



MHHS Implementation Approach

MHHS-DEL842

Version 3.3

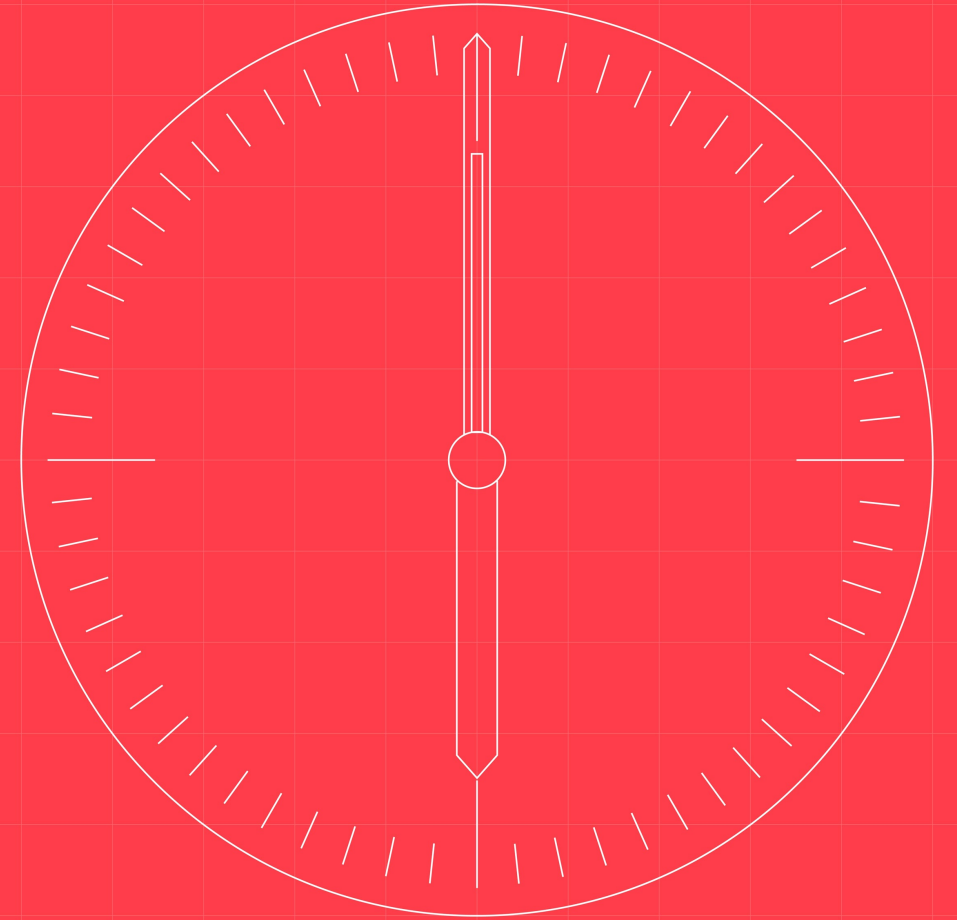
Document history:

- Version v1.0 & v1.1 - Issued for Round 3 replan consultation
- Version v2.0 - Issued to support MHHS Replan Change Request CR022
- Version v2.1 – Issued to Ofgem Only to support Level 1 Milestone approval
- Version v3.0 – Issued with PSG papers to support Change Request CR022 decision post industry consultation
- Version v3.1 – Minor change to align the POAP date formats to Programme Plan version 5.0
- Version v3.2 – Minor changes to SIT and Transition slides
- Version v3.3 – Additional slide with Level 1 milestones as approved by Ofgem under CR022 and the POAP aligned to Programme Plan version 5.1

Changes to the Implementation Approach since v2.0 – All changes in v3.0 unless otherwise stated

Slide(s)	Section	Type of Change	Change
Various	RAID Summaries	Amendment & Additions	Summary RAID items have been updated, particularly to SIT section
Various	POAP	Amendment [3.1]	All POAPs have been updated to align with baseline v5.0 MPP. Date format amended to be consistent with UK (not US) format for clarity
4	Introduction	Amendment	Updated to reflect use of Implementation Approach as a planning guide now plan is baselined.
N/A	CR022 Section	Deletion	Section removed in anticipation of conditional approval of CR022 at PSG on 8 June 23
8	Plan overview	Amendment	Clarification added around three defining critical paths to commencement of migration. This covers Minimum Viable Cohort, who participate in SIT and qualify via the QAD process to reach the earliest migration start (CP2). Other SIT PP's will be able to Go-Live between CP2 and CP3
8	Plan overview	Addition	Any Non-MVC SIT participants who have not completed successfully will need to apply to Code Bodies to obtain credit for what they have tested in SIT. Code Bodies will determine what additional testing is required in order to qualify Qualification Testing is assumed to take 12 months overall for all tranches with 2 months following Qualification for PAB approval and production environment mobilisation for Programme Parties. Further discussions are on-going with the code bodies to fine testing requirements and scope.
11	Design, Build, Test	Amendment	Note 2 updated to reflect definition of consequential change. A consequential change is defined as change required by parties to enact the core industry design being delivered by the Programme within their own system and process landscapes. The scope of Consequential Change to be included in the MHHS Programme Code drafting is defined in the Consequential Change Log which can be found here .
10-11	Design, Build, Test	Addition	Approach for delivery assurance and timeline for activities added
15-16	Design, Build, Test	Addition	Revised Phased PIT Approach added to enable increased participation in SIT for various PPs
26	System Integration Testing	Addition [3.2]	Need to record SIT execution results in the MHHS Test Management Tool (ADO) added
33 - 34	Test Data Approach & Plan	Addition	Further elaboration on data cuts and timescales
51	Qualification	Amendment	Updates to RACI table deleting redundant products (Test Plan and Scope included in QA&P) and updating RACI
64	Transition & Migration	Addition [3.2]	New slide setting out differences between Transition and Migration. Scope visual added to slide.
67	Transition & Migration	Addition	Elaboration of modelling assumptions underpinning 18 month migration window
N/A	Business & Operational Readiness	Deletion	Section removed and absorbed into Transition which covers all aspects

Introduction



Introduction to Implementation Approach - MHHS Re-baseline Version (post CR022 approval)

Context for the plan

- MHHS implementation is an essential enabler for realisation of much of the benefits from smart metering, as well as most of the planned benefits attributable to time of use pricing and demand-side flexibility.
- These benefits are significantly more than the £1.5bn - £4.5bn that were directly attributed to MHHS in its business case. The scale of the benefits the plan is particularly sensitive to any delay and carries a very heavy cost in delayed benefits.
- With MHHS now in delivery mode for many PPs, in particular those in FTIG, baselining the plan in the absence of any material risks is unrealistic. A programme of this nature will inherently carry risk which was openly recognised through the three rounds of consultation and subsequently CR022 impact assessment. All future plan changes will be managed strictly by change control using the baseline plan as a measure for impact assessing future CR's.
- CR022 also set out the principle of applying contingent ranges of dates for key Tier 1 milestones. These will be kept under close review through control points and PSG governance as planning assumptions become validated.
- Consistent with the Programme being industry-led, the baseline plan is seen as credible, robust, and achievable, enabling MHHS implementation proceed at pace and therefore benefits as early as possible. This was comprehensively endorsed by 92% of CR022 responses firmly supporting the replan and approaches as set out in this document.

Purpose of the Implementation Approach

The purpose of the Implementation Approach (IA) is to:

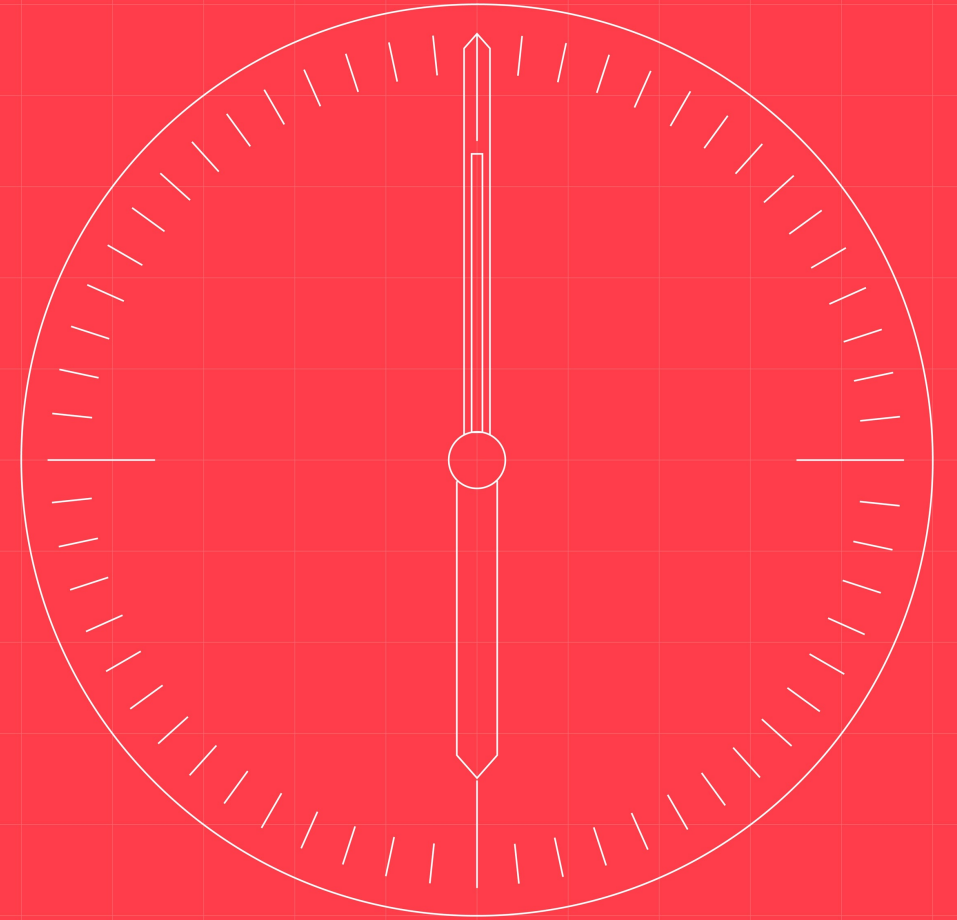
- Provide an overview of the rationale behind the proposed re-baseline plan, set out the dependencies between key stages, and highlight areas of uncertainty and risk at the point of baselining the plan (expected at PSG on 8 June).
- Support Programme participants during planning, ensuring plans align to the MHHS Programme and milestones.

About this document

The IA is intended to aid planning and not substitute more detailed elaboration through associated working groups. . Each section reflects the latest approach at a high level in framing the plan, including planning assumptions and planning assumptions following a standard format:

- 1. An Overview** covering the scope, approach and high level roles and responsibilities of the MHHS, Participants and other stakeholder bodies
- 2. RACI Matrix** providing a more detailed definition of proposed roles and responsibilities by key activities outlined in the detailed MS Project Plan (MPP)
- 3. MPP Extract** offering a series of Plans-on-a-Page summarising the detailed MPP (provided as a separate consultation artefact)
- 4. Key RAID items** impacting each stage. (Note: The dPMO cross reference is specified for visibility of live updates).

Plan Overview



Rebaselined Plan – Key Features

Paths and timings

- Control Points demarcate the main programme phases
- Delivery is phased: there are three defining critical paths to commencement of migration (see next slide):
 - Minimum Viable Cohort, who participate in SIT and qualify via the QAD process to reach the earliest migration start (CP2). Other SIT PP's will be able to Go-Live between CP2 and CP3
 - Participants who do not participate in SIT but reach early migration via Tranche 1 of Qualification (CP3)
 - Other participants will pursue the Qualification route (in later tranches) (CP1 reflects the final tranche)
- All suppliers must be ready to start migration by or before M14 (i.e. have their new settlement operations in place, ready to accept MPANs into the new arrangements), or they will not be able to take on new customers as per BSC Section C

Key Dependencies

- SIT (M9) will start when:
 - Core Capability Providers (starting with DIP and Helix) have completed their design, build and PIT – assured by the SI; and at that time
 - The Programme confirms that the number and types of participants joining SIT is sufficient to form the MVC
- SIT participants must complete their DBT1* (design, build and PIT) before starting SIT
- All participants must have completed DBT1* and DBT2* in order to complete Qualification
- Qualification is owned and managed by Elexon, and other code bodies as needed
- Qualification should not start until after SIT functional testing is complete
- Any Non-MVC SIT participants who have not completed successfully will need to apply to Code Bodies to obtain credit for what they have tested in SIT. Code Bodies will determine what additional testing is required in order to qualify
- Migration proceeds at M11: all Core Capability Providers have fully completed SIT, all non-SIT LDSOs have conducted specified pre-migration testing, and all have completed QAD
- Migration can proceed when code changes have been delivered (M8)
- M14 is reached at the end of the Qualification phase

* See slide 16 for DBT1 and DBT2 definitions

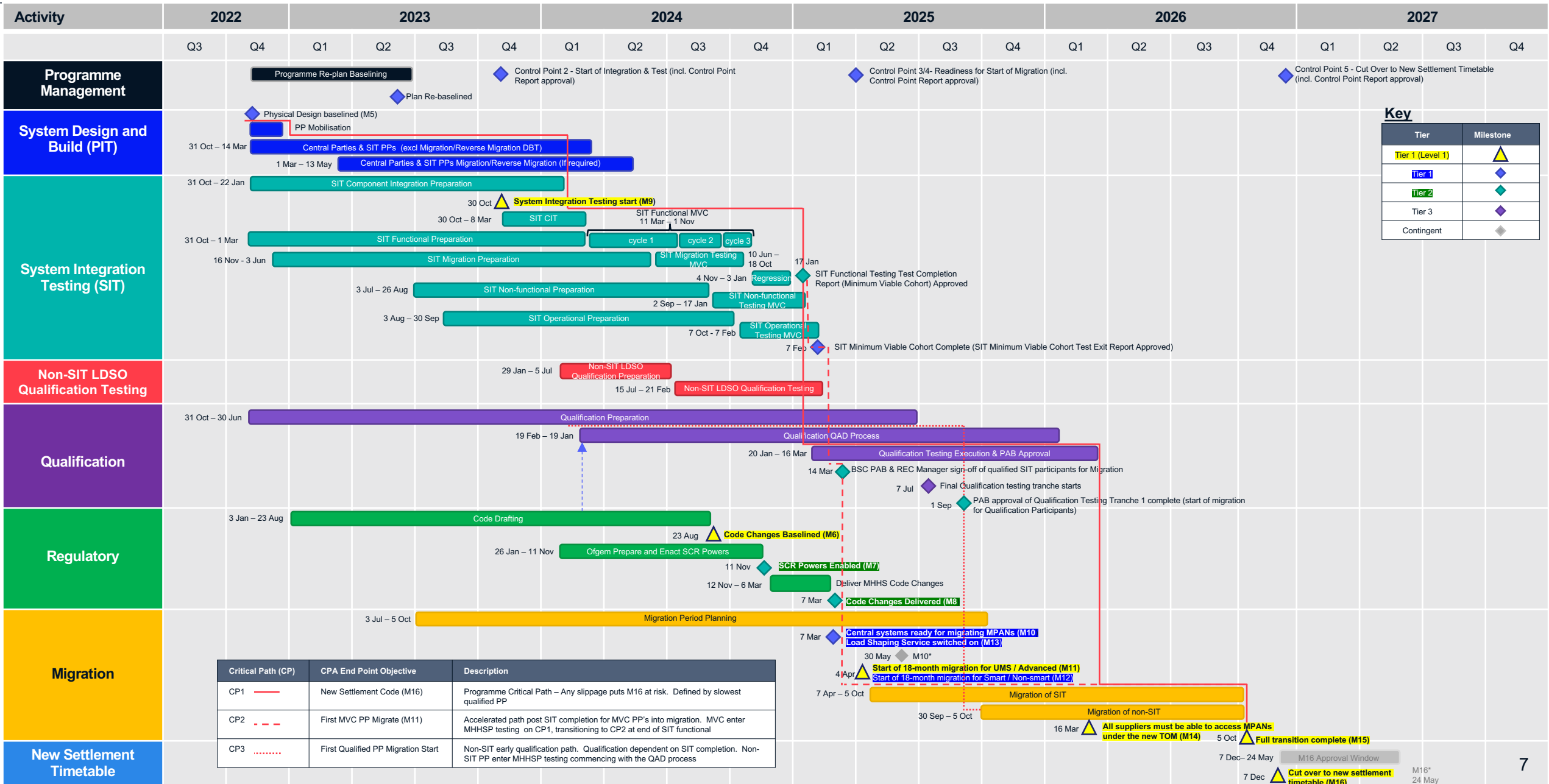
Minimum Viable Cohort (MVC)

The smallest group of SIT participants which is needed to operate their systems in a co-ordinated manner to complete the SIT tests.

