Defect Management Plan

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Dean Bailey	**MHHS-DEL466**	**2.0**
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Baselined	**29/02/2024**	**Public**

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1.1   Change Record

Date	Author(s)	Version	Change Detail
23/06/2022	Dominic Mooney / Adrian Samlal	0.1	Initial Draft for LDP peer review
08/07/2022	Dominic Mooney	0.2	Document name and structure amended following a session with SRO (AA) to agree principles
15/07/2022	Dominic Mooney	0.3	Updates following LDP review
28/07/2022	Dominic Mooney	0.4	Updates following SRO (AA) review
25/08/2022	Dominic Mooney	0.5	Updates following SRO formal review
05/09/2022	Dominic Mooney	1.0	Baselined following SRO approval
18/04/2023	Dean Bailey	1.1	Sections 3.2, 5, 7 and 8 updated
23/05/2023	Dean Bailey	1.2	Baselined following SRO approval
12/06/2023	Dean Bailey	1.3	Sections 5.1.2, 8.2, 8.5, 8.6, and 9 updated based on industry feedback
11/08/23	Dean Bailey	1.4	Sections 4.2, 5.3, 7.1.1. and 8.2 updated
24/01/2024	Carol-Anne Smith	1.5	Sections 5.1.3, 5.1.4, 5.1.7, 5.4.3, 5.44, 7.11, 8.2, 8.3.
20/02/2024	Carol-Anne Smith	1.6	Document updated in readiness for SIT Functional testing.
29/02/2024	Carol-Anne Smith	2.0	Published version.

1.2   Reviewers

Reviewer	Role
Lee Cox	LDP SI Test Manager
Simon Berry	LDP Environments and Release Manager
Kiran Raj	SRO Function SIT Functional Test Lead
Adrian Ackroyd	SRO Function Programme Test Manager
Smitha Pichrikat	SRO Function Client Delivery Manager

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 Change Control Approach	PMO	28th June 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. The responsibility for success is shared between all parties and stakeholders, with everyone working together to make sure the programme is delivered and to the highest possible quality.

Robust quality assurance for the necessary changes is required for this complex programme, not least during the industry testing stages where proactive and efficient management of defects will be crucial to the overall success of the programme objectives. This document provides definition of how defects are raised by MHHS Industry Programme participants and how these will be triaged, managed, and reported on, through a clear process to resolution. The approach and process adopted is intended to be familiar for those industry Programme participants involved in recent industry programmes.

3   Introduction

3.1   Document Purpose

The Defect Management plan describes the overall approach to managing defects within the industry testing phases of the MHHS Programme. The purpose of the Defect Management plan is to support the timely and efficient raising, triage, categorisation, and resolution of defects.

The Defect Management Plan describes:

- Defect assignment and process workflow;

- Defect status definitions and transition states;

- Defect types, classifications and definitions;

- Defect priorities, severities and service level response times;

- Defect Management roles and responsibilities;

- Defect Management tools;

- Defect Management governance;

- Defect Management reporting; and;

- Defect Management process for retest.

The process and mechanisms within this Defect Management plan fully supports the underlying principles described in [REF-01] MHHS-DEL315 E2E Testing & Integration Strategy.

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

- MHHS Programme Parties engaged in MHHS programme design, build and industry testing activities;

- SRO Function (SRO);

- Lead Delivery Partner (LDP);
    - Core Programme Team (CPT);
    - System Integration Team (SI);
    - Programme Party Coordinator (PPC);
    - Programme Management Office (PMO);

- Testing and Migration Advisory Group (TMAG);

- BSC Performance Assurance Board (PAB), including its Qualification team;

- Independent Programme Assurance (IPA).

3.2   Reviews and Approvals

The Defect Management plan document will go through initial formal LDP review by the following team members:

- Lee Cox, LDP SI Test 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 Function Programme Test Manager
- Smitha Pichrikat, SRO Function Client Delivery Manager
- Kiran Raj, SRO Function SIT Functional Test Lead

Once comments and feedback have been incorporated, approval and sign off will be requested from:

- Smitha Pichrikat, SRO Function Client Delivery Manager

It is not intended that the document will be reviewed by any Working Groups or Programme Parties, however, it will be made available for information via the MHHS Collaboration Base.

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.

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

3.4   Summary of Changes

This is version 1.6 following internal MHHS SI Test Team feedback.

4 Scope

4.1   Participants

All Programme Parties involved in MHHS testing will be expected to comply with this Defect Management plan, including:

- Suppliers;

- Service providers;

- Agents;

- (I)DNOs;

- Central parties;

- Data Integration Platform service provider (responsible for the DIP);

- DCC (responsible for both Smart Metering and Central Switching Service);

- Elexon (responsible for Elexon Central Systems, which comprise Load Shaping Service, Market Data Service, Volume Allocation Service, Industry Standing Data Service and BSC Settlement Operations);

- ElectraLink (responsible for the Data Transfer Network – DTN);

- St Clements and C&C, together with the (I)DNOs (responsible for SMRS); and

- UMSOs (responsible for the UMSO services).

Each of the parties above are referred to as Programme participants throughout this document.

4.2   Test Phases

Participation in the MHHS Defect Management process is mandated for the following Test Phases in accordance with [REF-01] MHHS E2E Testing & Integration Strategy:

- System Integration Testing (SIT) including;
    - Component Integration Testing
    - Functional SIT
    - Non-functional SIT
    - Operational Testing
    - Migration Testing
- User Integration Testing (UIT) including;
    - Qualification
    - E2E Sandbox Testing

Note that any post-implementation (Go Live) issues, including those encountered during the Migration period, i.e. within the production environment, will be managed as incidents through Service Management processes and tooling.

4.3   Defect Definition

The MHHS programme defines a defect as:

An imperfection or deficiency in a work product where it does not meet its requirements or specifications.

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

- Once commenced or executed, the test has an unexpected outcome or response against requirement;

- 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, scripts, data or expected results;

- Documentation Issue.

