SITAG
SIT Operational Test Scenarios	I	R,A	C	C	C	I
SIT Operational Test Scenarios Approval	I	C	C	C	C	R,A
SIT Operational Test Cases	I	R,A	C	C	C	I
SIT Operational Test Cases Approval	I	C	C	C	C	R,A
SIT Operational Test Approach and Plan	I	R,A	C	C	C	I
SIT Operational 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 Operational Test Readiness Report	R,A	C	I	I	I	I
SI SIT Operational Test Case Prioritisation	I	R,A	C	C	C	I
SI SIT Operational Test Readiness Report	C	R,A	C	I	I	I
SI SIT Operational Test Readiness Report Approval	I	C	C	I	C	R,A
Decision to commence SIT Operational Test Execution	I	C	C	I	C	R,A
Completion of assigned SIT Operational Test Case Execution within ADO (inc. evidence capture)	R,A	C	I	I	I	I
SIT Operational 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 Operational Test Completion Report	R,A	C	I	I	I	I
SI Participant Test Completion Assurance	C,A	C	R	I	I	I
SI SIT Operational Test Completion Report	C	R,A	C	C	I	I
SI SIT Operational Test Completion Report Approval	I	C	C	C	C	R,A

Table 2 – SIT Operational Test RACI (R = Responsible, A = Accountable, C = Consulted, I = Informed)

Note: Code Bodies will also need to agree any Participant work off plans

10 Test Governance & Reporting

10.1 Governance

SIT Operational Testing will operate in accordance with [REF-25] 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 Operational 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	Milestone date	Milestone ID	Milestone Title
T3	July 2024	TBC	SIT Operational Testing Test scenarios and Test Cases Theme 1 approved
T3	July 2024	TBC	SIT Operational Testing Test scenarios and Test Cases Theme 2 approved
T3	August 2024	TBC	SIT Operational Testing Test scenarios and Test Cases Theme 3 approved
T2	February 2025	T2-TE-0950	SIT Operational Testing Test Completion Report Approved
T3	May 2024	T3-TE-0029	SIT Operational Testing Test Approach & Plan approved
T3	October 2024	T3-TE-0042	SIT Operational Testing Start
T2	September 2024	T2-TE-0750	SIT Operational Testing Preparation Complete
T2	January 2025	T2-TE-0950	SIT Operational Testing End (incl. confirmation that PPs have submitted their Test Completion Reports to Programme for assurance)

Table 3 – SIT Operational Test Milestones

10.2 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, FTIG, SITWG 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.

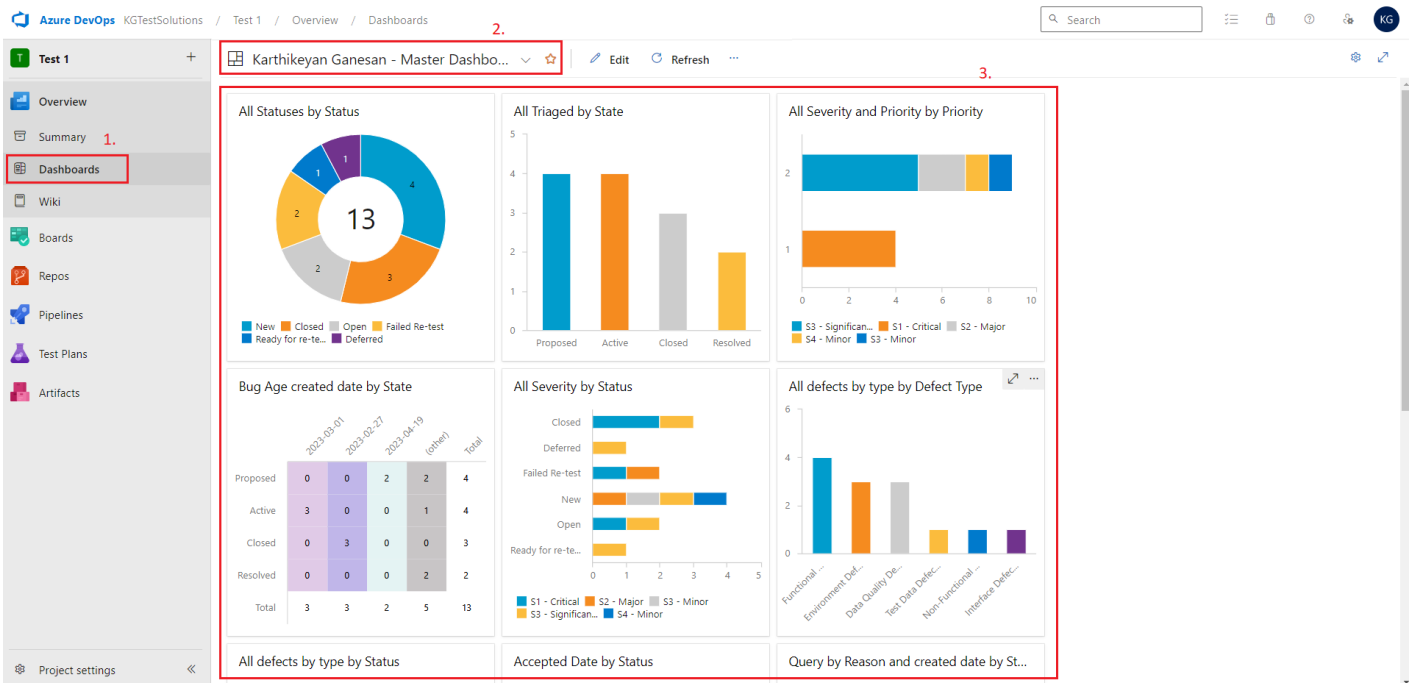


Figure 5 - ADO Dashboards

11 Test Assurance

11.1 Approach

SI Team will carry out monitoring and outcome assurance throughout PIT, details of this approach can be found within the [REF-15] MHHS-DEL852 - Pre-Integration Test Guidance.

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 Operational 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.
- Operational Processes
- 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.