1. All the providers of central systems:
 - Elexon (providing ECS, DIP and PKI as well as systems supporting existing settlement arrangements for migration testing)
 - DCC (providing Smart Metering and CSS)
 - RECCo (providing EES)
 - Electralink (providing DTN)
2. At least one of each of the following:
 - St Clements / DNOs / iDNOs (providing MPRS)
 - DNOs / iDNOs (providing Network Operations Services and UMSO Services)
 - Agents (providing DC, DA, MOP services for migration testing)
3. At least two of each of these other providers of systems**:
 - Service Providers (providing Metering Services Smart)
 - Service Providers (providing Metering Services Advanced)
 - Service Providers (providing Smart Data Services)
 - Service Providers (providing Advanced Data Services)
 - Service Providers (providing UMS Data Services)
 - Suppliers

** Single service providers may be able to cover multiple services depending on capability

Baselined MHHS Implementation Timeline - POAP Showing Ofgem CR022 Approved Level 1 Milestones



High Level Phase Overview – Key to Plan-On-A-Page (see previous slide)

Phase	Rationale Underpinning Critical Path for each phase	Stage Entry	Stage Exit
System Design and Build (PIT)	<ul style="list-style-type: none"> Design, Build and Test will continue for Helix and DIP participants up to c. 1 month prior to Component Integration Testing (CIT) marking the start of SIT on 30-Oct-23. PIT needs to be completed for all Central Parties and SIT participants before CIT interval due to staggered entry to SIT (CIT). DBT continues for Qualification participants up to final tranche starting Qualification (not shown). 	In-Progress	PIT Exit – Helix & DIP
System Integration Testing (SIT)	<ul style="list-style-type: none"> The objective of SIT is to demonstrate that the new MHHS arrangements function correctly (that they have been implemented in accordance with the MHHS E2E Design). The minimum number of SIT PPs needed to prove the design is the Minimum Viable Cohort (MVC) comprising of core capability providers and at least one provider of Registration, Network Operations Services and UMSO Services. Component Integration Testing (CIT) takes place between end of Oct 2023 and late Feb 2024, starting with DIP and Helix, followed by first of two drops for MPRS. SIT is comprised of 6 intervals for SIT PPs to enter; all other PPs enter between the first and last release of functionality for MPRS. SIT Functional testing starts on completion of CIT after which no more SIT PPs can enter the SIT environment (other than non-SIT LDSO at cycle 2). SIT Functional testing is a major component on the critical path, with qualification testing dependent on completion. SIT Functional testing has been modelled on three cycles of testing and is on the critical path through SIT. Final regression test is dependent on both functional testing and SIT migration testing being complete and necessary code base merged. 	DIP & Helix PIT test reports CIT Test Script Preparation CIT Test Data	MVC SIT Completion
Non-SIT LDSO Qualification Testing	<ul style="list-style-type: none"> To support migration for all DNO & iDNO licence areas at M11, all LDSO services need to be qualified at this point, i.e. registration, UMSO and Network Operations. Qualification for LDSOs has to be in advance of M11, hence the need to run a set of MHHS (qualification) testing for non-SIT LDSO participants in parallel with the later stages of SIT as an advanced cohort of PPs for LDSO testing only. LDSO qualification testing is likely to be on the SIT not UIT environment but subject to final decision at Working Group. 	Commencement of SIT Functional Cycle 2	SIT Functional (MVC)
Qualification	<ul style="list-style-type: none"> Qualification will be organised into tranches in line with the phasing principle. Qualification Testing is assumed to take 12 months overall for all tranches with 2 months following Qualification for PAB approval and production environment mobilisation for Programme Parties. Further discussions are on-going with the code bodies to fine testing requirements and scope. The entry & exit from qualification will be controlled by BSC and REC PABs which sit monthly. Qualification testing, excluding completion of the Qualification Assessment Document (QAD) is assumed to take 6 months per tranche. An additional period of 2 months to cover PAB governance at entry and exit, mobilisation of production environments etc has been included so each complete tranche is assumed to take 8 months from start to finish. QAD approval at PAB is dependent on the start of the mop-up topic area consultation in Code drafting, when the Code drafting is stable enough to be reflected in the QAD. On completion of Qualification, participants will be able to join the production environment and commence migration following PAB approval. The last Participant will enter Qualification 8 months before qualification completes at M14. 	UIT Set Up SIT MVC Functional Completion	All Non SIT PP's Qualified
Regulatory	<ul style="list-style-type: none"> The sequence and duration of code drafting has been agreed by CCAG and activities are already underway. Code drafting activity is not on the MHHS critical path as there is sufficient slack in the plan. We are expecting M8 to be set as the implementation date for Code Changes from SCR determinations at M7 and for M8 to be aligned with M10. 	In-Progress	M8
Migration	<ul style="list-style-type: none"> 18-month migration is assumed based on high level modelling scenarios to provide sufficient time between MVC Go Live and last migrations. Failed migration rate will be key (see risk) and profile assumed to follow S-curve. 	MVC SIT Completion	MPAN Migrated
New Settlement Timetable	<ul style="list-style-type: none"> M16 will be subject to assessment against a set of criteria to demonstrate to BSCCo that the MHHS arrangements are stable and fit for purpose to cut over to the new Settlement Timetable. The earliest M16 date assumed is 2 months after M15 with a 6-month range so to enable the entry criteria to be achieved 	Early Live Running	Cutover to New Settlement Code

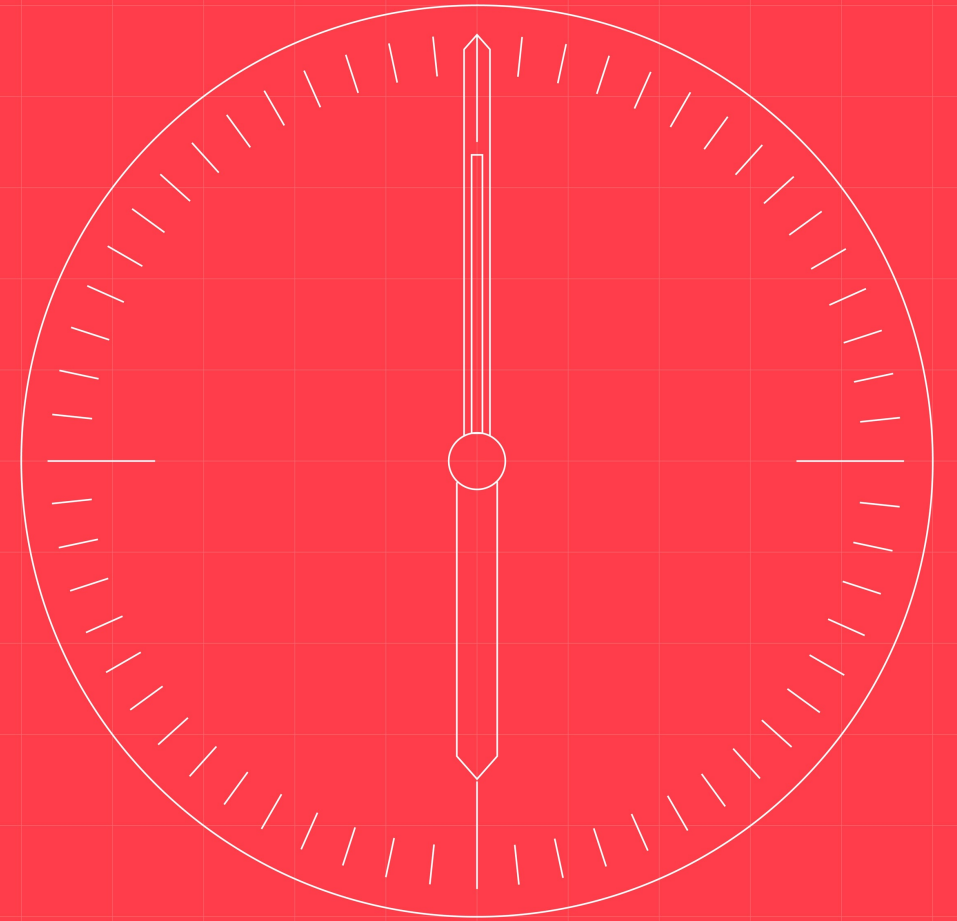


Milestone Descriptions and Dates – Level 1 as agreed by Ofgem under CR022

Milestone	Milestone type	Milestone	Date	Description
M6	Level 1 / Tier 1	Code change and detailed design recommendations delivered	Aug-24	The CCDG will deliver the recommendations aimed at addressing any outstanding areas of the DWG's TOM design, and will deliver the recommendations for the changes to the Industry Codes and subsidiary documents necessary to enable the TOM.
M7	Tier 2	Smart Meters Act powers enabled	Nov-24	Time limited (5 year) powers in Primary Legislation for Ofgem to make changes to Industry Codes for the purposes of MHHS are activated.
M8	Tier 2	Code changes delivered	Mar-25	All changes to regulation (licences, industry codes (including BSC, SEC, REC, DCUSA)) have been made setting out the regulatory baseline.
M9	Level 1 / Tier 1	System Integration Testing Start	Oct-23	System Integration Testing (SIT) involves the central parties (Elexon, DCC, comms network providers and the registration system providers) along with a number of agents and suppliers.
M10	Tier 1	Central systems ready for migrating MPANs	Mar-25	Following completion of the testing phase (excluding TE18 Security Testing), the Central Systems (BSC central systems, registration, DCC and communication systems) will be ready to initiate migration of Meter Point Administration Numbers (MPANs) from the current market roles into the new market roles.
M11	Level 1 / Tier 1	Start of 18 month migration for UMS/Advanced	Apr-25	Start of migration window for suppliers to move all UMS and advanced meter points to be settled in the new arrangements.
M12	Tier 1	Start of 18 month migration for Smart/Non-smart	Apr-25	Start of migration window for suppliers to move all smart and non-smart meter points to be settled in the new arrangements.
M13	Tier 1	Load Shaping Service switched on	Mar-25	The LSS will be switched on after a period used to gather and validate settlement period level data from the smart meter data service.
M14	Level 1 / Tier 1	All suppliers must be able to accept MPANs under the new TOM (one way gate)	Mar-26	Deadline by which all suppliers must have the systems and services in place to accept MPANs under the new TOM. From this point MPANs cannot be moved back into NHH regime on change of supplier.
M15	Level 1 / Tier 1	Full transition complete	Oct-26	Completion of implementation activities including 18 month migration.
M16	Level 1 / Tier 1	Cut over to new settlement timetable	Dec-26	The date of the cut over to the new settlement timetable will occur after the end of migration. The decision on when the settlement timetable should be reduced should be taken nearer the time, and on market monitoring against trigger points. Industry should ensure that the new settlement timetable is introduced as soon as practical after the end of migration, ideally 2 months.
M16*	Contingent	Cutover to New Settlement timetable – Latest Cutover	May 27	The latest date for cutover is c.8 months after the end of migration (M15) then this decision should be brought to Ofgem.

Design, Build and Test (DBT)

including PIT, Test Assurance and Design Assurance



Design, Build & Test (DBT) – PIT Overview covering DBT1 and DBT2

Pre-Integration Testing (PIT):

- Includes functional, migration, non-functional and operational testing. It also includes any regression testing.
- PIT may be carried out in several stages. If the participant is undertaking Design, Build and Test (DBT) in different stages (notably DBT1 and DBT2), then a separate PIT will be conducted for each stage.

What is DBT1?

It refers to the Design, Build and Test activities required to enter into either SIT or Qualification Testing, depending on the path the Programme participants intends to take.

Who conducts DBT1?

It will be carried out by all Programme participants.

What does it include:

- Design, Build and Test of all the Market Interfaces & Services that will be utilised for SIT or Qualification Testing.
- DBT1 scope will be to validate every system or service that is included in the MHHS E2E Design for compliance with its functional and technical requirements.

Programme participants are...

- Required to provide DBT1 PIT evidence in line with the PIT Guidance that requisite activities are complete ahead of entry into SIT Component Integration Test (CIT) (See note 1).
- For those Programme participants joining SIT, we acknowledge their migration related testing may be ongoing when they enter into SIT CIT and Functional testing. NFT and Operational PIT planning will be discussed and agreed in NFTWG.
- All Programme participants must complete and provide evidence of DBT1 PIT prior to the start of Qualification Testing.

Test assurance covering all testing-related deliverables and activities:

- Self-assurance will be carried out by Programme participants.
- MHHS SI Test team will assure all SIT Programme participants.
- Code Delivery Bodies will assure all non-SIT Programme participants.
- MHHS SI Test Team will additionally assure a small sample of non-SIT Programme participants as agreed at the time with SRO and Code Delivery Bodies.

What is DBT2?

DBT2 is separated from DBT1 to remove the Back-End Systems' DBT from the critical path as far as possible and decoupling from those changes required for SIT or Qualification Testing. DBT2 comprises system and process changes delivered by Programme participants that will not be tested in SIT or Qualification Testing but are needed for MHHS, such as consequential change (see note 2).

Who conducts DBT2?

It will be expected to be carried out by Suppliers (Domestic and Non-Domestic) and Network Operations.

What does it include:

- Any aspects within their estate which may not be explicitly covered by the Programme but required to ensure business processes work post Go-live but does not impact the progress of SIT or Qualification Testing (e.g. consequential change).
- DBT2 scope would be all additionally functionality required to operate under the new MHHS arrangements which is not already included in DBT1.

Programme participants are...

- Expected to produce all test deliverables associated with DBT1 either new or updated specific to DBT2.
- Expected to provide evidence of DBT2 testing in order to exit Qualification Testing.

Test assurance covering all testing-related deliverables and activities:

- Self-assurance will be carried out by Programme participants.
- Code Delivery Bodies will assure DBT2 PIT for SIT and non-SIT Programme participants.

Note 2: Definition of Consequential Change:

A consequential change is defined as change required by parties to enact the core industry design being delivered by the Programme within their own system and process landscapes. The scope of Consequential Change to be included in the MHHS Programme Code drafting is defined in the Consequential Change Log which can be found [here](#).

Note 1 – At time of writing this slide, options for further aligning DBT1 PIT completion requirements to specific SIT stages is under review at SITWG,

Document Classification: Public

Participant design assurance objectives:

1. To support key MHHS Programme outcomes for collective confidence in participant readiness prior to SIT or Qualification testing
2. To provide design support to individual participants through their design and build stages prior to PIT

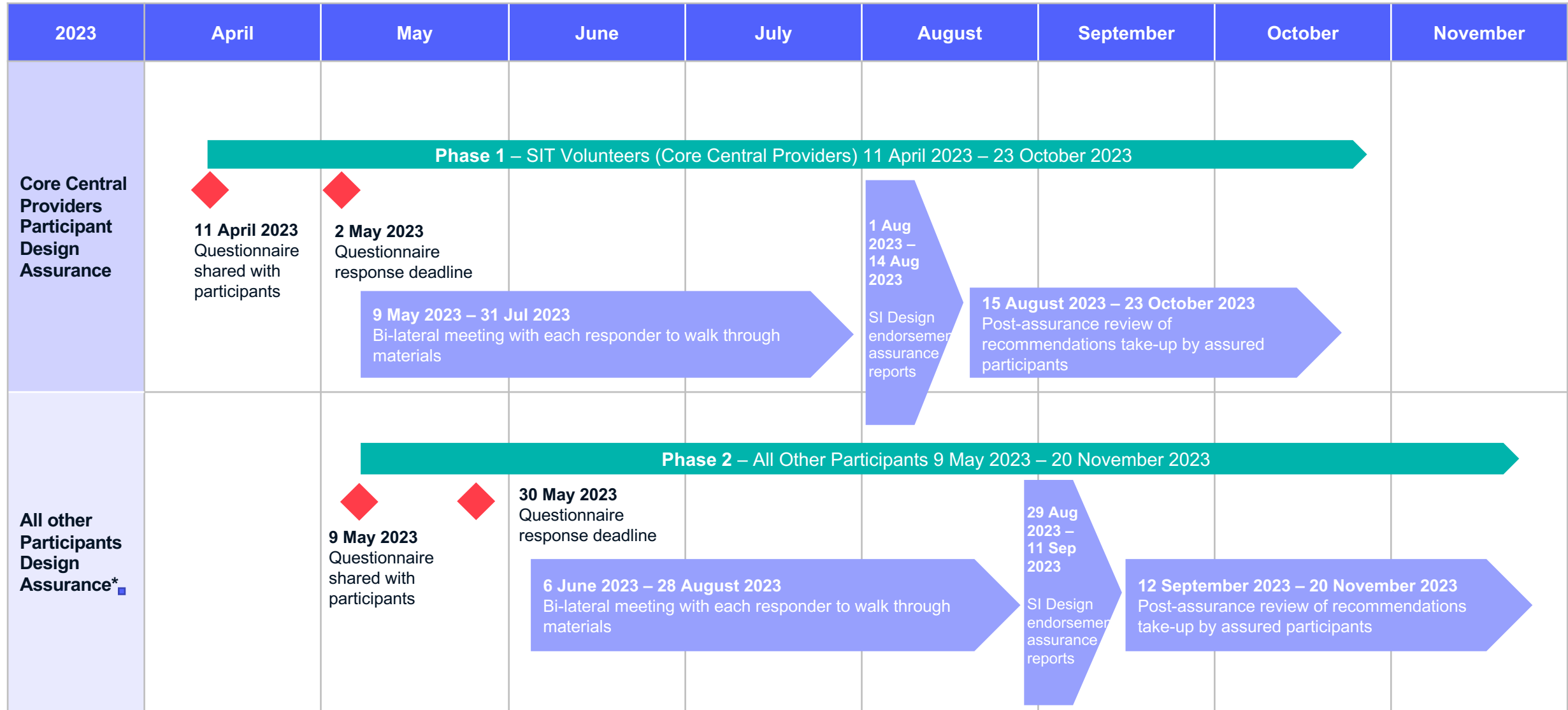
MHHSP Outcomes...

- Participants understand the MHHS design artefacts
- Prevention/Reduction of interoperability issues in Systems Integration Testing (SIT) (and User Integration Testing/production)
- Identification (and mitigation) of design assurance risks to inform SIT entry decisions
- Assurance tailored and appropriate for materiality and complexity for participant

Participant Outcomes...

- Verification of participant design approach and understanding of design artefacts
- Identification of potential design risks or issues prior to entering SIT or qualification
- Increased confidence in design approach of central bodies, participants and service providers
- Support from Programme Design and programme assurance subject matter experts

Design Assurance: Timelines and Activities (up to M9 and SIT CIT)



Pre-Integration Testing (PIT)

- PIT will be performed by all users of the new settlement arrangements to validate every system or service that is included in the MHHS E2E Design for compliance with its functional and technical requirements. This includes back-office systems if affected. The system/service may have several components and PIT refers to the testing conducted when those components have all been internally integrated.
- The PIT phase is focused on the Programme participants' own testing, proving that they have designed, developed and tested their systems and that their systems align to the requirements within the MHHS E2E Design, which introduces the new settlement arrangements.
- Participants will be required to demonstrate completion of their own internal PIT by providing test evidence to validate testing has taken place on each system or service included in the MHHS E2E Design (including the successful messaging in and out of all Interfaces and Publications).
- The Programme participants' system/services may have several components and DBT1 PIT refers to the testing conducted when those components are all integrated in a participants' own test environment and is prior to the E2E testing that will be conducted when participants connect to the MHHS integrated environments in System Integration Testing (SIT) and Qualification Testing (UIT).
- Progression through DBT will be closely monitored in order to ensure Programme participants stay on track for subsequent Test Phases (either SIT or Qualification Testing).

The PIT test phase will comprise the following different types of testing:

- Functional
- Migration
- Non-functional:
 - Performance
 - Load
 - Resilience
 - Security
- Operational
- Regression

PIT is the responsibility of each individual participant using their own:

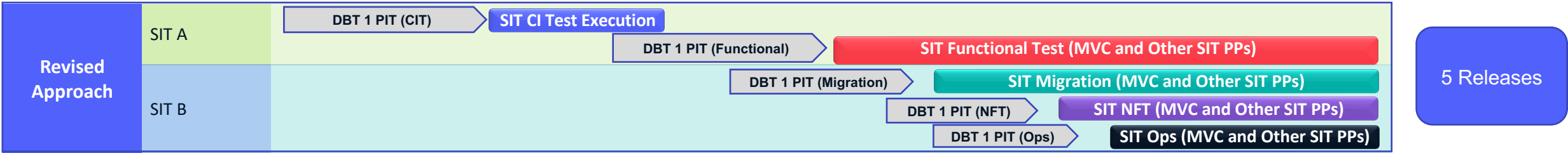
- Systems
- Test Environments
- Test Data
- Test Scenarios
- Test Cases
- Test Processes
- Test Tools
- Test Management Tool
- Defect Management Process

Each Programme participant undertaking PIT will be expected to provide the following test deliverables to the MHHS SI Test Team and Code Delivery Bodies:

- PIT Approach and Plan
- Requirements to Test Traceability Matrix (RTTM)
- PIT Test Scenarios
- PIT Test Readiness Reports
- PIT Test Execution Progress Reports (including Test issues & defects)
- PIT Test Completion Report (draft & approved)

Phased PIT Approach

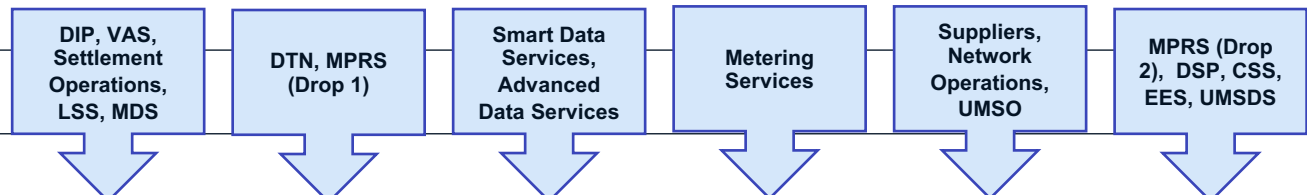
Following a request from the LSC to consider a phased approach to PPs PIT Test Execution, to ease DBT pressures, the programme accepted an alternative option that allowed LSC SIT Volunteers to split PIT Test Scope across multiple tranches of PIT.