5 Defect Management Process

5.1   Defect Process Flow

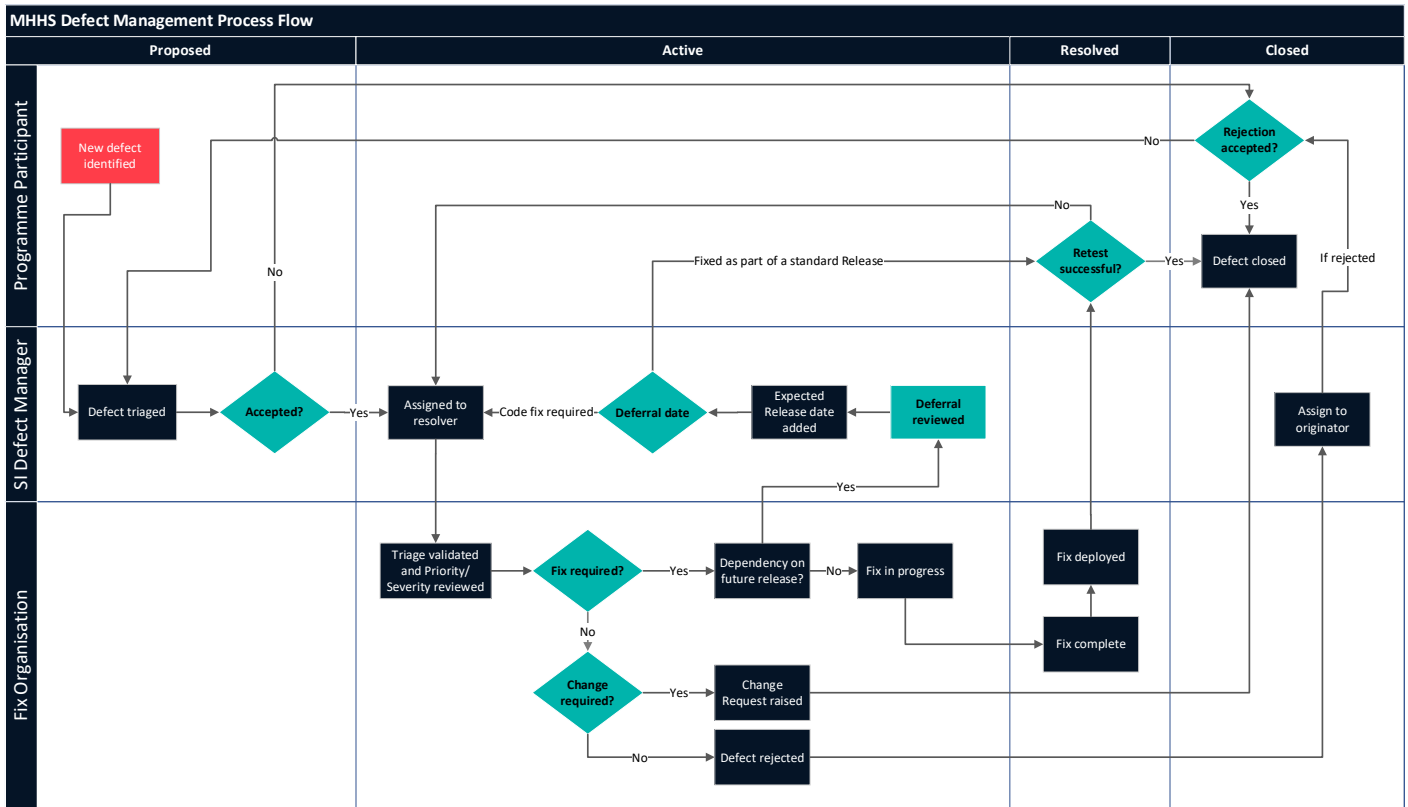| MHHS Defect Management Process Flow			
Proposed	**Active**	**Resolved**	**Closed**

Figure 1 - Defect Process Flow

5.1.1   Identification and Capture

At the time of execution, if system or application behaviour does not conform to the expected results of the Test Specification, this will result in a defect. This will be raised in the MHHS Test Management Tool (ADO) by the Test Participant within their respective Test Cohort(s) responsible for testing that interface, system or application.

Defects related to environments will be raised either by the SI Environment Manager or Test Participant within Cohort Teams. Further details regarding the different scenarios are provided below:

- If the defect is identified in the Environment build and readiness stage (before test execution) this will be raised by the Test Participant, Test or Environment Teams or the SI Environment Manager and assigned directly to the relevant Test Participant Environment team for resolution (they will be acting as Fix Organisation in this scenario).

- If the defect is identified in any of the test phases (or sub-stages), then this will be raised by the respective Test Participant Cohort and assigned to the SI Defect Management Team after which the process remains the same as any other defect which is defined in the Defect Management plan.

From this point, the process for managing Environment defects remains the same as for any other defect.

5.1.2 Initial Assessment (Triage)

For any defects with the ADO state "**Proposed**", the SI Triage Team will assess the defect to ensure the information provided is clear and concise. The defect details will be reviewed and assessed with the Severity and Priority assigned by the originator and categorised to one of the following options: Rejected, Duplicate, Accepted.

If incomplete information has been provided, the triage status will be set to '**More info required**'. The defect status will remain as '**New**' and ADO state as '**Proposed'**.

If the defect is then accepted by the Triage Team, the triage status will be set to '**Triaged**' and defect status will be set to '**Assigned**'.

1. **'Rejected'** - The defect will be classed as '**Rejected**' if it is considered an invalid defect:

    For an invalid defect, the MHHS SI Defect Manager will update the triage status to '**Triaged**', followed by the defect status to '**Rejected**', along with setting an applicable rejection reason. The defect will then be assigned back to the originator either for acceptance or rejection. If the originator does not accept the rejection, they may assign it back to the MHHS SI Defect Manager with additional information for review. If the rejection is accepted by the Programme participant, the MHHS SI Defect Manager must be notified and the comments section of the defect updated to reflect this. The MHHS SI Defect Manager will then set the ADO state to '**Closed**'.

2. **Duplicate** – Defects raised will be classed as duplicated in the following circumstances:

    When two individual testers from the same, or different cohorts raise a similar defect, the second case will be classed as a duplicate. The SI Triage Team will change the status of the duplicate defect to '**Duplicate**'. This will be considered the 'Child' defect of the 'Parent', where the 'Parent' is the original defect raised. These defects will be linked in ADO. The related Test Case will be set to 'Blocked' by the original Parent defect. The defect will then be assigned back to the originator awaiting a fix to the Parent defect. The SI Defect Manager will notify originators of the Parent and Child defects when a fix is deployed to allow retesting.

    To avoid the possibility of duplicate defects, it is recommended that the Programme Participant conducts triage against their respective defects before being recorded in ADO.

    Where a cluster of duplicate defects are raised, the priority of the parent defect will be reviewed. The MHHS SI Defect Manager will change the status of the Parent and Child 'duplicate' defect(s) to '**Resolved**' once the parent/linked defect is fixed and ready to retest.