We have now adopted a model of accepting and assuring a PPs PIT that is correct and appropriate for entry into 5 Phases of SIT:

- PIT (Functional) - completed one month prior to the Programme start of SIT Functional
- PIT (Migration) - completed one month prior to the Programme start of SIT Migration
- PIT (CIT) – completed one month prior to the LSCs entry into appropriate CIT Interval
- PIT (NFT) - completed one month prior to the Programme start of SIT Non-Functional
- PIT (Ops) - completed one month prior to the Programme start of SIT Operational

PIT Deliverables Milestones supporting SIT (CIT) intervals



PIT Guidance on deliverable milestones based on the 'Interval' a PP is expected to enter SIT CIT:

PIT Deliverables

Activity / Milestone	Notes	CIT Interval 1	CIT Interval 2	CIT Interval 3	CIT Interval 4	CIT Interval 5	CIT Interval 6
PIT Approach and Plan	At least 12 Weeks before PP Final Test Completion Report	07 th July 23 (No later than ^{**})	28 th July 23 (No later than ^{**})	11 th Aug 23 (No later than ^{**})	25 th Aug 23 (No later than ^{**})	15 th Sep 23 (No later than ^{**})	13 th Oct 23 (No later than ^{**})
Assurance of PIT Approach and Plan	+ 10 days to assure	21 st July 23	10 th Aug 23	25 th Aug 23	8 th Sep 23	29 th Sep 23	27 th Oct 23
PIT Test Readiness Report	To be submitted every two weeks on a Friday after issuing PIT Approach and Plan, until the start of PIT test execution	21 st July 23 ^{****}	10 th Aug 23 ^{****}	25 th Aug 23 ^{****}	8 th Sep 23 ^{****}	29 th Sep 23 ^{****}	27 th Oct 23 ^{****}
PIT Requirements to Test Traceability Matrix	At least 4 weeks after test approach and this will be updated during test execution	4 th Aug 23 ^{**}	1 st Sep 23 ^{**}	8 th Sep 23 ^{**}	15 th Sep 23 ^{**}	06 th Oct 23 ^{**}	10 th Nov 23 ^{**}
Assurance of Requirements to Test Traceability Matrix	+10 days and will be assured before test execution and will be ongoing as part of test completion	18 Aug 23	15 th Sep 23	22 nd Sep 23	29 th Sep 23	20 th Oct 23	24 th Nov 23
PIT Test Scenarios	Issued same day as RTTM	4 th Aug 23 ^{**}	1 st Sep 23 ^{**}	8 th Sep 23 ^{**}	15 th Sep 23 ^{**}	06 th Oct 23 ^{**}	10 th Nov 23 ^{**}
Assurance of PIT Test Scenarios	+10 days and will be assured before test execution and will be ongoing as part of test completion	18 Aug 23	15 th Sep 23	22 nd Sep 23	29 th Sep 23	20 th Oct 23	24 th Nov 23
PIT Test Execution Progress Report	Every Month following start of test execution and on a weekly basis in the last 4 weeks before completion of testing	22 nd Sep 23 ^{***}	13 th Oct 23 ^{***}	27 th Oct 23 ^{***}	10 th Nov 23 ^{***}	01 st Dec 23 ^{***}	29 th Dec 23 ^{***}
PIT Execution	Assumption that execution runs up to PIT completion report submitted	29 th Sep 23 (No later than ^{**})	20 th Oct 23 (No later than ^{**})	3 rd Nov 23 (No later than ^{**})	17 th Nov 23 (No later than ^{**})	8 th Dec 23 (No later than ^{**})	5 th Jan 24 (No later than ^{**})
PPs Issue Draft PIT^{**} Completion Report	A draft of the PIT test completion report to be submitted no later than 15 working days before the planned end of test execution	8 th Sep 23 (No later than ^{**})	29 th Sep 23 (No later than ^{**})	13 th Oct 23 (No later than ^{**})	27 th Oct 23 (No later than ^{**})	17 th Nov 23 (No later than ^{**})	1 st Dec 23 (No later than ^{**})
Draft PIT Completion Reports assured by SI		29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
PPs Issue Final PIT Completion Report	Final report allowing for any test completion delta	29 th Sep 23 (No later than ^{**})	20 th Oct 23 (No later than ^{**})	3 rd Nov 23 (No later than ^{**})	17 th Nov 23 (No later than ^{**})	8 th Dec 23 (No later than ^{**})	5 th Jan 24 (No later than ^{**})
PP Final PIT Completion Reports assured by SI	5 working days for review	6 th Oct 23	27 th Oct 23	10 th Nov 23	24 th Nov 23	15 th Dec 23	12 th Jan 24
SIT CIT Ready to Start (TMAG Milestone)	TMAG Milestone - 1 week prior to CIT Start for each CIT Interval	23 rd Oct 23	6 th Nov 23	20 th Nov 23	4 th Dec 23	8 th Jan 24	22 nd Jan 24
SIT CIT Start	CIT Interval 1 Start = PSG Milestone (M9)	30 th Oct 23	13 th Nov 23	27 th Nov 23	11 th Dec 23	15 th Jan 24*	29 th Jan 24

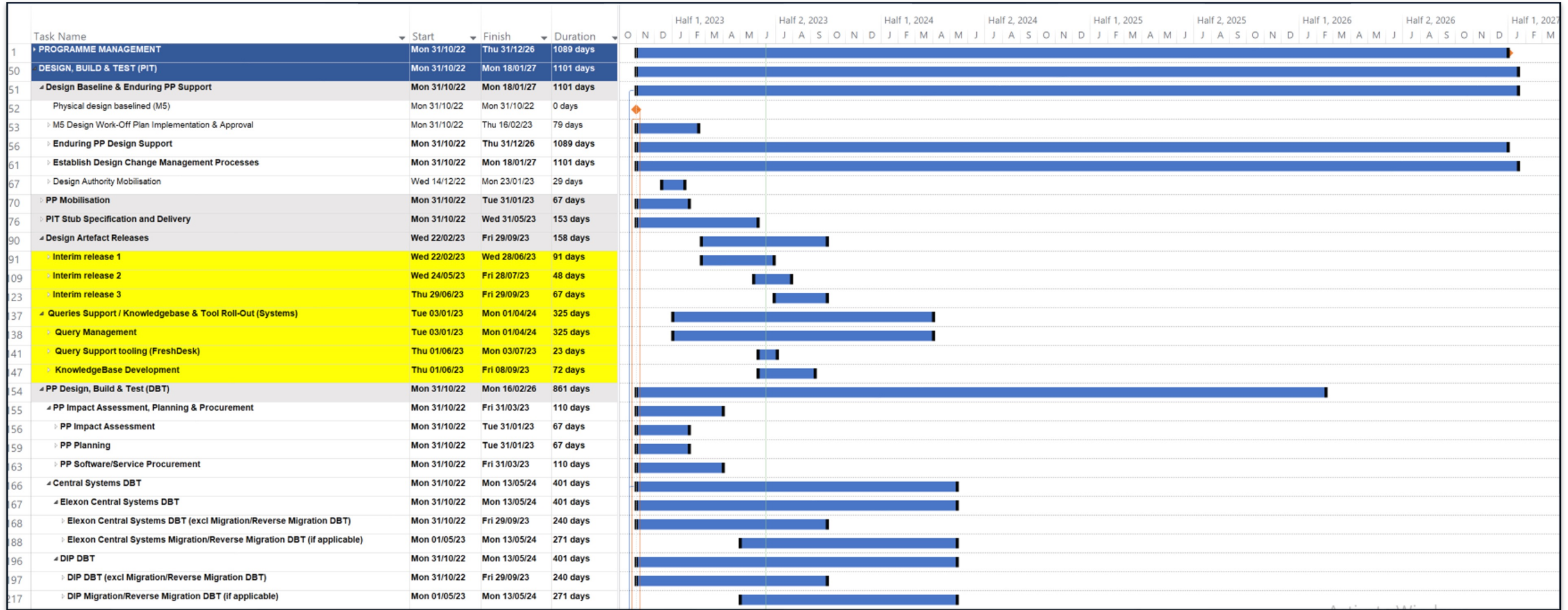
Note 1* – There is an extended period between CIT Intervals 4 and 5 allowing for the Xmas and New Year period. Some readiness dates have also been adjusted accordingly for CIT Intervals 5 and 6.
Note 2** – SI Test Team will agree timelines for prior PIT deliverables with individual SIT PPs in line with their delivery plans, allowing for test assurance activities in the lead up to SIT
Note 3 *** – For the purpose of this plan, this is the final test execution progress report for the final month. In the final month, the requirement is to provide a weekly report and the monthly report is required to be provided once a month.
Note 4 **** – For the purpose of this plan, this is the first PIT test readiness report we will be expecting from PPs. This will be submitted every two weeks on a Friday after issuing PIT Approach and Plan, until the start of PIT test execution. 16

Design, Build & Test (DBT) - Roles and Responsibilities (RACI)

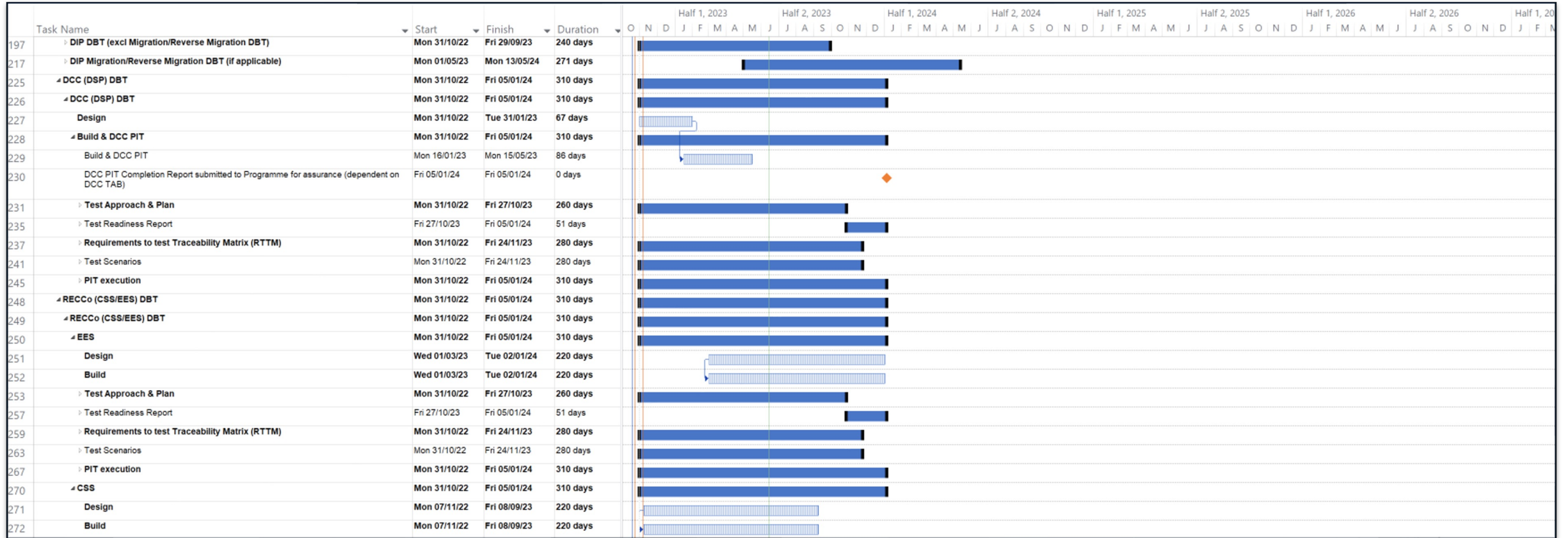
Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Establish Design Baseline & Enduring PP Support	C	A	C	C	R	C	C	C, DAG	C	I	I	
Complete PP Mobilisation	I	I	I	C	I	A, R	A, R	C, PSG	C	I	I	
Complete PIT Simulators and Data Generators Spec & Delivery	C	A	I	C	R	C	C	C, TMAG	I	I		
Complete PP Design, Build & Test (DBT)	I	I	I	C	I	A, R	A, R	C, TMAG	I	I	I	
Undertake DBT Monitoring and Assurance (for SIT PPs)	C	A	I	C	R	C	C	C, TMAG	I	I	I	
Undertake DBT Monitoring and Assurance (for non-SIT PPs)	C	A	I	C	I	C	C	C, TMAG	R	I	I	
Document Pre-Qualification Guidance (PIT Guidance)	C	A	C	C	R	C	C	C, TMAG	C	C		
Complete External Programme Dependency Management	A	R	C	C	C	C	C	C, PSG	C	C	I	

RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

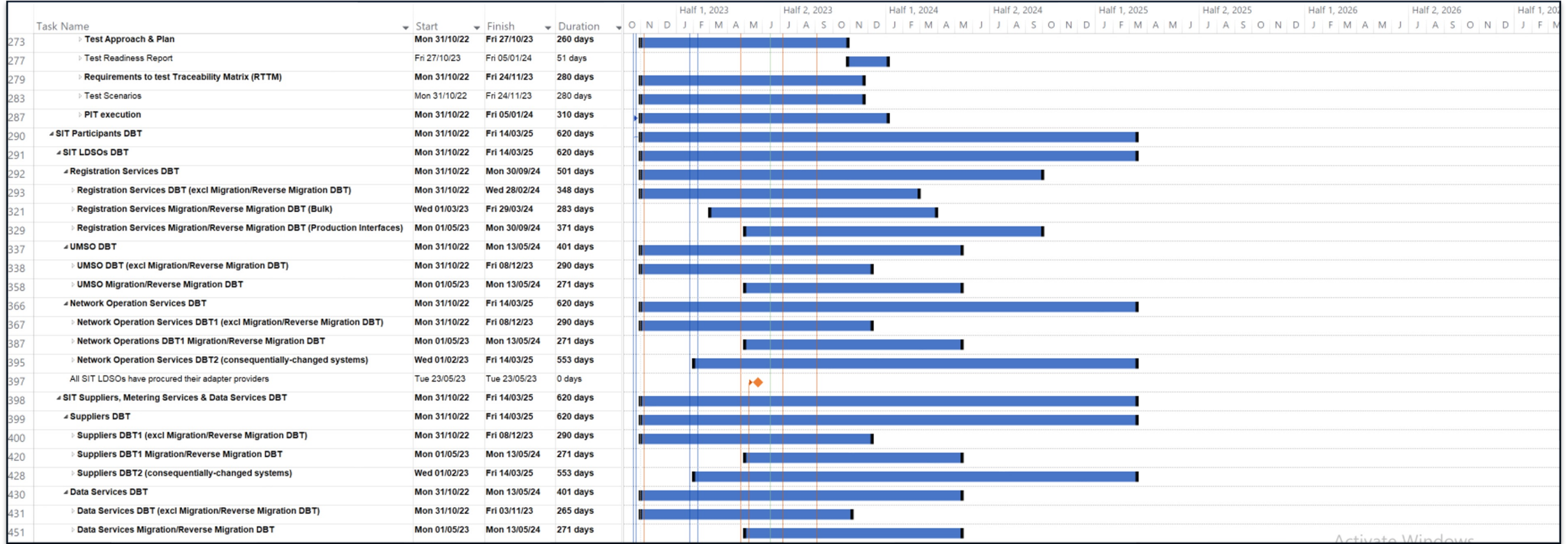
Design, Build & Test - Plan-on-a-Page (PoaP) 1 of 4