3. **Accepted** – If the SI Triage Team confirms that the raised defect is valid, then it will move to the investigate and accept stage which then falls into the relevant Fix Organisation queue to perform further investigation. The Fix Organisation is the organisation deemed by the SI Triage Team to be responsible for making the required changes to resolve the defect, be it code, configuration, design, script or environment changes. At this stage, the defect status will be changed from '**Proposed**' to '**Active**' by the MHHS SI Defect Manager. The 'Progress Status' field will then be set to '**Assigned**'.

Upon assessment of the defect, the SI Triage Team may change the Severity and/or Priority if required (and inform the originator and relevant stakeholders). E.g. where the defect has broad cross-cohort impact, it is likely to increase the severity and priority of the defect.

If the SI Triage Team identifies the new defect as a potential change required, the SI Triage Team will update the comments in ADO and assign it to the Fix Organisation team to raise the change request. The 'CR required' field will be updated in ADO and once available, a change reference will be added to the defect. Where a change to a baselined MHHS Design product is required, the MHHS Change Control Approach [REF-02] must be followed.

5.1.3 Investigate and accept

Once the defect is moved to the Fix Organisation queue, the Fix Organisation will investigate the defect in detail and acknowledge as one of the following:

- **Accepted** - If the Fix Organisation accepts the defect, they will have re-Triaged the defect with their own respective teams and will assess root cause and decide on the resolution action. Fix Organisations will be expected to provide a fix date as soon as is practically possible after the defect has been accepted for resolution.

- **Deferred** – If the Fix Organisation team accepts the defect and identifies it to be a candidate for deferral, then they will update the comments in ADO and assign back to the SI Defect Manager.
  - If the deferral is accepted, the SI Defect Manager will set the Deferral status to '**Yes**' and the commentary will be updated with the targeted release date;
  - The deferred defect must have an accepted deferral justification and a target date for review (e.g. planned for a later release;
  - Once this has been noted by the DM team, the Deferred defect will be assigned to the relevant party;
  - The Release Manager role will agree a schedule of releases. Once the defect is fixed, it will follow the standard Defect Management process.

- **Rejected** – If the defect is rejected by the Fix Organisation, then they will change the defect status from '**Assigned**' to '**Rejected**'. A valid rejection reason must be given and the defect assigned back to the MHHS SI Defect Manager.

The MHHS SI Defect Manager will review and assign the defect to the originator. If the originator accepts the rejection, then they must acknowledge this by updating the comments section of the defect. Alternatively, it will be assigned back to the SI Defect Manager for review with more information provided. The SI Defect Manager will review and assign back to the Fix Organisation for further review and action accordingly.

- **Change Request** – If the defect is deemed to be a change, the Fix Organisation team will initiate a change request, update the defect comments with the change request details in ADO (and the CR flag = Y). The 'Change required' field will be updated and once available, the change reference will be added to the defect and the defect status will be changed from '**Active**' to '**Closed**' with the closure reason set to '**Change required**'. The change will be managed and monitored through MHHS Change Control process.

If the change identified agreed to be outside of the Fix Organisation, the change request will be raised by the SI Defect Manager

- **Blocked** – If the defect is identified to be blocked by an already existing defect, then the MHHS SI Defect Manager will link to the dependent. The defect progress status will be set to '**Blocked**'. Once the dependency defect is resolved then the MHHS SI Defect Manager will assign the blocked defect to the originator for retest.

If the defect is blocked by another defect which is closed due to a Change Request, then the blocked defect will be updated with the CR number, linked to the original defect and the MHHS SI Defect Manager will update the ADO state of the defect from '**Active**' to '**Closed**'.

5.1.4 Defect Resolution

On the resolution of a defect, a categorisation of the root cause will be added by the Fix Organisation, for example Code, Configuration or Environment. This will be validated by the MHHS SI Defect Manager and may be used for reporting purposes.

For all defects, the Fix Organisation will be expected to provide the following details in order to meet the closure criteria and to allow the defect to be closed:

- Detailed Root Cause - Details are added in the comments section of the defect to elaborate on the 'category' of root cause selected.

- Resolution action taken to fix the defect will also be added in the 'Resolution' free text box.

- Preventative action – Add details of any preventative action taken going forward (where appropriate) to help ensure the defect will not re-present. This can be added in the defect comments.

5.1.5   Apply Fix

The Fix Organisation team will apply the fix and retest in their test environment. On successful retest, the Fix Organisation team will set the status of the defect to '**Fixed**'.

Using the relevant field provided on the defect template in ADO, the Fix Organisation must provide reference to the Release Note associated with the fix.

Note - The timings and frequency of deployment of fixes will be specified in the relevant test phase test plan.

5.1.6   Retest / Verification

The MHHS SI Defect Manager will initiate the retest process and assign it to the relevant Test Team for verification.

If the retest has failed, along with updated commentary, the relevant Test Team will change the status to '**Retest failed**' and assign back to the MHHS SI Defect Manager. The MHHS SI Defect Manager will review the failed retest with the evidence. If the failure reason is the same, the SI Defect Manager will assign it back to the Fix Organisation team, setting the defect status to '**Assigned**'. The ADO state will also be updated to '**Active**'. If the failure reason is different, the defect will need to be presented at Triage again and reassessed. It may be possible that a new defect will need to be raised

5.1.7 Closure

If the retest is successful, the relevant Test Team will change the status to '**Retest passed**'. When the retest has been verified and the closure criteria checked for fulfilment, the MHHS SI Defect Manager will set to ADO state to '**Closed**'.

Closing a defect requires the following minimum mandatory information:

- Test Evidence - Provide proof of the successful retest. This can be in the form of a screenshot, payload or any supporting transactional messages which must demonstrate the resolution;
- Root Cause – See (5.1.4);
- Resolution Action – See (5.1.4)

The defect originator may choose to withdraw a defect. To achieve this, the defect Originator should contact the MHHS SI Defect Manager via email (or phone if Severity 1 or 2) to allow the MHHS SI Defect Manager to manage any impact on other Test Participants.

5.2 Defect Status Transition

ADO state
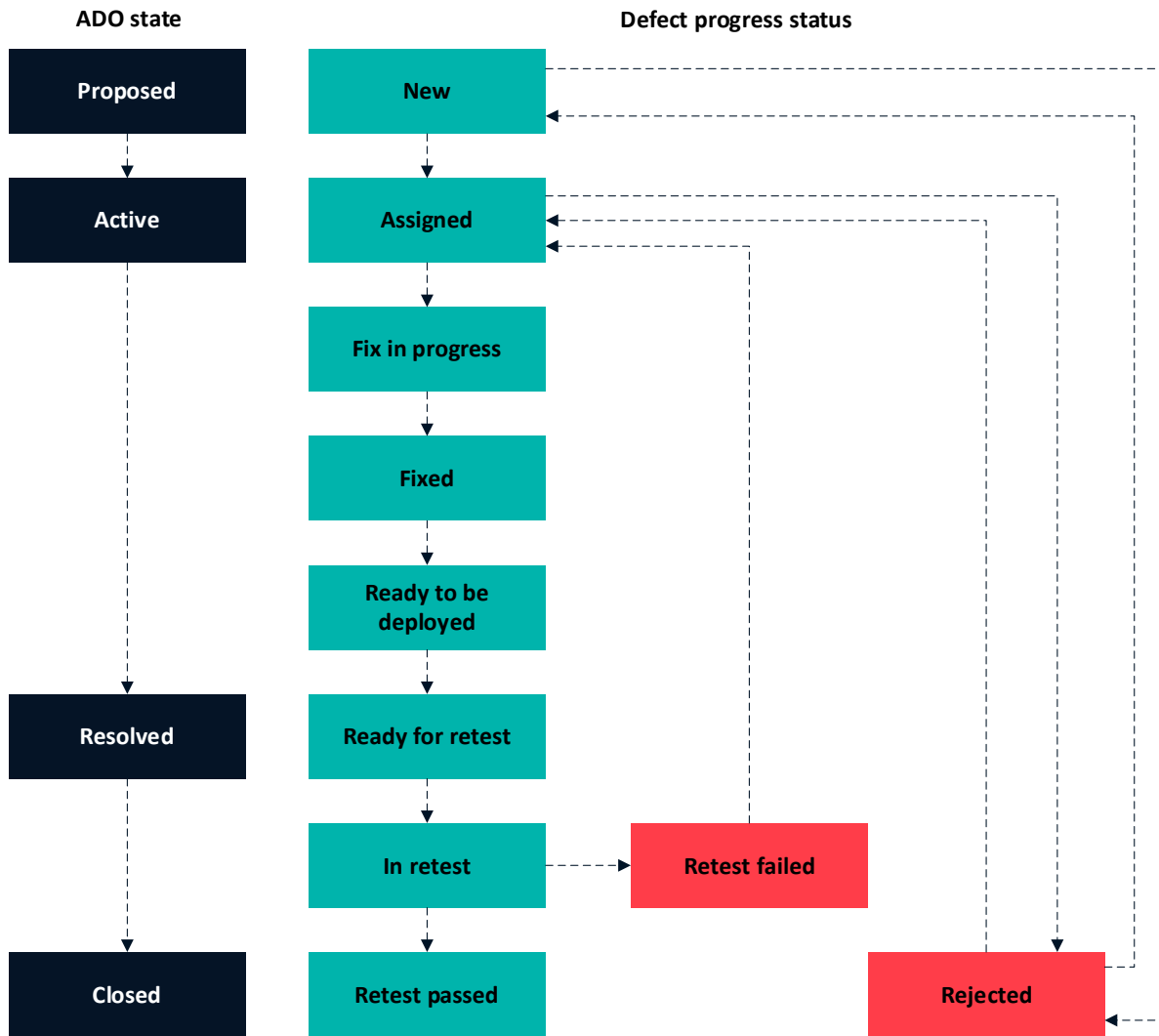
Defect progress status

Figure 2 - ADO State Transitions

5.3 'Progress Status'

To provide the MHHS programme with clarity on the status of live Defects, a 'Progress Status' field will be visible on the Defect template within ADO. The following table details the various statuses throughout the defect journey.

Progress status
New
Blocked
Assigned
Duplicate
Deferred
Fix in progress
Fixed
Rejected
Ready to be deployed
Ready for retest
In retest
Retest passed
Retest failed

Table 1 - 'Progress Status'

5.4 Defect Classifications and Definitions

5.4.1 Defect Severity

Defects are assigned a severity based on their impact to the business. These are as follows.

Severity	Definition
S1 – Critical	A problem that indicates a complete shut-down of a process, such as: • Has no workaround • Affects all users • Affects all system usage activities • Could cause significant loss of revenue • Will cause interruption of a major process
S2 – Major	A problem that is not easily recoverable without significant manual effort: • A workaround would involve a high level of additional user effort • Creates significant operational risk • Affects most users and most system usage activities • Data corruption (recoverable)
S3 – Minor	A problem with a business impact where: • A workaround would involve a moderate level of additional user effort • Creates moderate increase in level of operational risk • Affects significant number of users and system usage activities. Can be recovered from at a later stage without impacting Operational Efficiency
S4 – Low	A minor problem which: • A workaround would involve little additional user effort • Carries little operational risk • Affects a small number of users and small number of system usage activities • Does not impact functionality of the system or cause serious confusion to the user

Table 2 - Defect Severity Definitions

5.4.2   Defect Priority

The following priorities describe the urgency of a fix at time of submission and are in terms of how the test team is affected (i.e. a minor defect may still be of high priority if it blocks other tests from being run).

Priority	Definition
P1 – Critical	A problem has occurred that has rendered further testing impossible either at a functional or a team level
P2 – High	Unable to complete test but can continue other tests. Test thread to be completely re-tested
P3 – Medium	Able to complete the test but with significant non-compliance. May not require complete re-testing of the test thread
P4 – Low	Able to complete the test but with minor non-compliance. Will not require complete re-test of the test thread. Minor non-compliance is a defect which does not impact the functionality and which an explanation would temporarily resolve

Table 3 - Defect Priority Definitions

5.4.3   Closure Reasons

The final status of any defect will be '**Closed**'. The closure reasons shown in Table 4 - Defect Closure Category Definitions are used to qualify the nature of each closure:

Closure Category	Definition
Fixed	The defect is fixed by the Fix Organisation and retested/verified by the Test Participant Test team and assign to respective Test Participant Test Defect Manager for acceptance to Close. If a Defect has been closed as 'Fixed', a Defect Root Cause will also need to be populated.
Rejected	The defect is deemed not to be valid by the SI Triage Team or the assigned Fix Organisation and the respective Test team has concurred. If a defect has been Closed as 'Rejected, it will in addition require a 'Rejection Reason' to be populated.
Change Required	The defect is changed to Change Required along with the change request number and assign to the originator for review and acceptance to Close.
Withdrawn	The defect has been withdrawn by the raising Organisation.