Design, Build & Test - Plan-on-a-Page (PoaP) 2 of 4

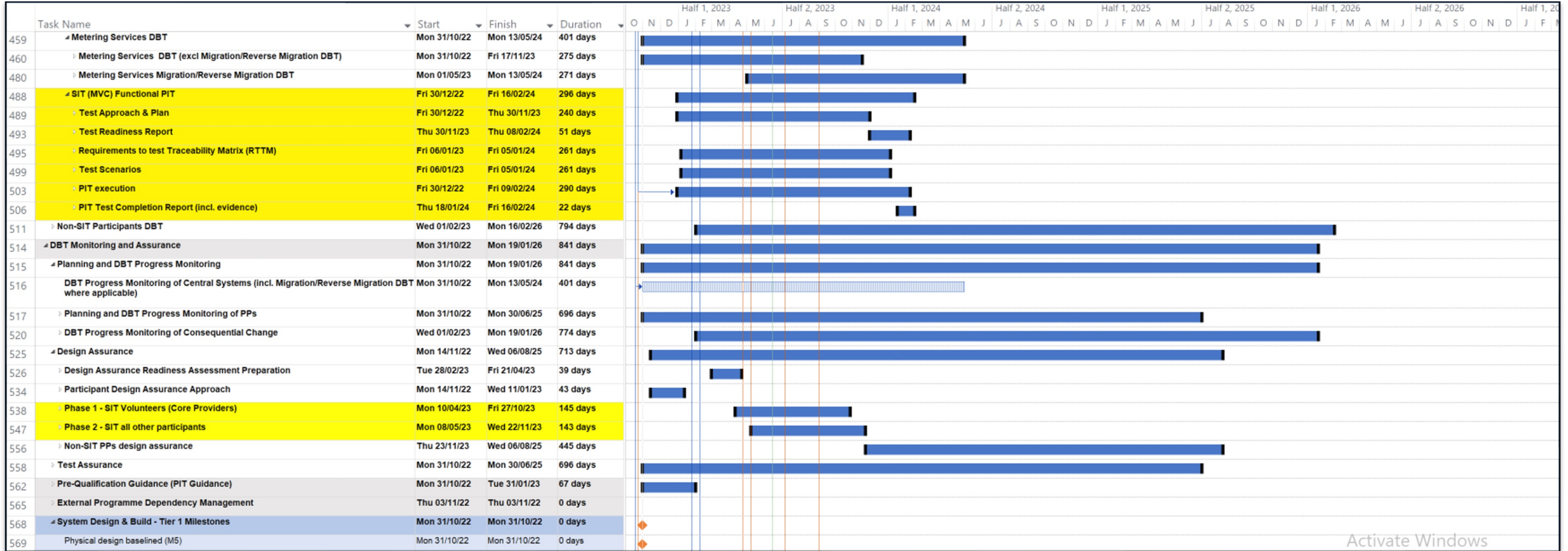


Design, Build & Test - Plan-on-a-Page (PoaP) 3 of 4



Activate Windows

Design, Build & Test - Plan-on-a-Page (PoP) 4 of 4



Activate Windows

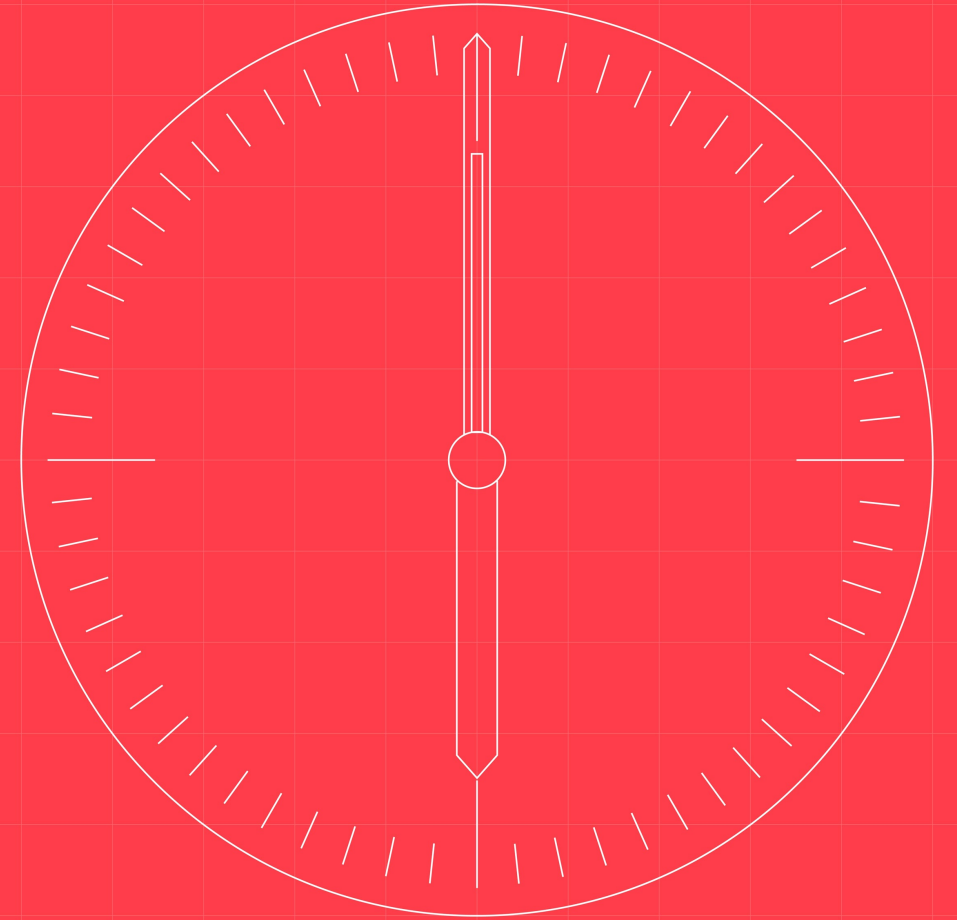
Design, Build & Test (DBT) - Key RAID Items

ID	Issues	Manage-able?
I115	The ISD file template/example is not currently available to PPs for their PIT and the subsequent CIT	High

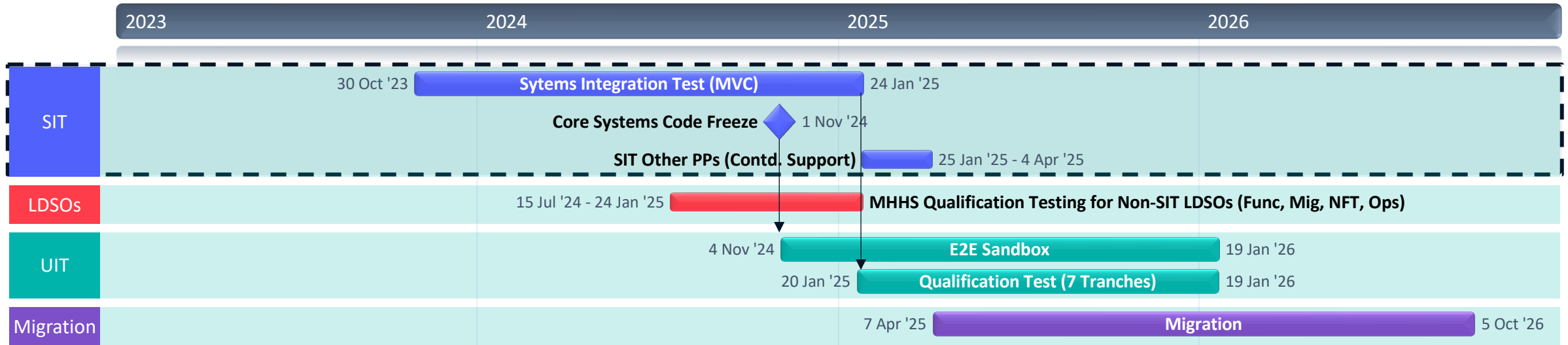
ID	Risk	Risk Rating
R432	Existing and new Change Requests have a material impact on the baseline Design	High
R433	There is a risk that the high volume of Design queries is putting pressure on the governance process and there is a delay in resolving the queries	High
R526	DAG do not sign off Transition Design artefacts in time for PIT and the participants won't have sufficient time for their build	Medium
R274	If adapters are required, Participants' plans don't allow additional time to procure and test adapter services	Low
R467	MDR parties do not complete DCC UEPT in time to enter SIT or Qualification in line with their plans	Low

ID	Dependency	Manage-able?
D135	Confirmation of DTN changes required for new market roles (e.g., SDS to be able to access the continuing DTN flows that are part of MHHS Design)	In process
D155	DCC test environments are available with MP162 functionality in time for MDR agents to execute UEPT in advance of MHHS Programme SIT	Yes

Systems Integration Testing (SIT)



SIT - Objectives and Principles



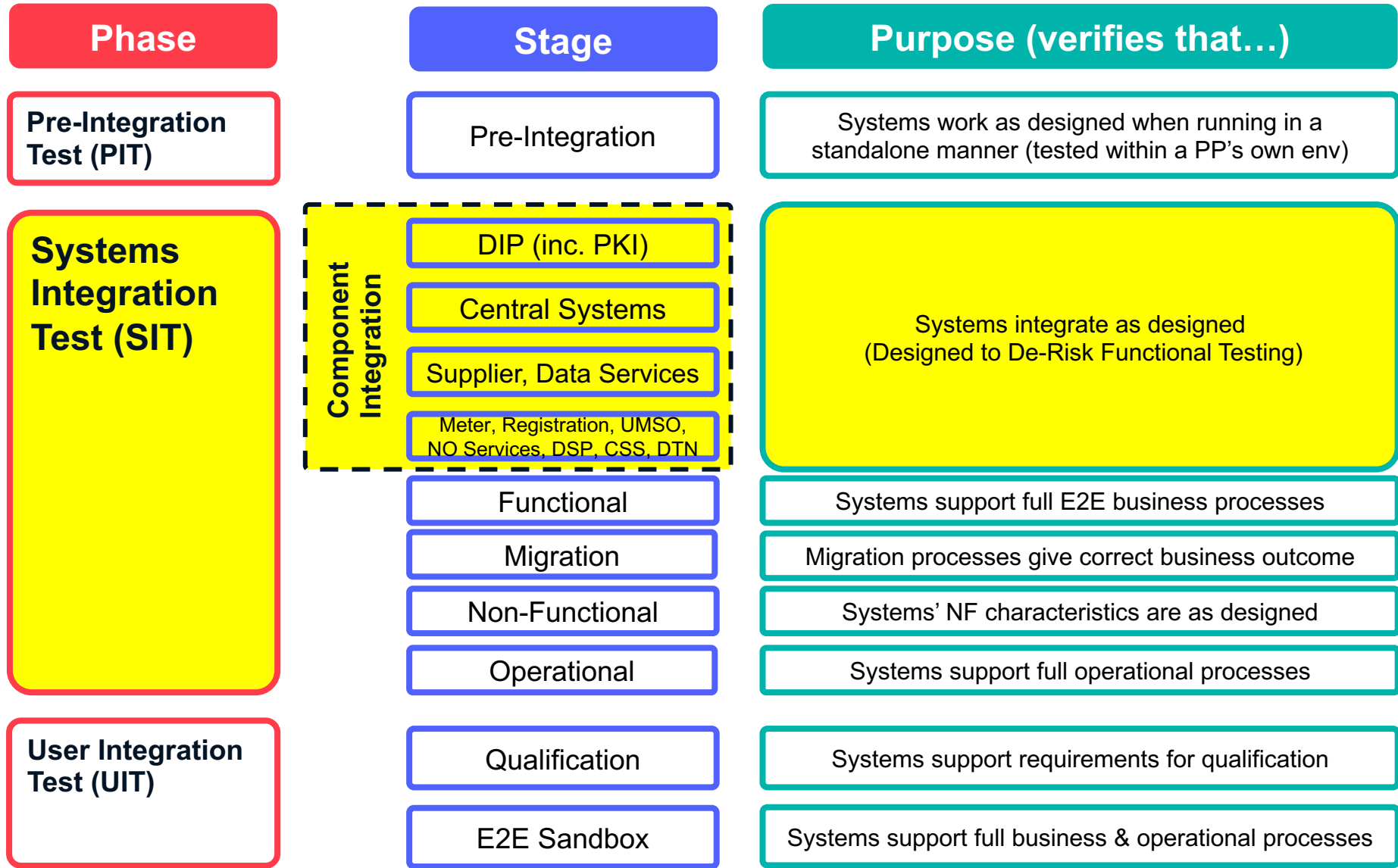
SIT Objectives:

- ✓ **Test the MHHS end-to-end (E2E) Design**, ensuring that the new MHHS arrangements function correctly and have been implemented in accordance with the MHHS E2E Design
- ✓ Execute test scenarios to verify the functional, non-functional and migration-related characteristics of the Market Interfaces and Services in an integrated environment

Key Principles:

- ✓ To form a **Minimum Viable Cohort (MVC)** of SIT participants needed to operate their systems in a coordinated manner, in order to complete SIT and reach Go-live at the earliest point
- ✓ The number and types of participants joining SIT must be sufficient to form the Minimum Viable Cohort (MVC)
- ✓ All SIT volunteers will be expected to **demonstrate PIT completion and SIT readiness** prior to their SIT commencement
- ✓ The MVC will be formed in the early stages of SIT Functional Test on the basis of the **fastest pace of test execution success**. Non-MVC SIT PPs will also be supported, still benefiting a faster route to Go-Live
- ✓ SIT participants are **not expected to undergo additional Qualification Testing** in the Qualification phase

SIT – Key Test Phases & Stages



SIT – Overview of Approach

SIT Participation

- Any participant may take part in SIT provided they are acting as a defined BSC and/or REC governed MHHS Role ready to do so according to the timeline
- SIT exit is reached when a *group* representing all roles has completed the necessary testing
- This *group* is called the **Minimum Viable Cohort (MVC)** and its members will be identified early in SIT Functional Test according to the speed at which they are completing their tests
- SIT participants not in the MVC will be supported through SIT at their own pace
- Participants must declare that they are committed to participating in SIT, by 23-May-23

MVC Target Composition...

- All providers of Central Systems (DIP, Elexon, DCC, Recco, Electralink)
- One of each of St. Clements (MPRS), i/DNOs (UMSO and Network Operations Services) and Supplier agents (DV, DA, MOP services for Migration Testing)
- At least two Service Providers (providing Metering Services Smart and Advanced; Smart, Advanced and UMS Data Services)
- Two Suppliers (Change of Supply (CoS))

Participants are to...

- Produce test artefacts to the SI team. These include:
 - PIT Test Approach and Plan
 - Requirements Traceability Matrix (RTM)
 - PIT Scenarios
 - PIT Preparation and Execution Status Reports
 - PIT Testing Completion Report
 - SIT Readiness Report
- Demonstrate test environment network connectivity and test data readiness to the SI team, prior to the commencement of SIT
- Record your SIT execution results in the MHHS Test Management Tool (ADO)

MHHS SI will...

- Assure test readiness of SIT entrants, including verifying participants have met PIT exit criteria (see PIT guidance document)
- Provide Test Approach and Plans for each SIT Stage. Specify the SIT scenarios and test cases, and assure SIT results
- Coordinate the availability of environments and ensure appropriate data is available
- Manage the SIT process using ADO and provide access and training to participants
- Provide defect and release management for centrally-raised issues
- Produce overarching Testing deliverables (plans and reports)

Key SIT Guidance (1 of 2) – Roles and SIT Entry

Role Alignment

- We expect any Programme participant engaging in MHHS industry testing (i.e. SIT and UIT including Qualification Testing) to do so as a defined BSC and/or REC-governed MHHS Role. Apart from the Central Parties, the MHHS Roles are as follows:
 - Supplier
 - Metering Service Smart (MSS)
 - Metering Service Advanced (MSA)
 - Smart Data Service (SDS)
 - Advanced Data Service (ADS)
 - UMS Data Service (UMSDS)
 - Registration Service
 - UMISO
 - Network Operations Service
- Organisations in each participating Role are accountable for executing and evidencing their own completion of MHHS Programme industry testing (this applies to both SIT and Qualification Testing), however this has been achieved. For example in the case of a partnership with a 3rd-party software provider or IT service provider (not currently defined BSC or REC roles) or other 3rd-party testing provider, the accountability remains with the Code-defined organisation to declare, execute and evidence their completed test coverage.

SIT Entry

- From the outset of SIT CIT we will expect SIT participants to be ready to include the use of any systems in your estate which are necessary to support the MHHS end-to-end design. MHHS cannot define what these systems are (PPs will need to make this assessment). For example: In order to conduct the Change of Supply (CoS) tests, SIT PPs will need the system that triggers the CoS process to be part of the test (typically CRM or another similar system) – for details please see '**MHHS-DEL872 - SIT Scope for Voluntary Participants' Planning**'
- Those SDS participants intending to operate Meter Data Retrieval (MDR) as part of the SDS role are expected to have acceded to the SEC and completed the required DCC UEPT testing as a pre-requisite to commencing MHHS SIT CIT.
- Entry to SIT CIT will be progressive based on systems / services as outlined in this MHHS Implementation Approach.
- All SIT participants will be required to demonstrate SIT readiness i.e. test environment network connectivity and test data readiness to the SI team, prior to their commencement of SIT CIT.
- Once the SIT Component Integration stage completes, no further SIT PPs will be added to SIT (i.e. within SIT Functional, Migration, Non-functional or Operational Stages). Please note if a participant is unable to meet the timescales for SIT CIT entry then they will need to plan to proceed down the non-SIT route to Qualification.

Key SIT Guidance (2 of 2) – *Equivalence, Testing on behalf of, and Placing Reliance Policy*

Equivalence

- Where an organisation has successfully exited SIT, the SIT exit evidence is considered “equivalent” to that required for Qualification Testing. The SIT exit evidence will form part of that required for BSC / REC market Qualification.
- The Programme is currently assuming that these organisations will not be required to undertake any further industry-wide Qualification Testing, however this will be dependent on whether the SIT coverage is sufficient to align with the Code requirements and risk areas. Note there may be additional PIT evidence that will be required to achieve Qualification (for DBT2 / ‘Consequential Change’ functionality). Full Qualification requirements will be defined by the BSC and REC Code Delivery Bodies - for details please see ‘**MHHS-DEL1064 - Placing Reliance Policy**’.
- Where a Participant has successfully completed market role testing with one MPID, other MPIDs belonging to the same organisation will by default be deemed to have passed for the same role and requirements, providing it is demonstrated to the Programme, and Code Delivery Bodies, that the other MPIDs for that role are served by the same technology stack/operational processes and controls and there are no deviations from role/requirements previously tested for the other MPID.
- For any MPID/roles served by different technology stack/operational processes and controls, then separate testing will be required to successfully exit Qualification for that MPID/role. Note the Placing Reliance Policy allows for parties to place reliance on the testing of other organisations operating in the same role under the conditions set out in the policy - for details please see ‘**MHHS-DEL1064 - Placing Reliance Policy**’.

Testing on behalf of

- Where an MHHS participant organisation elects to delegate some or all of its Industry-wide testing to a 3rd-party software provider or IT service provider, or other 3rd-party testing provider with which they are contractually aligned, for execution “on their behalf”. This might be an option some participants chose to adopt during SIT (or Qualification Testing) in order to meet their test coverage requirements.
- Where a participant organisation, which has acceded to the code, chooses to opt for this, they also accept the associated risks and remain accountable for meeting code requirements - for details please see ‘**MHHS-DEL1064 - Placing Reliance Policy**’.

Placing Reliance

- This option can be adopted within SIT where 2 (or more) active SIT participant role organisations, that can demonstrate are operating in the same system/service/features arrangements, propose to meet the full SIT coverage requirement by forming a SIT test exit group, and then place reliance on the SIT role/feature testing, and/or SIT stage-based testing being undertaken by another SIT participant member in the same group.
- Where a participant organisation which is governed by BSC and/or REC, and chooses to opt for this, they also accept the associated risks and remain accountable for meeting Code requirements - for details please see ‘**MHHS-DEL1064 - Placing Reliance Policy**’.

SIT CIT

30 Oct '23 SIT CI Test Execution 23 Feb '24

SIT Environments -		
SIT Env	SIT Stage(s)	Required By
SIT A	CIT Functional Test	Start of CIT
SIT Staging	Functional Test	Start of Functional Test
SIT B	Migration Test Non-Functional Test Operational Test	Start of Migration Test

SIT Func

11 Mar '24 **SIT Functional Start (MVC and Other SIT PPs)**

11 Mar '24 - 28 Jun '24 **Cycle 1**

Defect fix, assurance, data & environments maintenance 1 Jul '24 - 12 Jul '24

15 Jul '24 - 6 Sep '24 **Cycle 2**

Defect fix, assurance, data & environments maintenance 9 Sep '24 - 20 Sep '24

23 Sep '24 - 18 Oct '24 **Cycle 3**

Defect fix, assurance, data & environments maintenance 21 Oct '24 - 1 Nov '24

1 Nov '24 **CORE SYSTEMS CODE FREEZE**

4 Nov '24 - 3 Jan '25 **Regression**

3 Jan '25 **SIT Functional End (MVC)**

4 Jan '25 - 4 Apr '25 **SIT Other PPs (Contd. Support)**

SIT Mig

10 Jun '24 - 4 Oct '24 **SIT Migration (MVC)**

10 Jun '24 - 4 Apr '25 **SIT Migration (Other PPs)**

SIT NFT

2 Sep '24 - 3 Jan '25 **SIT NFT (MVC)**

2 Sep '24 - 4 Apr '25 **SIT NFT (Other PPs)**

SIT Ops

7 Oct '24 - 24 Jan '25 **SIT Ops (MVC)**

7 Oct '24 - 4 Apr '25 **SIT Ops (Other PPs)**

SIT Other PPs Complete 21 Apr '25

- Notes -**
- Upon successful completion of CIT, no further SIT PP will be added to SIT testing
 - SIT Functional will be structured into cycles. Cycle 1 will aim to execute as much coverage as possible and flush out key defects.
 - Cycles 2 and 3 will address defect retesting and associated regression testing
 - A core systems code freeze is targeted by 1st Nov 24, followed by a regression cycle
 - The code freeze milestone will trigger the commencement E2E Sandbox Testing
 - In the later stages of SIT non-SIT LDSO testing will also be undertaken to support M11
 - Completion of regression testing and the MVC SIT Migration, NFT and Operational test stages will trigger Qualification Testing to commence

LDSOs

15 Jul '24 - 24 Jan '25 **MHHS Qualification Testing for Non-SIT LDSOs (Func, Mig, NFT, Ops)**

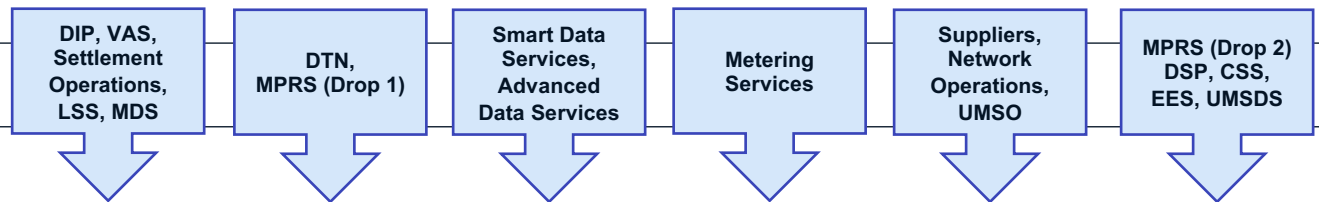
UIT

Non-SIT Testing

4 Nov '24 **E2E Sandbox Execution Start**

20 Jan '25 **Qualification Execution Start**

PIT Completion / SIT Readiness supporting SIT CIT Start



New guidance on readiness milestones based on the 'Interval' a PP is expected to enter SIT CIT:

SIT CIT Readiness

Activity / Milestone	Notes	CIT Interval 1	CIT Interval 2	CIT Interval 3	CIT Interval 4	CIT Interval 5	CIT Interval 6
SIT CIT Start	CIT Interval 1 Start = PSG Milestone (M9)	30th Oct 23	13th Nov 23	27th Nov 23	11th Dec 23	15th Jan 24*	29th Jan 24
SIT CIT Ready to Start (TMAG Milestone)	TMAG Milestone - 1 week prior to CIT Start for each CIT Interval	23 rd Oct 23	6 th Nov 23	20 th Nov 23	4 th Dec 23	8 th Jan 24	22 nd Jan 24
SI Overarching CIT Test Readiness Report reviewed by SITWG / IPA	• 5 working days for review	13 th Oct 23	3 rd Nov 23	17 th Nov 23	1 st Dec	5 th Jan 24	19 th Jan 24
SI Issues Overarching CIT Test Readiness Report	• SI releases report 2 weeks prior to 'SIT CIT Ready to Start' milestone for CIT Interval 1, allowing for review and mop up ahead of PSG (M9) • SI releases iterated report 1 week prior to 'SIT CIT Ready to Start' milestone for CIT Intervals 2-6	6 th Oct 23	27 th Oct 23	10 th Nov 23	27 th Nov 23	18 th Dec 23	15 th Jan 24
PP CIT Test Readiness Reports Assured by SI	5 working days for review	6 th Oct 23	27 th Oct 23	10 th Nov 23	24 th Nov 23	15 th Dec 23	12 th Jan 24
PPs Issue CIT Test Readiness Reports		29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
Test Data Load and Verification Complete	Period of 4 weeks prior to PP CIT Test Readiness Report	29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
MHHS code deployed to SIT PPs' envs	Period of 2 weeks prior to PP CIT Test Readiness Report	29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
Environment Connectivity Proving Complete	Reduced from 8 weeks to 4 weeks	29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
SIT PPs' envs ready to start connectivity proving (incl certs)		1 st Sep 23	22 nd Sep 23	6 th Oct 23	20 th Oct 23	10 th Nov 23	24 th Nov 23
PP Final PIT Completion Reports assured by SI	5 working days for review	6 th Oct 23	27 th Oct 23	10 th Nov 23	24 th Nov 23	15 th Dec 23	12 th Jan 24
PPs Issue Final PIT Completion Report	Final report allowing for any test completion delta	29 th Sep 23 (No later than**)	20 th Oct 23 (No later than**)	3 rd Nov 23 (No later than**)	17 th Nov 23 (No later than**)	8 th Dec 23 (No later than**)	5 th Jan 24 (No later than**)
Draft PIT Completion Reports assured by SI		29 th Sep 23	20 th Oct 23	3 rd Nov 23	17 th Nov 23	8 th Dec 23	5 th Jan 24
PPs Issue Draft PIT** Completion Report	A draft of the PIT test completion report to be submitted no later than 15 working days before the planned end of test execution	8 th Sep 23 (No later than**)	29 th Sep 23 (No later than**)	13 th Oct 23 (No later than**)	27 th Oct 23 (No later than**)	17 th Nov 23 (No later than**)	1 st Dec 23 (No later than**)

Note 1* – There is an extended period between CIT Intervals 4 and 5 allowing for the Xmas and New Year period. Some readiness dates have also been adjusted accordingly for CIT Intervals 5 and 6.
Note 2** – SI Test Team will agree timelines for prior PIT deliverables with individual SIT PPs in line with their delivery plans, allowing for test assurance activities in the lead up to SIT

Environments – Usage and Pre-CIT Connectivity Proving

Environment ¹	Phase	Testing Stage	Comments
SIT Staging	All phases	All stages	Initially for SIT readiness such as regression for changes, defect re-testing, etc. This will ensure that the main SIT environments are not broken when new code is deployed, this will also be used for later code releases to UIT. It is anticipated that Central Parties will provide SIT Staging Environments. It is not anticipated that non-Central Parties will provide SIT Staging Environments. Non-Central Test participants can decide if they wish to do so.
SIT A	SIT	SIT Component Integration SIT Functional	Component integration tests will be conducted as individual components are integrated. Then full end-to-end testing can start.
SIT B	SIT	SIT Migration SIT Non-Functional* SIT Operational	It is assumed these three stages can be executed on one environment, but not in parallel to avoid conflicts. TP's can decide to have their own environment for each stage or re-purpose their environments for each stage. *Note new systems, such as the DIP, may be required to run tests on Pre-Prod and Prod.
UIT	UIT	Qualification E2E Sandbox	Central systems and some (i)DNOs' environments will be provided as a testing service to allow TPs to conduct Qualification Testing and E2ESandbox Testing. Each TP will need to complete either SIT or Qualification Testing before starting E2E Sandbox Testing.

Connectivity Proving

A dedicated Environment Connectivity Proving stage will enable connectivity activities to be more closely monitored and supported, acting as a Quality Gate for subsequent test activities. Environment Connectivity Proving is a pre-requisite for CIT, essentially establishing Environment Readiness and will include Programme Parties. This is a key lesson learnt from similar large industry programmes, and often present a risk to timely test entry. Connectivity proving includes:

- Installing PKI (TLS & JWS) certificates. Programme participants will be required to have requested and received PKI certificates prior to the commencement of Connectivity Proving.
- Registering Webhooks
- Demonstrating the use of the APIs, and
- Connecting to each end point for each organisation by Market Role

Note 1 – the Environment usage for non-SIT LDSO Qualification Testing is yet to be determined – please refer to Environments Working Group and SIT Working Group

MHHS Environments Timeline

2024

2025

2023

2026

Jun Oct Feb Jun Oct Feb Jun Oct

SIT-A

- 28 Aug '23 ◆ PKI Solution available to Register PKI Officers, Request PKI Certs
- 4 Sep '23 - 29 Sep '23 █ Interval 1 - Connectivity Proving / Data Load & Verification
- 25 Sep '23 - 20 Oct '23 █ Interval 2 - Connectivity Proving / Data Load & Verification
- 9 Oct '23 - 3 Nov '23 █ Interval 3 - Connectivity Proving / Data Load & Verification
- 23 Oct '23 - 17 Nov '23 █ Interval 4 - Connectivity Proving / Data Load & Verification
- 13 Nov '23 - 8 Dec '23 █ Interval 5 - Connectivity Proving / Data Load & Verification
- 24 Nov '23 - 5 Jan '24 █ Interval 6 - Connectivity Proving / Data Load & Verification
- 30 Oct '23 - 23 Feb '24 █ SIT CIT Execution

11 Mar '24 - 7 Apr '25 █ SIT Functional Test Execution

SIT Staging

- 29 Dec '23 ◆ PKI Officers and PKI certificates In-Place
- 2 Jan '24 - 26 Jan '24 █ SIT Central Parties Connectivity Proving / Data Load & Verification
- 29 Jan '24 - 9 Feb '24 █ Env. Regression Testing
- 11 Mar '24 - 19 Jan '26 █ Required for Code Release Testing (SIT then UIT)

SIT-B

- 29 Mar '24 ◆ PKI Officers and PKI certificates In-Place
- 1 Apr '24 - 26 Apr '24 █ SIT PPs Connectivity Proving / Data Load & Verification
- 29 Apr '24 - 10 May '24 █ Env. Regression Testing
- 10 Jun '24 - 4 Apr '25 █ SIT Mig / NFT / Ops Testing

UIT

- 23 Aug '24 ◆ Central Parties PKI Officers and PKI certificates In-Place
- 27 Aug '24 - 20 Sep '24 █ Central Parties Connectivity Proving / Data Load & Verification
- 23 Sep '24 - 4 Oct '24 █ Env. Regression Testing
- PPs PKI Officers and PKI certificates In-Place (Tranches 1 to 7) → █ 6 Sep '24 - 9 May '25
- PPs E2E Sandbox & Qualification Test Connectivity Proving / Data Load & Verification (Tranches 1 to 7) → █ 9 Sep '24 - 6 Jun '25
- 4 Nov '24 - 19 Jan '26 █ E2E Sandbox Testing & Qualification Testing (Tranches 1 to 7)

MHHS Test Environments –

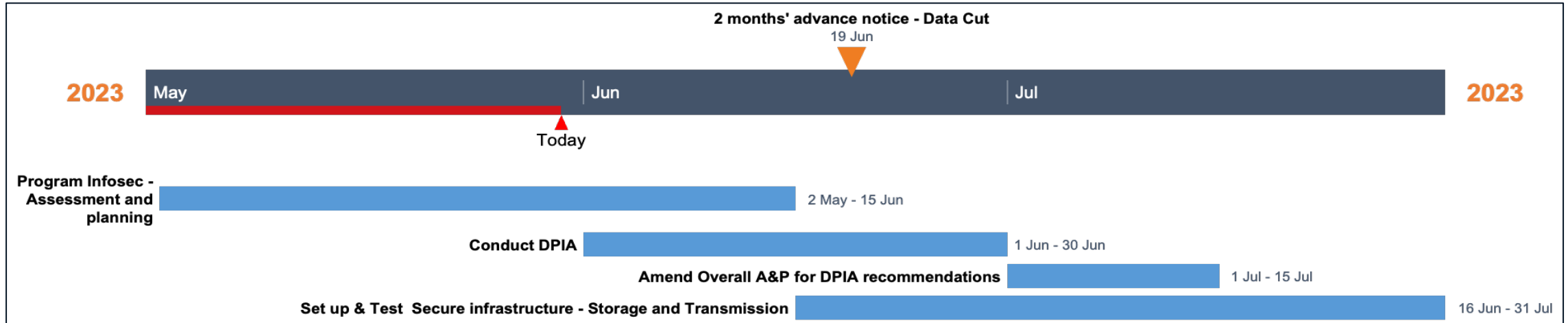
Env	Required for	Required By
SIT A	CIT Functional Test	Start of CIT
SIT Staging	All phases & stages	Start of Functional Test
SIT B	Migration Test Non-Functional Test Operational Test	Start of Migration Test
UIT	E2E Sandbox Test Qualification Test	Start of E2E Sandbox

Test Data – Timeline

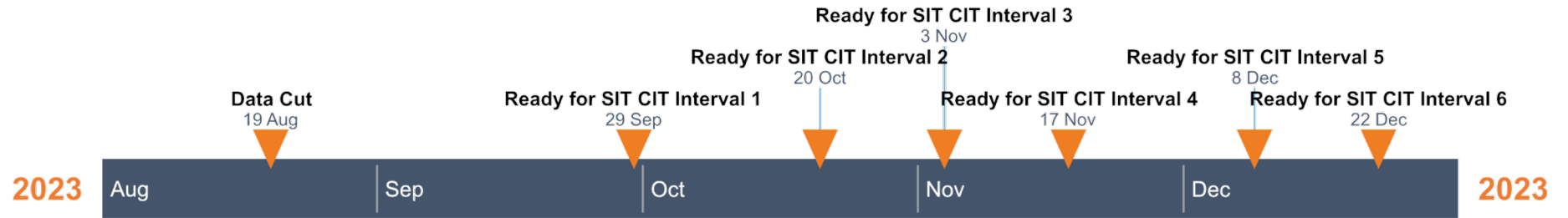
Overarching Test Data Approach & Plan Objectives:

- Set the approach for data to be used in testing, that is the responsibility of the MHHS programme and in particular, the SI test team
- Define the test data necessary for the purposes of testing
- Identify potential risks and define mitigating actions
- Identify the responsibilities for test data management, including the production, manipulation, dissemination and securing of data
- Provide further details that supplement the (MHHS-DEL 300) Test Data Strategy
- The Overarching Test Data Approach & Plan was submitted to the Data Working Group (DWG) and pending TMAG Approval.

Plan Outlook



Test Data – High Level Timeline



Data Cut and Integrity check	19 Aug - 19 Aug ■ Take data cut 21 Aug - 25 Aug ■ Check & transmit requested data to SI 28 Aug - 1 Sep ■ Check alignment/integrity of Data Cut
Test Data - CIT Interval 1 (DIP, VAS, Settlement Operations, LSS, MDS)	4 Sep - 15 Sep ■ Interval #1 - Allocation, Cleanse, Anonymisation, Population and Transmission 18 Sep - 29 Sep ■ Interval #1 - PP - Load and check integrity on Test Environment
Test Data - CIT Interval 2 (DTN, MPRS - Drop 1)	18 Sep - 3 Oct ■ Interval #2 - Allocation, Cleanse, Anonymisation, Population and Transmission 4 Oct - 20 Oct ■ Interval #2 - PP - Load and check integrity on Test Environment
Test Data - CIT Interval 3 (Smart Data Services, Advanced Data Services)	2 Oct - 17 Oct ■ Interval #3 - Allocation, Cleanse, Anonymisation, Population and Transmission 18 Oct - 3 Nov ■ Interval #3 - PP - Load and check integrity on Test Environment
Test Data - CIT Interval 4 (Metering Services)	16 Oct - 31 Oct ■ Interval #4 - Allocation, Cleanse, Anonymisation, Population and Transmission 1 Nov - 17 Nov ■ Interval #4 - PP - Load and check integrity on Test Environment
Test Data - CIT Interval 5 (Suppliers, Network Operations, UMSO)	30 Oct - 21 Nov ■ Interval #5 - Allocation, Cleanse, Anonymisation, Population and Transmission 22 Nov - 8 Dec ■ Interval #5 - PP - Load and check integrity on Test Environment
Test Data - CIT Interval 6 (MPRS - Drop 2, DSP, CSS, EES, UMSDS)	20 Nov - 5 Dec ■ Interval #6 - Allocation, Cleanse, Anonymisation, Population and Transmission 6 Dec - 22 Dec ■ Interval #6 - PP - Load and check integrity on Test Environment

Roles and Responsibilities (RACI) – SIT (Page 1 of 4)

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
SIT Preparation	C	A	I	C	R	R	R	C, TMAG	I	C	I	
Complete Test Artefact Development	C	A	I	C	R	C	C	C, TMAG	I	C		
Finalise Environment Approach & Plan	C	A	I	C	R	C	C	C, TMAG	I	I		
Document Test Scope for all test stages	C	A	I	C	R	C	C	C, TMAG	C	C		
Document Test Traceability & Coverage for all test stages	C	A	I	I	R	C	C	C, TMAG	C	I		
Document Configuration and Release Management Approach & Plan	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Overarching Approach & Plan	C	A	I	I	R	C	C	C, TMAG	I	C	I	
Complete Data Protection Impact Assessment (DPIA)	A	R	I	C	R	C	C	C, TMAG	I	C	I	
Complete Test Tool Development	C	A	I	I	R	C	C	C, TMAG	I	I		
Implement Test Management Tool	C	A	I	I	R	C	C	C, TMAG	I	I		
Implement Test Query Tool	C	A	I	I	R	C	C	C, TMAG	I	I		
Complete SIT Simulators, Emulators, Data Generators Specification and Delivery	C	A	I	I	R	C	C	C, TMAG	I	I		
Set-up Data Service Emulators	C	A	I	I	R	C	C	C, TMAG	I	I		
Complete Production Data Cut	C	A	I	I	R	R	R	C, TMAG	I	I	I	
Complete Data Obfuscation (If required)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Component Integration Preparation	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Document Test Approach & Plan (Component Integration)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Approach & Plan (Component Integration)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Scenarios (Component Integration)	C	A	I	I	R	C	C	C, TMAG	I	I		
Document Test Cases (Component Integration)	C	A	I	I	R	C	C	C, TMAG	I	I		

RACI Key

R	Responsible
A	Accountable
C	Consulted
I	Informed

Roles and Responsibilities (RACI) – SIT (Page 2 of 4)

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Establish Environments (SIT A) (Component Integration)	C	A	I	I	R	R	R	C, TMAG	I	I		
Prepare Test Data (SIT A) (Component Integration)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Component Integration Test Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	C	I	
SIT Functional Preparation	C	A	I	I	R	R	R	C, TMAG	I	I		
Document Test Approach & Plan (SIT Functional)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Approach & Plan (SIT Functional)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Scenarios (SIT Functional)	C	A	I	I	R	C	C	C, TMAG	I	I		
Document Test Cases (SIT Functional)	C	A	I	I	R	C	C	C, TMAG	I	I		
Establish Environments (SIT-Staging) (SIT Functional)	C	A	I	I	R	R	R	C, TMAG	I	I		
Prepare Test Data (SIT-Staging) (SIT Functional)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Functional Test Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	C	I	
SIT Migration Preparation	C	A	I	I	R	R	R	C, TMAG	I	I		
Document Test Approach & Plan (SIT Migration)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Approach & Plan (SIT Migration)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Scenarios (SIT Migration)	C	A	I	I	R	C	C	C, TMAG	I	I		
Document Test Cases (SIT Migration)	C	A	I	I	R	C	C	C, TMAG	I	I		
Establish Environments (SIT B) (SIT Migration / NF / Operational Test)	C	A	I	I	R	R	R	C, TMAG	I	I		
Prepare Test Data (SIT B) (SIT Migration)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Migration Test Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	C	I	

RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

Roles and Responsibilities (RACI) – SIT (Page 3 of 4)