Table 4 - Defect Closure Category Definitions

5.4.4　Rejection Reasons

A Defect, when rejected, will have a reason for rejection. The different Rejection Reasons shown in Table 5 - Rejection Reasons are as follows:

Rejection Reason	Definition
Additional information required	The new defect raised without enough information to proceed for triage will be rejected with this reject reason. A comment will be added to the defect highlighting the required information to be provided.
Agreement not to fix	Where all relevant parties agree that it will not be fixed. *Note - issues that have been closed for this reason will be available to appropriate parties to access via the programme portal during the life of the programme and will be handed over to the Service Management function for future reference during Production Incident triage.*
Cannot Reproduce	The defect that cannot be reproduced by the Fix Organisation will be rejected with this reject reason.
Duplicate within Test Participant	Two defects raised by the same Test Participant which are similar, the latest raised defect will be marked as Duplicate.
Duplicate (different Test Participant)	Two defects raised by more than one Test Participant which are similar, the latest raised defect will be marked as a Duplicate and linked to the Master.
Invalid Defect	The defect raised with an incorrect interpretation of test requirements, incorrect / invalid test execution or invalid test scenario will be rejected as Invalid Defect.
Tester Error	The Defect occurred as a result of invalid action of the Test Team or an error in a test artefact.
Payload	The defect raised required rework to the construction of the message Payload e.g. due to non-conformity to SI Design Documents (Interface catalogue)
Pre-Requisite: Certificate	The defect occurred as a result of ongoing Certification issues with PP related to the Onboarding process.
Pre-Requisite: URL / Webhooks	The Defect occurred due to incorrect or insufficient URL / webhook set up by PP in the DIP Portal prior to Test.

Table 5 - Rejection Reasons

6 Defect Management Roles and Responsibilities

6.1 Roles and Responsibilities

The SI will lead the central Defect management. Table 6 - Roles and Responsibilities describes the roles of those participating in the MHHS Programme Defect Management process:

Role	Description
MHHS SI Defect Manager	• Leadership & communication of defect management process. • Point of Escalation. • Regular defect Status Reports. • Running defect Triage Panel and managing the audience. • Analysis of defects to assist in project decision-making activities. • Responsible for arranging meetings as and when necessary between teams or PP's for defect resolution discussions and follow up until resolved. • Liaising upstream with senior stakeholders and downstream with Test Participant Test and Programme teams. • Single point of contact for any user level access management towards Defect Management Tool (ADO). • Chairs daily defect status calls / Triage meetings.
MHHS SI Triage Team	• Representation from SI Design, Test and Programme teams. • Review and analyse the newly raised defects (along with Severity and Priority of the Defect) by different Test Participants within cohort and drive relevant actions; • Analyse newly raised defects for cross-cohort impact; • Change the assigned Priority and Severity if required as a part of triage assessment. • Involved in regular Defect Triage Meetings. • Involved in changing the status from 'New' to 'Open' if a newly raised defect is accepted by SI Triage Team.
Test Defect Manager (per Programme participant)	• Reviewing & managing the quality of the defect submitted by Tester (along with severity and - priority). • Responsible for maintaining accurate and up to date information on the defect relating to outstanding actions or any progress made. • Involved in Defect Triage meetings on a regular basis. • Point of contact for the SI Defect Manager. • Driving retest of defects that have been delivered into the test environment. • Reviewing, accepting and closing defects that have been successfully retested in the test environment.
MHHS SI Environment Manager	• Responsible for raising any environment defect in ADO and liaising with relevant environment teams. • Ensuring environment stability during the Test window in conjunction with the relevant environment managers. • Managing & Tracking change in general across all environments. • Assessing the impact of Fix Organisation/Central Party planned fixes; • Awareness of individual Participant fixes within respective cohorts; • Involved in Defect Triage meetings on a regular basis.

Role	Description
	• Ensuring that all required systems are connected & working as expected in the test environment prior to test execution.
MHHS SI Release Manager	• Checking Release Notes when patch is delivered to determine which defects can be set to ready for retest.
	• Coordinating with the SI Defect & environment managers when required;
	• Responsible for communicating planned releases to all impacted parties;
	• Invoking Rapid Impact Assessment process for major releases;
MHHS SI Data Lead	• Responsible for investigating and resolving test data defects, liaising with relevant data subject matter experts where necessary.
	• Involved in Defect Triage meetings on a regular basis.
	• Is assigned the ownership of data quality defects within the MHHS Defect Management process, referring these to the Data Working Group (See Section 8.6).
Tester (Programme participant)	• Submitting new defects.
	• Defect retest.
	• Involved in Defect Triage meetings on a regular basis wherever necessary.
	• Retesting fixed defects as per the release notes/info in the Test Management Tool (ADO).
Fix Organisation	• The Organisation responsible for making the required changes to resolve a defect.
	• The organisation is required to assess/understand the impact of planned fixes on other participants and cohorts and clearly communicate this.
	• Recreate the defect in their environment.
	• Validate the defect category (Severity and Priority).
	• Involved in defect Triage meetings on a regular basis wherever necessary.
	• Liaise with Tester/Test Defect Manager and SI Defect Manager when required, e.g. additional information/clarity around the topic in question.
	• Fix the defect.
	• Update the defect Root Cause field.
	• For any resolved S1 / P1 defects, provide Root Cause, Resolution Action taken and provide details of any preventative action taken going forward.
	• Retest the fixed defect in their environment.
Design Authority	• Provides design concurrence for the design activities under the MHHS solution.
	• Point of escalation for System Integrator for defects related to the design.
MHHS SRO	• Point of escalation for System Integrator.
	• Oversight of Defect Management process.
PAB / PAB Qualification Team	• Point of escalation for System Integrator during Qualification.
RECCO	• Point of escalation for System Integrator during Qualification.
SECAS	• Point of escalation for System Integrator during Qualification.

Table 6 - Roles and Responsibilities

7 Defect Management Tool

7.1 Defect Tracking Tool

ADO will be used as the Defect Management tool. This will be used to raise and manage Defects that have been identified during the various Test Phases. Defects raised in ADO will be referenced to failed test executions. The SI Defect Manager will grant levels of access to ADO for respective Programme participant roles.

7.1.1 Raising a Defect

All defects must be raised from the execution of a Test Case. This will ensure that the test steps are populated in the defect template correctly. The information provided needs to be detailed enough so that anyone attempting to reproduce the problem does not face issues. Upon allocation of the defect, the assignee is notified via email and the defect is specifically allocated to them within ADO. The following details indicate which fields are mandatory and which are optional when raising a New defect in ADO.