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
SIT Non-Functional Preparation	C	A	I	C	R	R	R	C, TMAG	I	C	I	
Document Test Approach & Plan (SIT Non-Functional)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Approach & Plan (SIT Non-Functional)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Scenarios (SIT Non-Functional)	C	A	I	I	R	C	C	C, TMAG	I	I		
Document Test Cases (SIT Non-Functional)	C	A	I	I	R	C	C	C, TMAG	I	I		
Complete SIT Non-Functional Test Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	C	I	
SIT Operational Preparation	C	A	I	C	R	R	R	C, TMAG	I	C	I	
Document Test Approach & Plan (SIT Operational)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Data Approach & Plan (SIT Operational)	C	A	I	I	R	C	C	C, TMAG	I	C		
Document Test Scenarios (SIT Operational)	C	A	I	I	R	C	C	C, TMAG	I	I		
Document Test Cases (SIT Operational)	C	A	I	I	R	C	C	C, TMAG	I	I		
Establish Environments (SIT B) (SIT Operational)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Operational Test Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	C	I	
SIT Execution	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT Component Integration Testing	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT – Minimum Viable Cohort	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Functional (Minimum Viable Cohort)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Migration (Minimum Viable Cohort)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Non-Functional (Minimum Viable Cohort)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Operational (Minimum Viable Cohort)	C	A	I	I	R	R	R	C, TMAG	I	C	I	

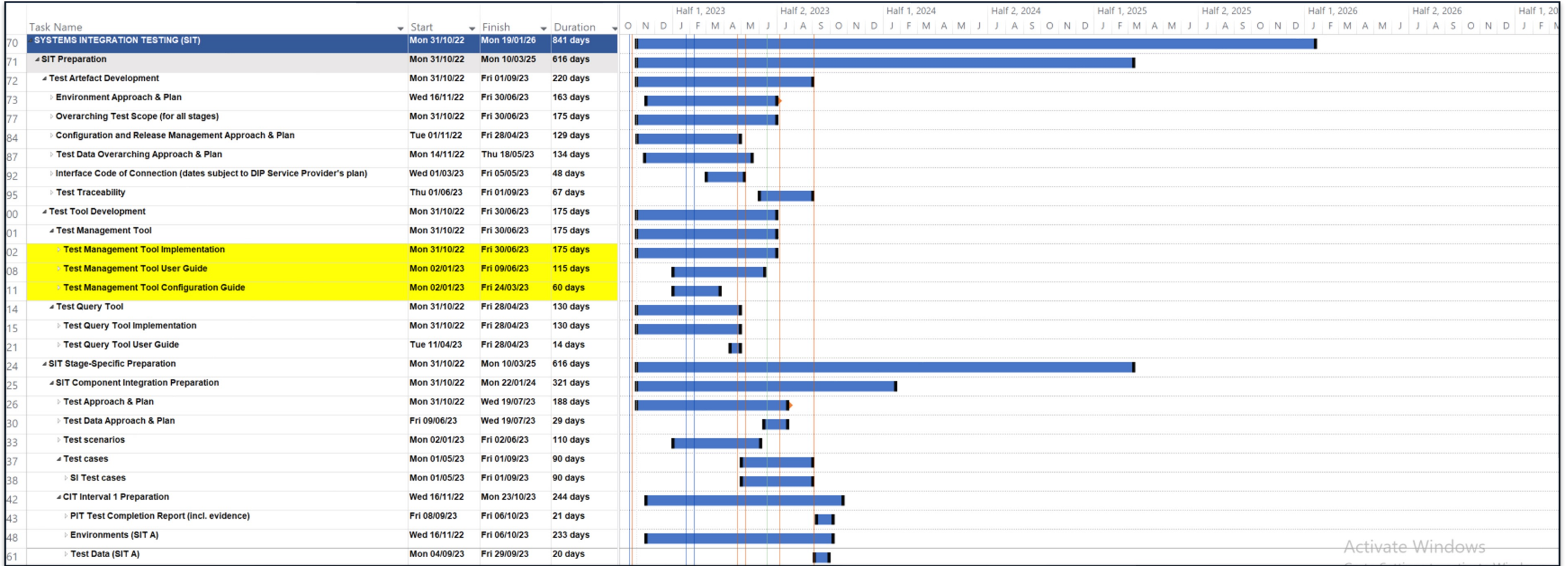
RACI Key	
R	Responsible
A	Accountable
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Roles and Responsibilities (RACI) – SIT (Page 4 of 4)

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Complete SIT Functional (Other Participants)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Functional Execution (Other Participants)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Migration (Other Participants)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
Complete SIT Operational (Other Participants)	C	A	I	I	R	R	R	C, TMAG	I	C	I	
E2E Sandbox Testing Preparation	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete UIT Stub Specification and Delivery	C	A	I	I	R	C	C	C, TMAG	I	I		
Set-up CSS & SMRS Simulators	C	A	I	I	R	C	C	C, TMAG	I	I		
Test Artefact Development	C	A	I	I	R	C	C	C, TMAG	I	I		
Create E2E Sandbox Guidance	C	A	I	C	R	C	C	C, TMAG	I	I		
Document E2E Sandbox Test Data Approach & Plan	C	A	I	C	R	C	C	C, TMAG	I	I		
Establish Environments (E2E Sandbox Testing Preparation)	C	A	I	I	R	R	R	C, TMAG	I	I		
Prepare Test Data (E2E Sandbox Testing Preparation)	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete UIT E2E Sandbox Readiness Report	C	A	I	I	R	R	R	C, TMAG	I	I		
Complete SIT PPs E2E Sandbox Testing Execution	C	I	I	I	C	R	R	C, TMAG	I	I		
External Programme Dependency Management	A	R	C	C	C	C	C	C, PSG	C	C	C	I
BSC CP1558 Implementation of changes	C	I	I	I	C	R	R	C, PSG	A	I		
REC CP R0032 Implementation of changes	C	I	I	I	C	R	R	C, PSG	A	I		
REC CP R0044 Implementation of changes	C	I	I	I	C	R	R	C, PSG	A	I		

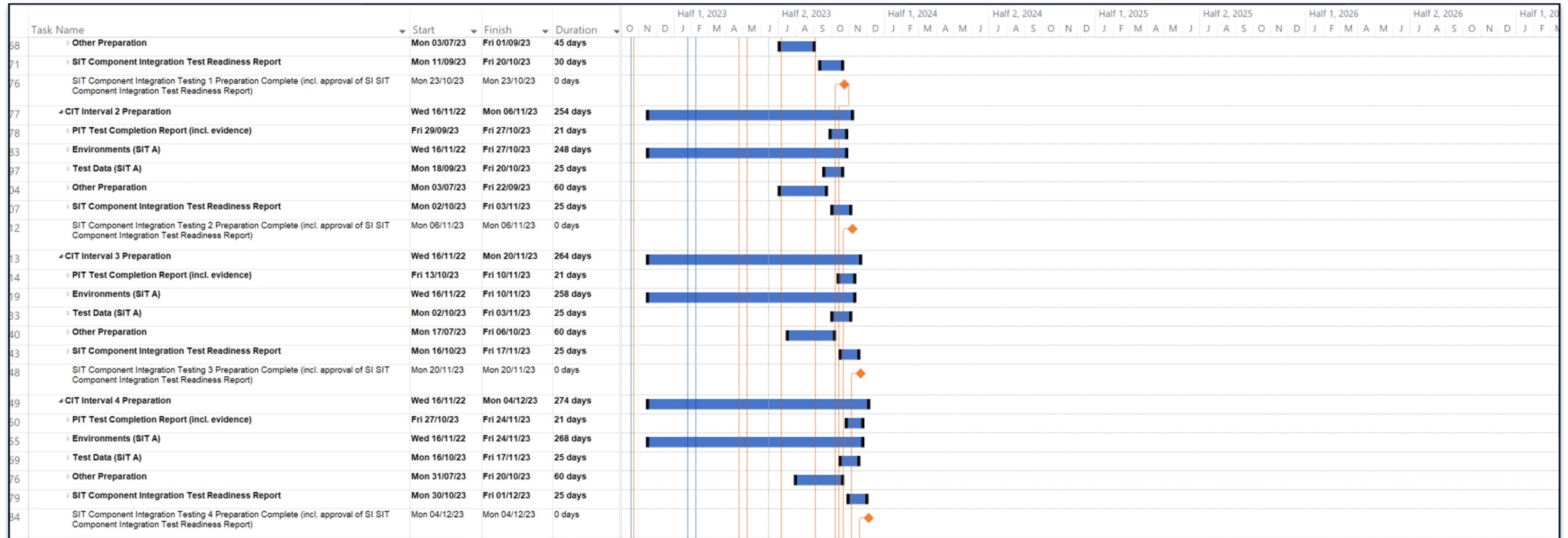
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SIT Preparation - Plan-on-a-Page (PoaP) 1 of 9

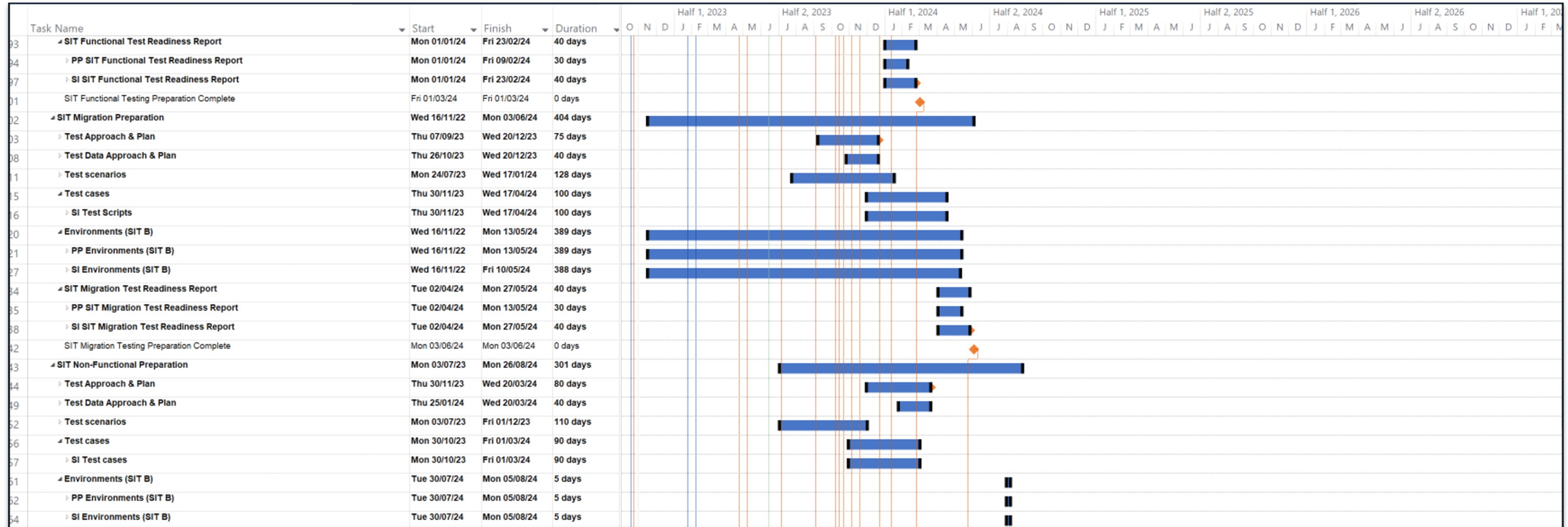


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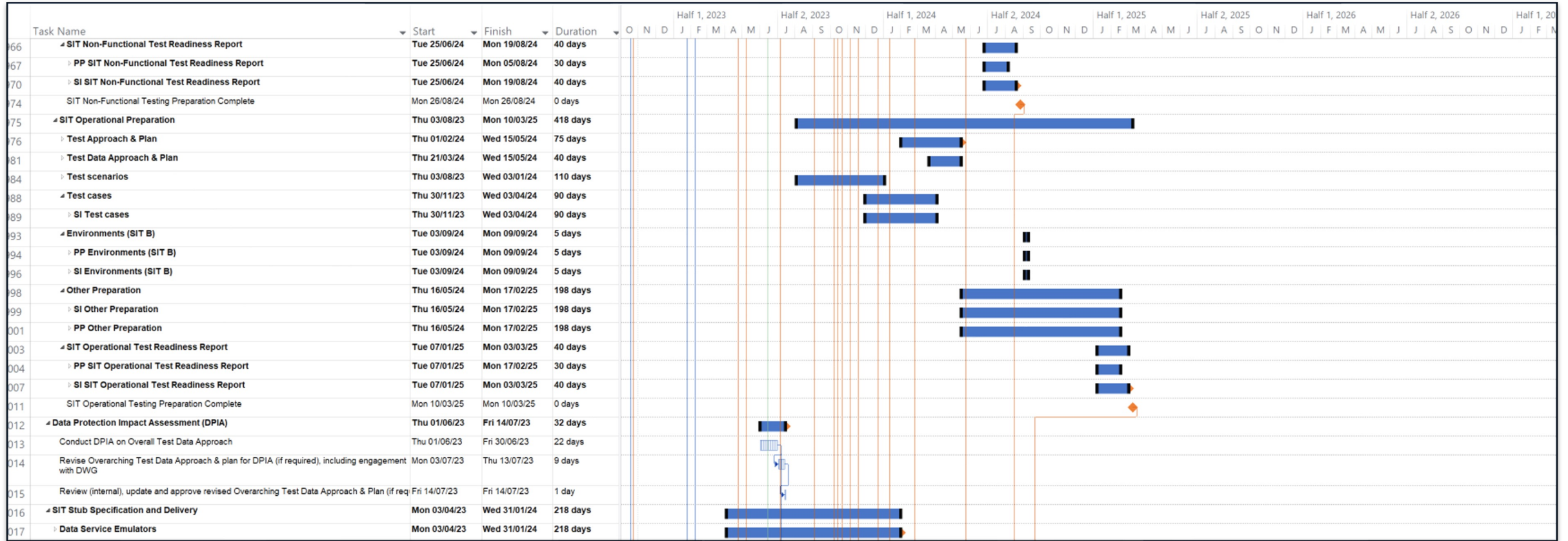
SIT Preparation - Plan-on-a-Page (PoaP) 2 of 9



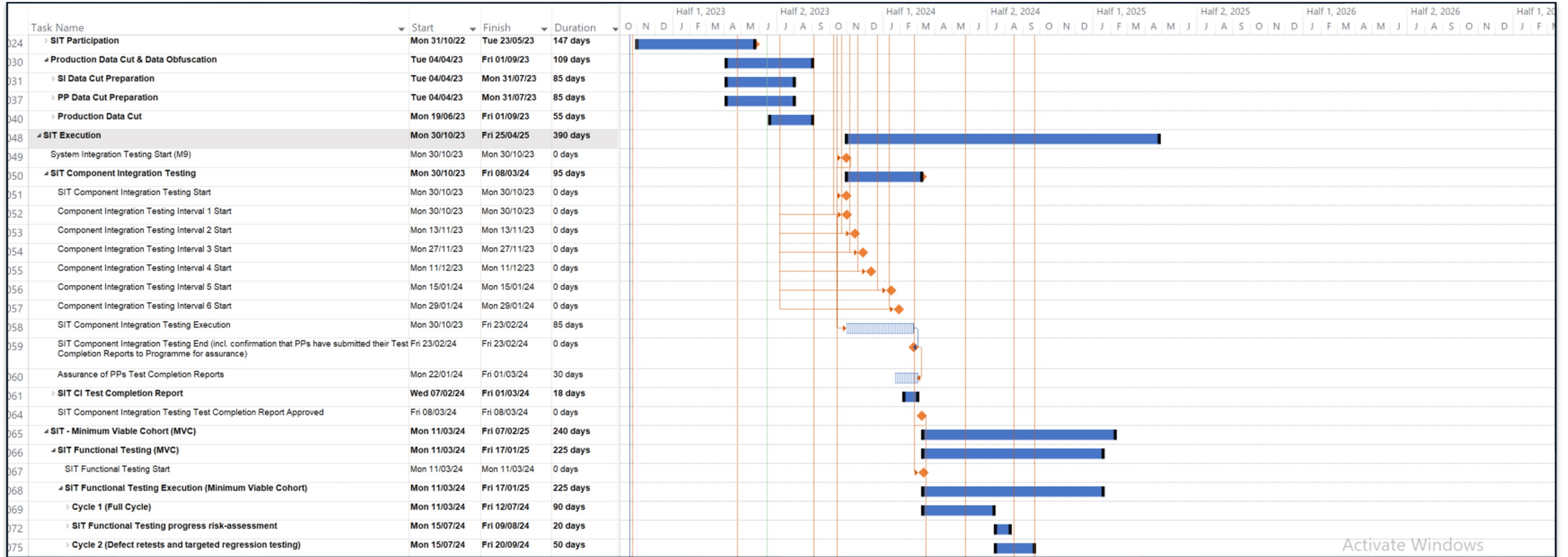
SIT Preparation - Plan-on-a-Page (PoaP) 4 of 9



SIT Preparation & Execution - Plan-on-a-Page (PoaP) 5 of 9

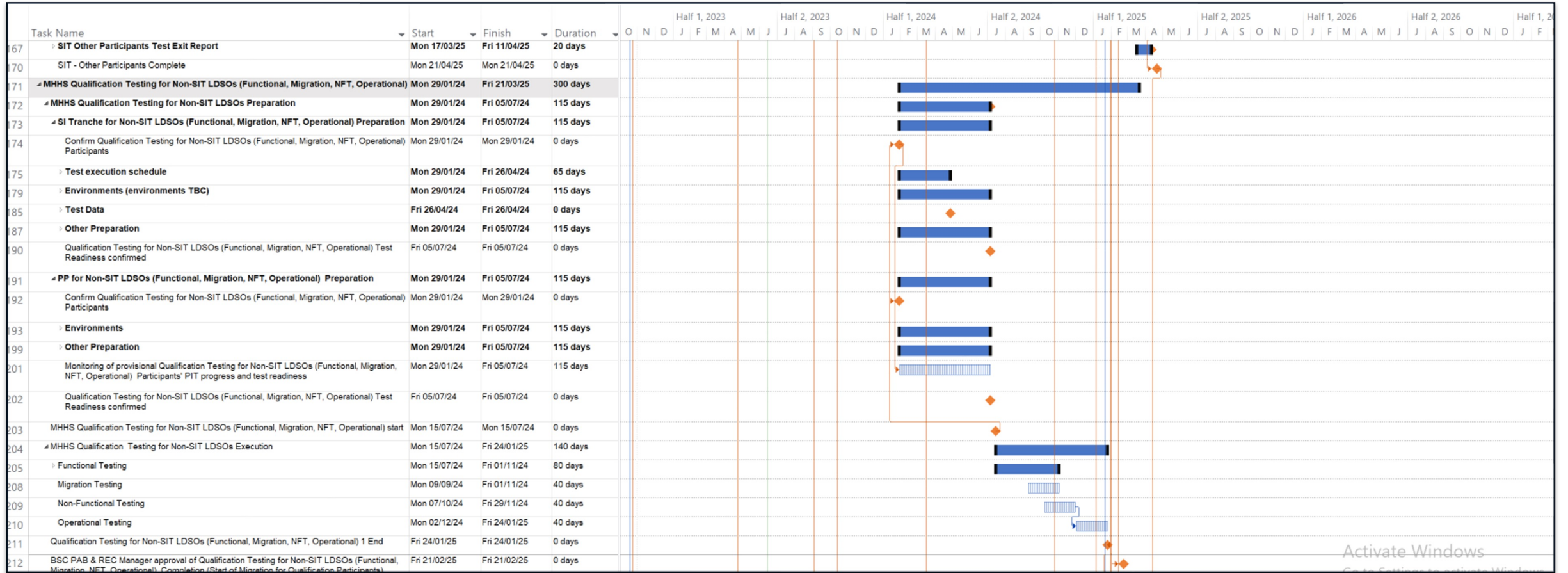


SIT Execution - Plan-on-a-Page (PoaP) 6 of 9



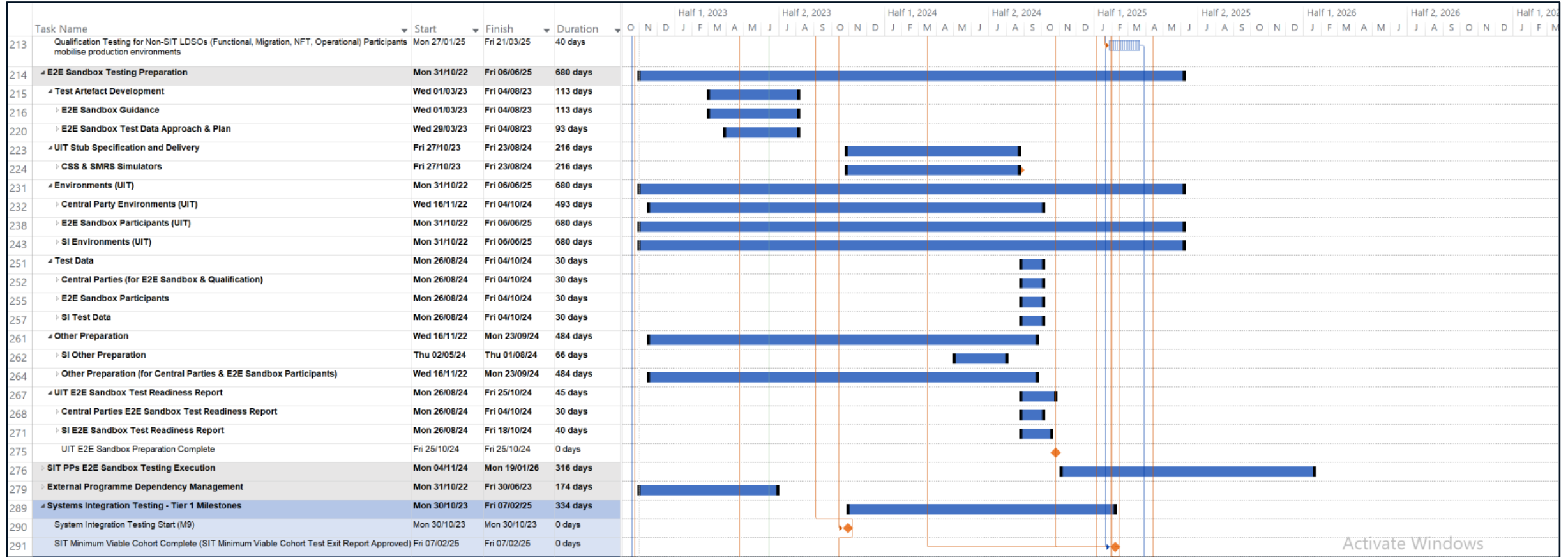
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SIT Execution - Plan-on-a-Page (PoaP) 8 of 9



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SIT Execution - Plan-on-a-Page (PoaP) 9 of 9



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Systems Integration Testing (SIT) - Key RAID Items

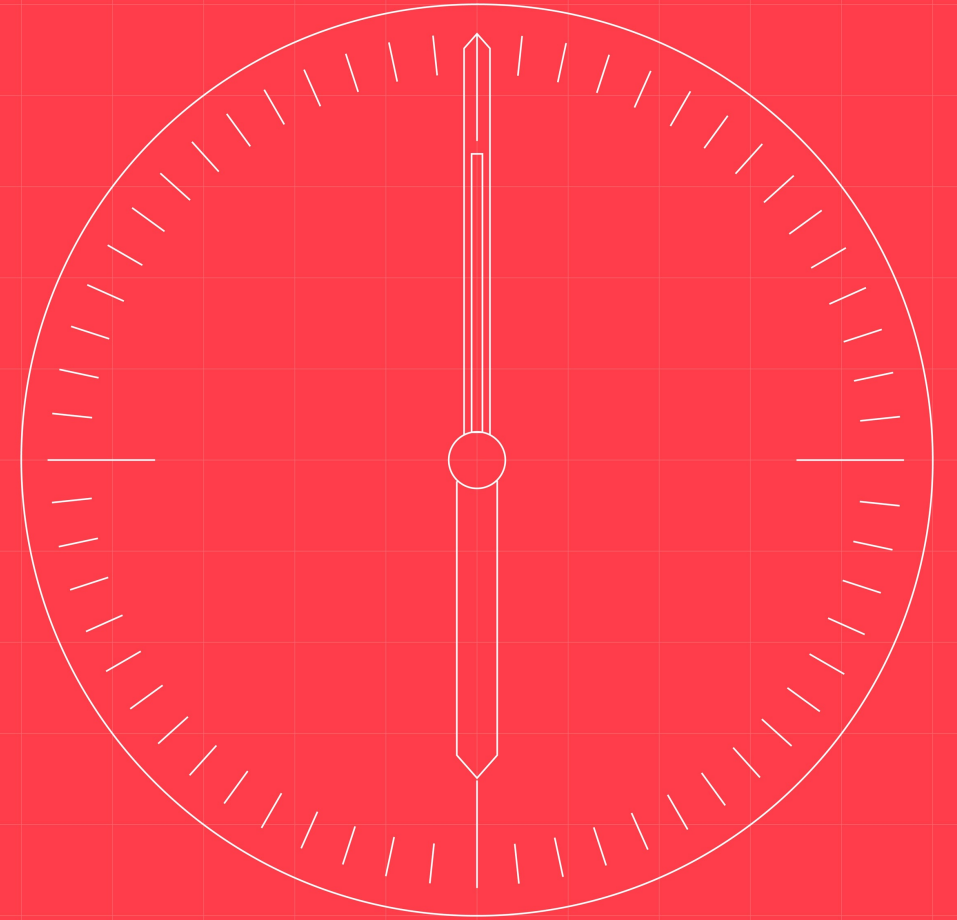
ID	Risk	Risk Rating
R273	SIT MVC participants may have to be dropped from SIT participation prior to Component Integration Testing (CIT) commencement, if they have not reached a sufficient point of progress in their independent DBT activities, do not meet criteria for SIT entry OR decide not to participate after all	Medium
R438	Participants in the MVC dropping out during SIT, slowing down or halting SIT until a suitable replacement is found	Medium
R522	SIT volunteers may be late arriving into their CIT Interval which may impact SIT timelines	Medium
R509	SIT and Qualification are not aligned due to changes identified during development of Qualification deliverables after the SIT deliverables are approved	Medium
R181	There is a risk that a lot of "manufactured" data must be used in SIT because cleansed actual data (that which is not currently envisaged in the Overarching Test Data Approach and Plan) is not available in time	Medium
R009	There is a risk that the programme will have difficulty verifying test results because of the large amount of complex test data involved	Medium
R331	Analogous estimating has been used to assess the likely duration of SIT testing using FSP as a benchmark. There is a degree of uncertainty over the accurate estimating of SIT duration which may be longer or shorter	Low

ID	Dependency	Manage-able?
D104	The Programme and all data providers must complete DPIAs as necessary to cover their obligations, before data cuts can be extracted from their systems and shared	In process
D121	Participant provision of adequate data cuts is required in advance of the start of CIT phase of SIT	In process
D082	M9 is dependent upon implementation of MP162 at DCC and configuring roles to support the MP162 solution	Yes
D115	Central Parties and SIT PPs to complete their Migration / Reverse Migration DBT in time for SIT Migration start	Yes
D147	SDS service providers who wish to operate MDR must complete SEC accession as an "Other Party" and DCC UEPT as an "MDR User" before entering into SIT Functional	Yes

ID	Assumption	Assumption Uncertainty
A167	Those who want to adopt the Placing Reliance policy meet the criteria and follow the MHHS policy	Medium
A168	From the outset of SIT CIT we will expect SIT participants to be ready to include the use of any systems in their estate (i.e. triggering it from the same point in their back-office service as would be the case in the E2E business process)	Medium
A169	Qualifying Organisations (and not their 3rd party providers) are accountable for executing and evidencing (or organising the execution of) their own completion of MHHS Programme industry testing	Medium
A127	Current plan assumes 30-40 participants in SIT split between MVC and non-MVC participants	Low
A138	Once CIT successfully exits, no further SIT PPs will be added to SIT testing	Low
A166	Entry to SIT CIT will be progressive based on systems / services as outlined in this deck, starting with DIP and Helix	Low
A170	Non-SIT LDSO testing can take place without adversely impacting SIT	Low

Qualification

including non-SIT LDSO Testing



Qualification - Overview

Qualification will include the following four core elements:

1. **Procedural & Governance** – participants are expected to adhere to the processes and procedures of the code bodies governing qualification (All PPs).
2. **Evidenced DBT1 Pre-Integration Testing to enter Qualification** which will prove specific functional, non-functional and migration-related characteristics of systems and processes:
 - a) Suppliers' core systems and DIP Interfaces
 - b) Metering Services
 - c) Data Services
 - d) Registration, Network Operations and UMSO Services. (Executed within a participant's own environment) This will be a pre-requisite to enter Qualification Testing.
3. **Evidence of DBT2 testing** in order to exit Qualification
4. **Qualification Testing of scenarios** specified by the Code Delivery Bodies, but is expected to be a sub-set of SIT coverage, demonstrating functional, non-functional and migration-related characteristics of the Market Interfaces and Services in an integrated environment (UIT).

Participants are...

- Responsible for ensuring their successful completion of Qualification and the QAD
- Required to demonstrate successful PIT completion and network connectivity prior to commencement of Qualification Testing
- Responsible for defining the detailed test steps and recording the test execution results in the MHHS Test Management Tool (ADO)

MHHS SI will...

- Ensure the availability of relevant test harnesses, test environments and appropriate data to be allocated to each PP
- Provide access to the MHHS Test Management tool (ADO)
- Provide Test Services as agreed with the Code Delivery Bodies

BSC PAB and REC PAB will...

- Control entry and exit from Qualification through monthly meeting cycle

Code Delivery Bodies will...

- Specify the approach, plan, scenarios and data allocation for Qualification Testing, based on SIT materials from the MHHS Programme
- Manage and execute the Qualification testing process and schedule in a non-discriminatory manner in line with BSC / REC / SEC
- Assure PIT completion and test readiness of Non-SIT participants
- Assure completion of QAD (including participant Qualification Test results) and schedule PAB and REC Manager approvals

Associated planned Deliverables include...

- PIT Guidance (from MHHS Programme)
- Qualification Approach and Plan (Code Bodies). To be developed iteratively in line with the schedule for developing the Approach & Plan documents for the various SIT stages. There will not be a separate Qualification Test Data Approach & Plan - this will be wrapped up in the Qualification Approach & Plan
- Qualification Assessment Document (Code Bodies)

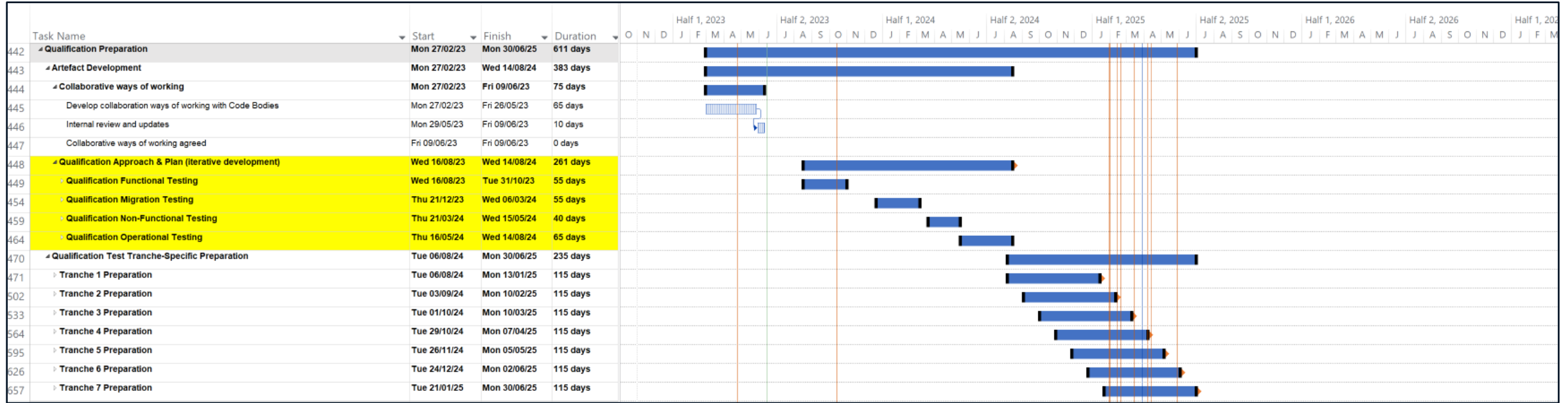
Roles and Responsibilities (RACI) – Qualification

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies (BSC & REC)	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Complete Qualification Testing Preparation	C	C	I	I	R	C	C	C, TMAG + PAB	A, R	C		
Perform Test Artefact Development	C	I	I	I	C	C	C	C, PAB	A, R	I		
Document Qualification Approach & Plan	C	I	I	I	C	C	C	C, TMAG + PAB	A, R	C		
Document Qualification Testing Tranche-Specific Preparation	C	I	I	I	R	C	C	C, PAB	A, R	I		
Confirm Qualification Testing Tranche 1 Participants	C	C	I	C	C	C	C	C, PAB	A, R	C	I	
Document Test execution schedule	I	I	C	I	C	C	C	C, PAB	A, R	I		
Prepare Environments	I	A	I	I	R	C	R	C, TMAG	C	I		
Prepare Test Data	I	I	I	I	C	I	I	C, PAB *tbc	A,R *tbc	I		
Support PAB in Qualification Setup	C	C	I	I	C	I	I	C, TMAG + PAB	A, R	I		
Complete Qualification QAD Process	I	I	I	I	C	R	R	C, PAB	A, R	C	I	
Perform Qualification QAD Process Monitoring	I	I	I	I	C	R	R	C, PAB	A, R	I		
PAB approval of SIT Participants post-M8 and pre-M11	R	R	I	C	C	C	C	C, PAB	A, R	C	I	
PP Pre-Qualification Assurance	C	C	I	C	R	C	C	C, TMAG	A, R	C		
Qualification Testing Execution	I	I	I	I	C	R	R	C, PAB	A	I		
Complete Qualification Testing Monitoring	C	A	I	I	R	C	C	C, TMAG	C	C		
Prepare for Cutover to Live	A	R	I	C	R	R	R	C, TMAG + PAB	R	C	I	

RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

* Under discussion

Qualification Preparation - Plan-on-a-Page (PoaP)



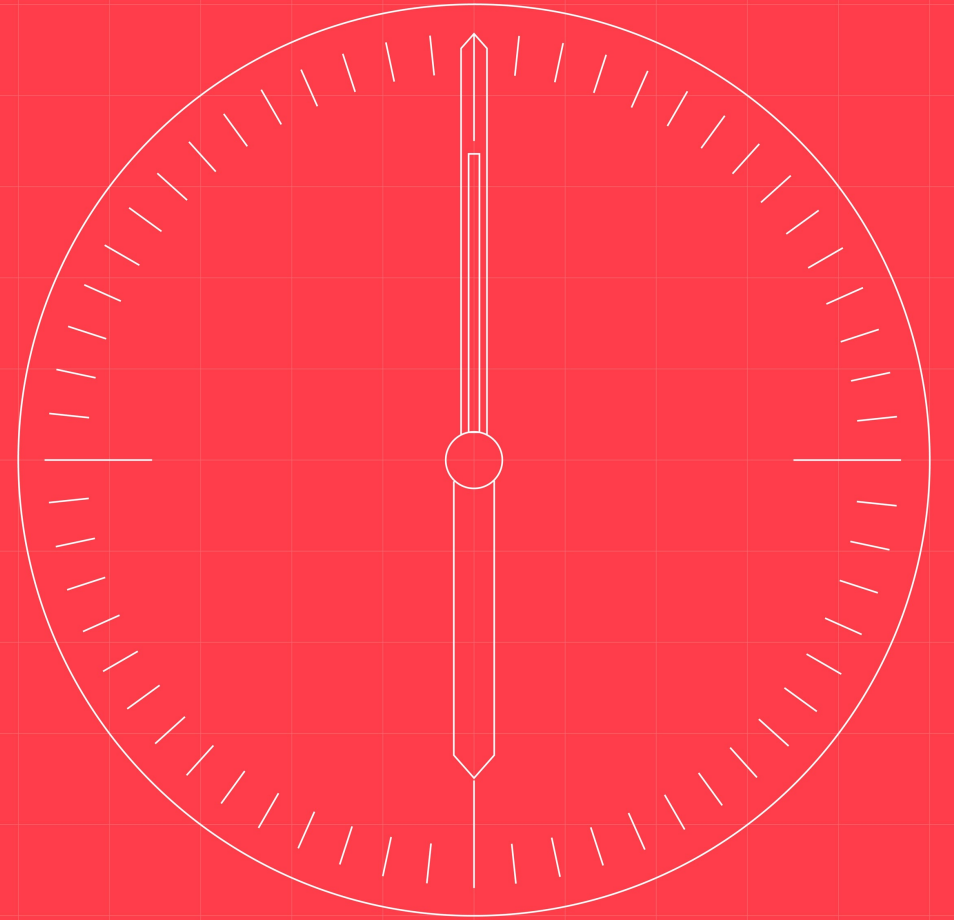
Qualification - Key RAID Items

ID	Risk	Risk Rating
R380	DNOs / iDNOs may not participate in the non-SIT / Qual LDSO Testing, or complete it in time	High
R332	Suppliers and other Programme Participants may require maximum amount of time to complete their DBT and subsequently qualify, resulting in backlog in final tranche	Medium
R479	During Qualification defects with Central Systems are identified that were not discovered during SIT	Medium
R480	The duration of Qualification tranches estimated is incorrect	Medium
R509	The content of SIT and Qualification are not aligned due to changes identified during development of Qualification deliverables after the SIT deliverables are approved	Medium
R510	If PPs drop out of SIT, they are not appropriately allocated to Qualification tranches as these have already been allocated to other PPs	Medium
R516	SIT documents are delayed which cause a delay to Qualification document preparation (approaches and plans)	Medium
R276	Elexon BSC, RECCo or SECAS may not have the capacity to manage the volume of participants going through Testing at any one time – meaning the Qualification Phase may need to be longer	Low
R442	Time identified for Qualification Testing may be insufficient given lack of certainty on the scope of Qualification Testing	Low

ID	Dependency	Manageable?
D101	The finalised Qualification Approach & Plan is dependent on the Test Approach & Plan documents for each stage of SIT as it will be drawing on this content	In process
D017	Confirmation of the participants to be involved for each tranche of Qualification Testing is dependent on the approval of the tranche Test execution schedule by Code Body PAB committees	Yes
D132	Qualification execution commencement is dependent on the completion of SIT Functional by the MVC. The Programme will conduct a risk-assessment of SIT Functional progress to assess whether Qualification Testing can start early. A decision on early Qualification Testing commencement will be made by TMAG	Yes
D123	BSCCo and RECCo will be responsible for drafting and approving the Qualification Assessment Document (QAD). The QAD is not required as part of Code drafting. However, any of the tests / requirements on Parties need to reflect the approved draft Code when it is approved, therefore QAD approval at PAB is dependent on the start of the mop-up topic area consultation in Code drafting, when the Code drafting is stable enough to be reflected in the QAD	Yes
D146	SDS service providers who wish to operate MDR must complete SEC accession as "Other Party" and DCC UEPT as "MDR User" before entering Qualification	Yes

ID	Assumption	Assumption Uncertainty
A109	Qualification Testing is assumed to take 12 months overall for all tranches with 2 months following Qualification Testing before migration starts to allow for PAB approvals and production environment mobilisation for Programme Parties	Medium
A110	Elexon BSC team and REC Code Manager will manage and execute Qualification and will have the capability and capacity to do so	Medium
A165	SIT participants will not need to execute additional Qualification Testing in order to qualify (although they will still need to complete the QAD and be approved as an MHHS Participant by the relevant BSC and REC PABs)	Medium
A175	Existing Suppliers already using Import Supplier and Export Supplier roles to retrieve smart meter data who will undertake the role of MDR themselves using those existing Service Requests do not have to undertake any SEC accession or DCC UEPT activities	Medium

Regulatory (Code Drafting)



Code Drafting - Overview

The Code Drafting workstream will deliver:

- All of the drafting required in the BSC, REC, DCUSA and CUSC to deliver:
 - the design set out in the design baseline (i.e. in the M5 design artefacts, the output from the work-off plans and the migration design)
 - Code drafting for Consequential Change items (Consequential Change Log [here](#)) from solutions defined and agreed by the responsible parties
- Ofgem powers, likely Significant Code Review powers with any necessary consultations, will be designated at M7 in advance of and to enable M8
- An Implementation Date for applicable Code changes (M8) to align with when Central Parties are ready for migration (M10)
- Support to the analysis of future change for Code impact through change management processes

Out of Scope:

- SEC drafting as this will be delivered through the SEC Mod MP162 changes
- Consideration and approval of solutions for Consequential Change

MHHS Programme will ...