- **Title** (Mandatory) – enter a concise summary of the issue that is meaningful and includes key words making it easily identifiable when read in list format;

- **Owner** – a new defect will always be assigned to the SI Defect Manager for triage;

- **State** – the four main states that are defined for the Defect Management process, that describe a defects progression. When a New defect is raised, this will be set to 'Proposed';

- **Description** (Mandatory) – enter a description of the Defect so that it is clear what is being addressed or requested. It should include the following information:
  - o Pre-Requisites
  - o Data (unless added as an attachment)

- **Repro Steps** – steps to reproduce the issue found, including expected and actual results. This information will be taken from the Test Case being ran when the defect is raised;

- **Defect Priority** (Mandatory) – choose a Priority for the issue, based on the defined Priority levels;

- **Defect Severity** (Mandatory) – choose a Severity for the defect, based on the defined Severity levels;

- **Theme** (Mandatory) – choose the relevant 'theme' from the pop-list provided. This describes the broad objective of the collection of test cases under execution;

- **Participant** (Mandatory) **–** This captures the individual Participant within their respective Cohort who raises the new defect;

- **Cohort** (Mandatory) **–** This captures the cohort(s) the Participant is associated with when the defect was raised;

- **Test Phase** (Mandatory) – choose the relevant test phase e.g. SIT F (stage), UIT (stage);

- **System/Service** (Mandatory) – user will be prompted to select from a list of pre-determined values, indicating in which 'system' the defect was found;

- **Business Process – (**Mandatory) – Select the Business Process being exercised by the failed test;

- **Environment (**Mandatory) - enter the environment the defect was found in. PPt's will be aware of the test environment applicable before each test phase in order to reference this correctly;

- **Found In Build Version** (Mandatory) – to be used to determine the build version the defect has been recorded against;

- **Triage Status** – will be used by the SI Defect Manager to determine the status of triage. When a New defect is raised this will be set to 'Pending';

- **Progress Status** – provides the programme with clarity on the defects current progress. When a New defect is raised this will be set to 'New';

- **Programme Wide Defect** – if selected, will indicate that the defect effects a number of services/systems;

- **Impacting** – to be used to indicate which service/system is affected by a programme wide defect;

- **Defect Type** – (Mandatory) to be completed at the time a defect is raised, where possible. This will be reviewed during triage and before Defect Closure;

- **CR required** – this will be used to determine whether a change is required, so the defect can be monitored prior to a change reference being created;

- **PUB / IF under test –** This must be selected if applicable to determine the type and ID of the message under test. This helps with identifying commonalities between defects and aids the Triage process. Also can be used for Reporting to inform Programme decisions;

- **Change Management Ref** – to be completed if a defect is closed as a change is required. This field will be used for traceability and future analysis;

- **Programme Subject Matter Expert** – Free form field, providing clarification as to the SME for the defect raised;

- **Resolver Group** – field used to record the Fix Organisation / Central Party resolving team (if applicable);

- **Release Version** – used to record release version for a defect fix;

- **Rejection Reason** – if a defect is rejected, this field is to be populated by using one of the pre-determined entries. This information will be passed back to the originator for review;

- **Duplicate Defect ID** – if a defect is identified as a duplicate, then this field will be used to record the ID of the associated defect;

- **Deferred** – if a defect is deferred and the deferral has been accepted, this field will be set to 'Yes'. Alternatively it will be defaulted to 'No;

- **Expected Release Date** – this field will be used to record the expected dated a fix is to be released and updated alongside the deferred field;

- **Expected Release Version** - this field will be used to record the expected release version;

- **Actual Release Date –** to be completed upon successful release;

- **Release Version –** to be completed for traceability, indicating in which release a defect fix was provided;

- **Closure Reason** – to be completed when a defect is closed to determine why the defect has been closed;

- **Defect Root Cause** – this will become a mandatory field when the Closure Reason is 'Fixed'. The information collected will provide the programme with the ability for future defect analysis;

- **Defect Rejection Reason** – this will become a mandatory field when the Closure Reason is 'Rejected';

- **Discussion** – to be used for commentary by all appropriate parties throughout the defect lifecycle. This should be a factual narrative of the defect lifecycle;

- **Linked Defect** – if the defect is duplicate or blocked, Triage Team or Test Team will use this field to link the parent Defect. (not mandatory);

- **Attachment** – (Mandatory) - attach any relevant documents in support of the defect. (For example, payloads, transactional messages received, screenshots, log files, test data for a Defect).

Where a Defect requires attachments such as logs, Test Data and screenshots, these attachments must comply with GDPR and any other relevant security requirements.

A detailed Test Management Tool User Guide will be provided for users to facilitate the submission and management of any Defects in accordance with this Defect Management Plan.

7.2 ADO Administration

The ADO administration role will be handled by the SI Test Support Team:

- To set up new users for different Test Participants;

- To remove or roll-off users from MHHS programme – Each Test Participant Test Manager or Defect Manager from each different party are responsible to inform the MHHS SI Defect Manager if any person from the MHHS programme who has ADO access has been rolled-off;

- To produce the defect reports from ADO as defined for the different test phases and test types;

- Where a defect is raised from one cohort and is believed to have cross cohort impact, the lead defect will be replicated from the Main ADO instance to the impacted Cohort ADO instances. Parent / Child relationship will be maintained to provide Reporting.

8   Defect Management Governance

8.1   PIT Phase

At PIT Exit for SIT participants, any open defects relating to systems in scope for SIT with potential impact on SIT will be identified in the PIT Completion Report and the Work Off Plan. This will allow an assessment of the potential impact of these Defects on planned SIT testing and identification of similar or potentially duplicate defects during subsequent Test Phases.

The subsequent management of PIT defects will still be the responsibility of the SIT participant through their Defect Management processes and tooling. The SIT participant will communicate changes in defect status to the MHHS SI Defect Manager through ongoing provision of their updated Work Off Plan.

8.2   Service Levels

To facilitate the timely and efficient resolution of defects, target Service Levels are set, measuring both: (1) Defect Response Times and (2) Defect Fix Times. These are based on the following principles:

- Service Levels are measured from point the defect has completed triage and has been assigned to the relevant Party;

- The Service Level Management process will allow Fix Organisations to 'stop the clock' where delays to defect resolution are beyond their control. Service Providers may apply to the MHHS SI Defect Manager to 'stop the clock' on defect response time measurement, for example:
    - Where the planned fix has been released into the Test Environment;
    - Where the defect is assigned to another Fix Organisation for investigation e.g. Design Authority; or
    - Where an agreed workaround is applied to the Test Environment, allowing testing to progress while the Fix Organisation provides the full fix. A valid workaround must be agreed with the MHHS SI Defect Manager and the relevant industry parties and will enable the progression of testing. In parallel, this will allow the full fix to be validated with relevant regression testing.
    - Where the escalation process has been initiated.

- The MHHS SI Defect Manager will arbitrate on disputes relating to Service Levels.

8.3   SLA Response Times

Once a defect it raised it will be assessed by the SI Triage Team and then assigned to the appropriate Resolver. The response times detailed below are indicative of the time allocated for initial root cause analysis.

This measure will be taken from: (1) The point the defect is assigned to the Resolving party, to (2) When the Resolving party formally acknowledges receipt of the defect. A comment can be added to the defect in ADO by the Resolver to demonstrate receipt and acknowledgment.

PrioritySeverity	Service Level
S1 – Critical	1 Business Hour
S2 – High	4 Business Hours
S3 – Medium	2 Business Days
S4 – Low	5 Business Days

Table 7 – Service Levels by Response Times

8.4   SLA Fix Times

This measure will be taken from: (1) When the Resolving party formally acknowledges receipt of the defect, e.g. a comment can be added to the defect in ADO by the Resolver to demonstrate receipt and acknowledgment, and (2) when the fix has been deployed for retest.

Priority	Service Level
S1 – Critical	(1) Patch, (2) Workaround or (3) Formal Release **within 8 Business Hours**
S2 – High (Assigned Mon / Tues)	Deployed in the following **Monday's Minor Release** (against the pre-agreed Fix / Deployment timetable)
S2 – High (Assigned Wed / Friday)	Deployed in the **week +1 Monday's Minor Release** (against the pre-agreed Fix / Deployment timetable)
S3 – Medium	Deployed within the **next 2 Monday releases** (against the pre Fix / Deployment timetable)
S4 – Low	Deployed within the **next 5 Monday releases**

*Severity 2 defects can be deployed as adhoc releases / patches prior to the SLAs above, subject to agreement with Release Management function

Table 8 - Service Levels by 'Fix Time'

8.5   Defect Status Meetings

The Defect Status Meetings will be chaired on a regular basis by the MHHS SI Defect Manager with all the required Test Participants, Test Team representatives, Central Systems Fix Organisations along with MHHS SI Test Management, MHHS SI Design Team, MHHS SI Test Assurance and SRO. Other appropriate parties may be invited on the discretion of MHHS SI Defect Manager. The frequency of these meetings will be included in the relevant Test Phase Test Plan. If necessary, the frequency of these meetings may change in response to Programme needs.

The focus of these meetings will be to review defect progression, manage pending actions and ensure any blockers to test progress or factors affecting testing are in hand or have been escalated. The review of defect progression will initially be based on Priority/Severity; however, it may be necessary to change the review criteria to be scenario based or functional area depending upon the number of defects raised in a particular area. This will be included in the relevant Test Phase / stage Test Plan.

The frequency of these meetings and attendees required may vary in response to the amount and severity of defects raised. This will allow the Defect management team to ensure that appropriate focus and control are applied.

Prior to the Defect Status Meetings, the Fix Organisation teams should ensure that all Defects in their ownership are up to date with clear comments regarding investigations held to date and next steps. In all cases, whomever the defect is assigned to will be regarded as the owner for progressing the resolution of the defect.

8.6 Defect Triage Meetings

Regular Defect Triage Meetings will be held by the SI Triage Team to analyse new defects raised. The frequency of these meetings will be included in the relevant Test Phase / Stage Test Plan. Defect Triage Meetings will include:

- Examination of the defect title and description to ensure sufficient detail and clarity, allowing Central Parties to perform their own respective Triage ;
- Checking that reproduceable steps have been linked/added to demonstrate the test step/test condition failure;
- Assess the impact of the defect on all parties: Participant, cross Cohort, Central Party / Fix Organisation;
- Assess the potential impact of the defect to any in-flight tests;
- Ensure the correct Severity and Priority has been assigned, which will be affected by several factors including cohort impact and desire to coordinate and prioritise fixes ;
- Check any necessary evidence of the failure has been attached in addition to the Test Case; Payloads, logs, transactional messages and screenshots.
- Ensure that the defects are assigned to the correct Resolver group/Test Participant;
- Ad-hoc calls will be conducted for Severity 1 defects.

SI Test Management, SI Release and Environments, SI Test Assurance, SI Design, SRO Function, and relevant technical/support teams will be expected to attend.

8.7 Defect Escalation Process

The Defect Escalation process will trigger in the following circumstances under the judgement exercised by the Defect Manager:

- Test Participant / Fix Organisation response times are consistently longer than target service levels (more than 10%);
- Failure to agree on the target Fix Organisation; or
- Failure to agree on the defect severity or priority

The defect escalation process will be initiated either from Programme participants to the MHHS SI Defect Manager, or directly from the MHHS SI Defect Manager to the SRO Programme Test Manager or the SRO. **Error! Reference source not found.** below shows the defect escalation process and escalation levels.
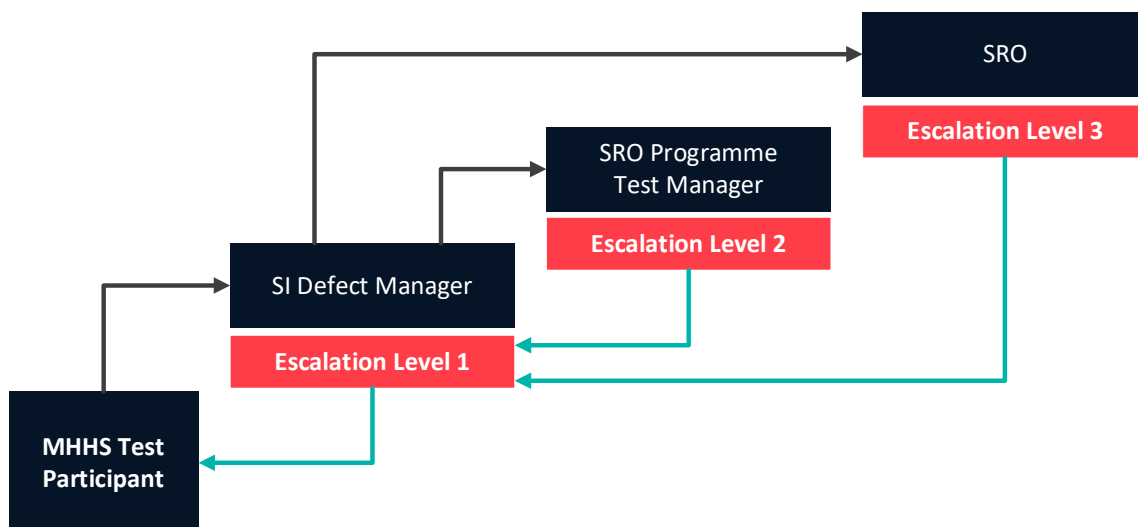

Figure 3 - Escalation Process for Programme participants
Error! Reference source not found.below provides more detail about the Defect Escalation process.

Escalation Levels	Involved Parties	Escalation Process	Resolution Process
Initiation (Trigger Point)	Test Participant / SI Defect Manager	The defect escalation will be initiated by either the PP to the SI Defect Manager, OR The defect escalation will be initiated by the SI Defect Manager to the SRO Programme Test Manager or SRO.	N/A
Escalation Level 1	SI Defect Manager	Firstly, an issue will be escalated to the SI Defect Manager by the Test Participant.	The SI Defect Manager will review the issue and provide the resolution. If the Test Participant is satisfied with the resolution provided by the SI Defect Manager, then the issue will be considered as resolved at this stage.
Escalation Level 2	SRO Programme Test Manager*	There are two paths of escalation at this level: a) Either the issue is escalated by the SI Defect Manager firstly with SRO Programme Test Manager, OR b) If the Test Participant is not satisfied with the resolution provided by the SI Defect Manager, then this will be escalated to the next level (Escalation Level 2) to SRO Programme Test Manager directly by the SI Defect Manager.	Once the issue is reviewed by the SRO Programme Test Manager, then relevant parties will provide the resolution to the SI Defect Manager. This will then be reviewed and if needed will be passed to the Test Participant for their review. If both parties are satisfied, then the issue will be considered as resolved at this stage.
Escalation Level 3	SRO*	There are two paths of escalation at this level: a) Either the issue is escalated by the SI Defect Manager firstly with the SRO directly, OR b) If the Test Participant is not satisfied with the resolution provided by the SI Defect Manager and SRO Programme Test Manager, then this will be escalated to the next level (Escalation Level 3) to the SRO directly by the SI Defect Manager.	Once the issue is reviewed by the SRO they will provide the resolution to the SI Defect Manager, then this will be reviewed and if needed will be passed to the Test Participant for their review. If both the parties are satisfied, then the issue will be considered as resolved at this stage. If either party is not satisfied with the resolution provided by the SRO then they need to have an ad-hoc meeting and decide upon the resolution which will be provided by that SRO at the overall Programme level.

Table 9 - Escalation Process for Test Participants

Note - that as per the MHHS Governance Framework [REF-003], where consensus cannot be reached the SRO will make the Programme decision based on the various views of the TMAG and considering any advice from the IPA.

*During Qualification defects will be escalated to the code bodies (BSCCo, RECCo, SECAS).

8.8   Data Quality Defects

Data Quality defects are defined as defects raised during MHHS Programme SIT or UIT phases but where the root cause of the defect relates to the production data used for testing.

Where a data quality defect is identified it will be assigned to the SI Data Manager for referral to the Data Working Group (DWG). This Working Group will manage the process for investigating and resolving production data issues. Where necessary the DWG will escalate data quality defects to the Migration Working Group (MWG). On successful resolution of the data quality defect, the SI Data Manager will assign the defect to the MHHS SI Defect Manager for closure.

Where the original defect requires further investigation or re-work a new defect will be raised by the MHHS SI Defect Manager to manage the data quality issue and the two defects will be linked in ADO.

9 Defect Management Reporting

Defect Reporting will be done at each stage during the different Test Phases. It will allow key stakeholders to accurately monitor the number, Priority, and status of defects. Tracking of defects will be a key input into quality metrics captured by the SI during MHHS.

Defect Reporting will be facilitated by the use of suitable queries and dashboards within ADO. These can be used as input into status and escalation meetings.

The different Defect Management Reports that will be available are detailed in the following sections.

9.1 List of Defects for Triage

The list of defects to be Triaged will include the following as a minimum:

- Defect ID
- Defect description
- Assigned to
- Severity
- Priority

9.2 Defect Status Reports

The following Defect MI will be provided:

- Number and details of New Defects
- Number and details of Outstanding Defects with their status
- Number of Defects Closed
- Number of Defects Rejected
- Number and details of Defects Failed Retest
- Number and details of Defects Deferred
- Number and details of Open Defects by Priority
- Number and details of Open Defects by Severity
- Number and details of Open Defects by Test Participant
- Defect Age – Total time taken to resolve Defects by Severity and Priority
- Retest Defect Age – Total time taken to retest the resolved Defects
- Defect Leakage Analysis – Total number of Defects slipped in different test phases
- Defect Age – Total time taken to resolve Defects by Test Participant.

9.3   Defect Reporting on Test Stage Completion for a Test Phase

On completion of a test stage for a Test phase, the MHHS SI Defect Manager will provide the consolidated Defect report for the test stage and will include:

- Number and details of New Defects
- Number and details of Outstanding Defects with their status
- Number and details of Defects Closed
- Number of details of Defects Rejected
- Number and details of Defects Failed Retest
- Number and details of Defects Deferred
- Number and details of Open Defects by Priority
- Number and details of Open Defects by Severity
- Number and details of Open Defects by Test Participants
- Total number of Defects outstanding by Severity
- Total number of Defects outstanding by Priority
- Defect Age – Total time taken to resolve Defects by Severity and Priority
- Retest Defect Age – Total time taken to retest the resolved Defects
- Defect Leakage Analysis – Total number of Defects slipped in different test phases
- Defect Age – Total time taken to resolve Defects by Test Participants.

9.4   Defect Reporting on Test Phase Completion

On completion of a Test phase, the MHHS SI Defect Manager will provide the consolidated Defect report for the test phase and will include the following cycle-wise:

- Number of New Defects Raised
- Number of Defects Closed
- Number of Defects Rejected
- Number and details of Outstanding Defects with their status
- Number and details of Defects Deferred
- Number and details of Defects Failed Retest
- Number and details of Open Defects by Priority
- Number and details of Open Defects by Severity
- Number and details of Open Defects by Test Participants
- Number and details of Defects closed
- Total number of Defects outstanding by Severity
- Total number of Defects outstanding by Priority
- Defect Age – Total time taken to resolve Defects by Severity and Priority
- Retest Defect Age – Total time taken to retest the resolved Defects
- Defect Leakage Analysis – Total number of Defects slipped in different test phases
- Defect Age – Total time taken to resolve Defects by Test Participants