- Manage the workstream to successful delivery
- Complete drafting for the BSC
- Provide secretariat services to support meetings
- Provide subject matter expertise to assure and navigate appropriate governance
- Manage RAID for Code drafting within the Programme
- Support any future change management activities relating to Codes
- Support communication of Code outputs to PPs
- Manage the consultation and approval process, learning lessons from design processes

Code Bodies will ...

- Define and agree the design of solutions for consequential change within the Code Governance ready for CCAG to approve drafting
- Complete drafting for their Codes from MHHS design artefacts (other than BSCCo) and consequential change (all Code Bodies)
- Review other Code Body's drafting through the CDWG review process
- Contribute to the approval of Code drafting through participation at CCAG
- Set Implementation Dates for the relevant Code changes to align with M8 and M10

Ofgem will...

- Deliver Code designation powers such as (Significant Code Review Powers) and conclude any associated consultation successfully in advance of M8 and M10

Programme Participants will...

- Review Code drafting in consultation windows
- Attend CDWG to provide input and CCAG for approval

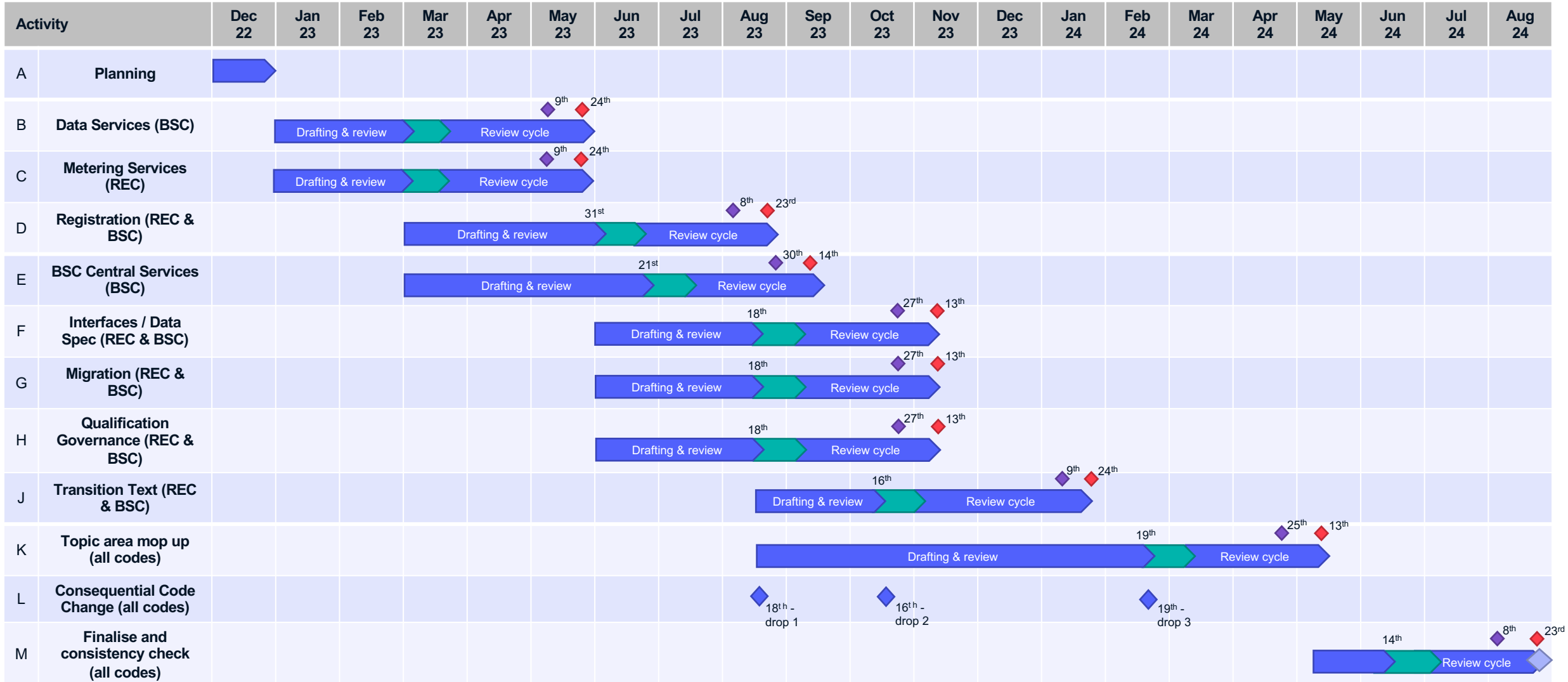
Associated Deliverables include...

- Code Drafting good practice and approach
- BSC, REC, DCUSA and CUSC drafting across the design
- Traceability matrix from design artefacts to Code Drafting and from Code drafting to design

Code Drafting Plan

Key:

	Industry Consultation		CCAG
	CDWG		Consequential code change consultation



M6 – 23rd Aug

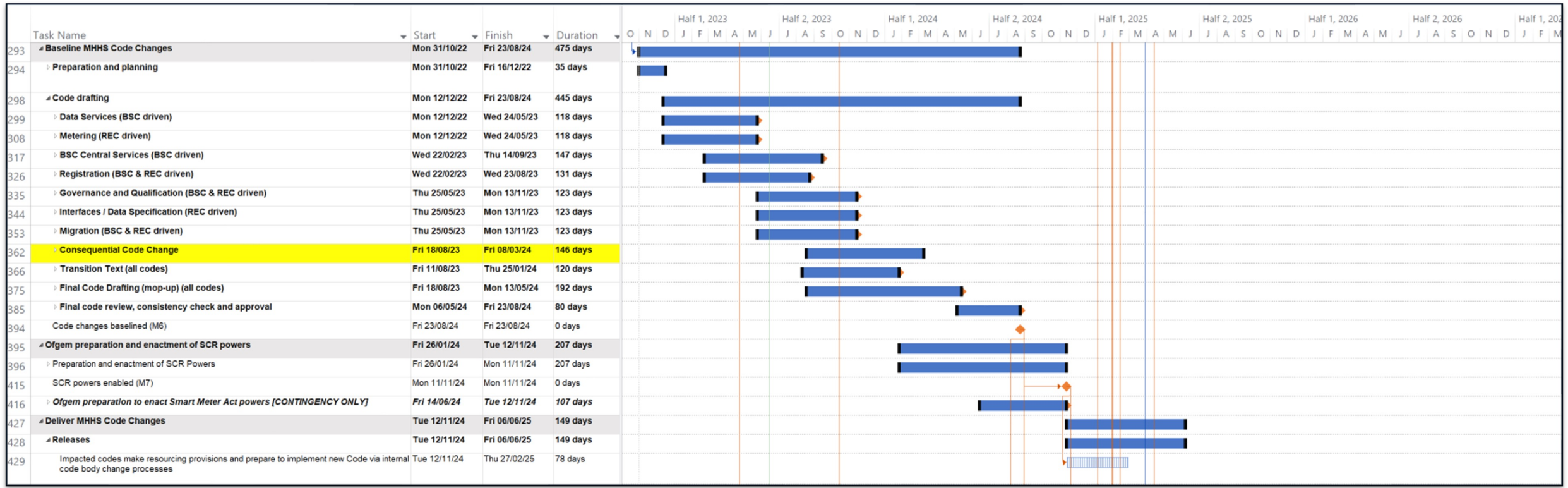
Roles and Responsibilities (RACI) – Code Drafting

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies (MMHSP for BSC)	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Baseline MHHS Code Changes	A	I			I	C	C		R		C	
Preparation and planning for MHHS Code Changes	A, R	C			I	I	I		R	C	I	
Complete Code drafting	A, C	C				C	C		R			
Finalise Data Services (BSC driven)	A, C	I				C	C		R			
Complete Pre Code Drafting activities	A, R	C							R			
Complete Code and subsidiary document drafting takes place offline	A, R, C	I							R			
Complete Internal review and cross-checking of drafting across code drafters	A, R, C	I							R			
Undertake External industry review via consultation	A, C	I				R	R			C		
Triage and action comments	A, R	C							C	I		
CDWG review and recommendation	A, C	I				R	R			C	I	
CCAG recommendation	C	I		I	I	R	R	A	C	C	I	
Metering	A, C	I				I	I		R			
BSC Central Services (BSC driven)	A, C	I				C	C		R			
Registration (BSC & REC driven)	A, C	I				C	C		R			
Review of code drafting process and forward look to rest of plan (eg remaining M6 activities and the code release plan)	A, R	C			C	C	C		C	C	I	
Governance (BSC & REC driven)	A, C	I				C	C		R			
Complete Code Drafting for Qualification (all codes)	A, C	I				C	C		R			
Prepare Interfaces / Data Specification (REC driven)	A, C	I				C	C		R			
Document Transition Text (all codes)	A, C	I				C	C		R			
Traceability Matrix	A, C	I			C	C	C		R	C		
Document Final Code Drafting (mop-up) (all codes)	A, C	I				C	C		R	C		
Complete Final code review, consistency check and approval	A, C	I			C	C	C		R	C		
Managing the baselined code through the change management process	A, R	I			C	C	C		C	C		
Ofgem preparation and enactment of SCR powers	C	I				I	I		I	C	A, R	
Deliver MHHS Code Changes	A, C	I		I	I	C	C		R			
Deliver Main Code Release	I	I		I	I	I	I		A, R	I	I	
Perform External Programme Dependency Management	A	R		I	I	I	I		I	C		
DCUSA Change Proposal 397	I	I							A, R			

RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

Document Classification: Public

Regulatory - Plan-on-a-Page (PoaP) 1 of 2

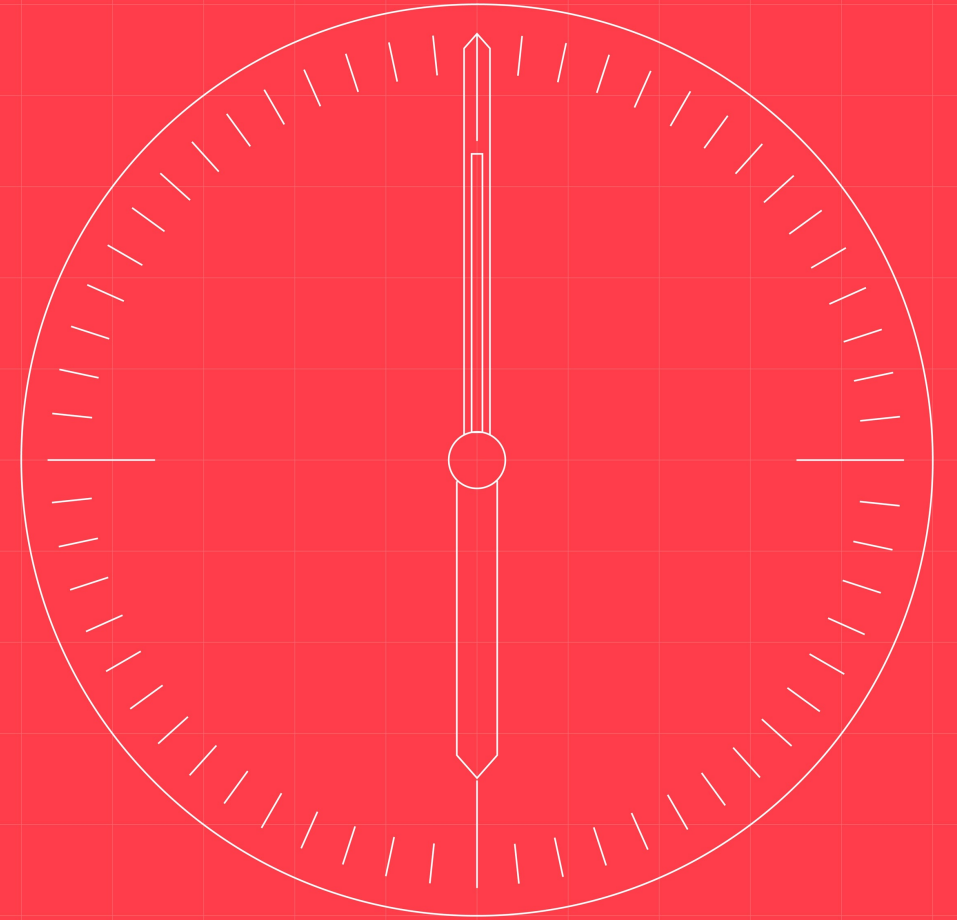


Regulatory (Code Drafting) - Key RAID Items

ID	Risk	Risk Rating
R354	External Code modifications or change proposals are raised that impact MHHS Programme	Medium
R434	Programme Parties do not have sufficient resource to review Code output within consultation windows, particularly during Summer holiday period	Medium
R454	Licence changes are found to be necessary later in the Programme	Medium
R455	SCR consultation process highlights issues that require resolution in the Programme	Medium
R464	SIT may uncover requirements to change Code drafting leading to changes to Code Artefacts	Medium
R355	Consequential Change solutions are not approved by responsible parties (as per the CCIAG log here) in advance of the associated Code drafting topics being started	Low
R462	There is not enough contingency in the plan for Code drafting dates, increasing risk of delays if a particular topic area is delayed	Low
R487	Through the participant reviews, a Code drafting gap is identified which could lead to an issue <i>if</i> : 1. It leads to a requirement to raise a change outside of the Programme change control process <i>and/or</i> , 2. there is no change sponsor to progress the external/internal change request	Low

ID	Assumption	Assumption Uncertainty
A081	Any changes to the Design via the Programme's Change Control process and subsequent changes required to industry codes can be managed within timeframes in the Code draft plan	Medium
A085	Ofgem will be able to deliver all activity required for M7 (to enact SCR or SMAP powers) and then consult and make a decision to implement Code changes for the planned release date	Medium
A142	Code Bodies can align Implementation Dates for Code changes to an extraordinary Release aligned with M10	Medium
A082	Any MHHS-related Code changes required after MHHS Code changes are implemented (M8) will be managed by the relevant Code Bodies	Low
ID	Dependency	Manage-able?
D052	Code drafting can only begin once all Design (including Migration and Transition) has been baselined and subsequent impact assessment of the design has been completed by Code Bodies	Yes
D144	Code releases to deliver the MHHS Code changes are dependent on activation of the Significant Code Review, Smart Meters Act Powers or equivalent Ofgem direction	Yes
D149	M8 is dependent on Code Bodies implementing Code changes	Yes

Transition and Migration



Transition and Migration - Overview

The Migration and Transition Workstream will produce all of the activities and deliverables required to prepare for; and execute MPAN migration from M11 to M15, followed by the cut over to the new settlement arrangements at M16.

This includes delivery of the:

- Forward and Reverse Migration Approach and Strategy, including the treatment of exceptional MPANs
- Migration Implementation Plan and Management of Migration Execution;
- Monitoring of Programme participants through migration preparation and execution
- Definition of migration processes and procedures, and taking migration through governance, including exit criteria
- Management of external dependencies responsible for executing migration activities (e.g. data cleansing, operational readiness); and
- Support of BSC & REC Performance Assurance teams on issues of mutual interest

The scope of Migration and Transition activities are set out on the following slide.

Participants will ...

- Complete their own preparation activities for migration to meet the entry criteria for migration, which are yet to be defined, but likely to include:
 1. Qualification complete with all contracted Service Providers to prepare for migration
 2. Production environments available
 3. Data 'cleaned' in line with entry criteria
- Execute migration in accordance with the strategies and plans delivered by the Programme, including any reporting or forecasting activities
- Complete migration in accordance with the defined migration timeline

MHHS SI will ...

- Deliver the Migration Design
- Define the approach and plans to manage and execute the migration process, including applicable escalation processes
- Prepare for the execution of migration with the necessary tools, infrastructure and communication channels/industry groups established
- Execute and manage migration from M10 to M15, meeting the exit criteria for M15 (to be defined)
- Support Ofgem in their analysis in setting M14 date
- Track progress of parties through SIT and qualification to coordinate cohort composition to commence migration at M11

Associated planned Deliverables include...

- Migration Approach
- Migration Design
- Migration Cutover and Data Strategy
- Data Assessment Report / Data Cleanse Plan
- Migration Entry Criteria (in Cutover and Data Strategy)
- Migration Exit Criteria (in the Implementation Plan)
- Migration Implementation Plan
- Migration Processes & Procedures
- Migration Period Plan
- Service Management Approach and Plan
- Reverse Migration Approach and Exclusions
- Business and Operational Readiness

Transition versus Migration – Scope Definition

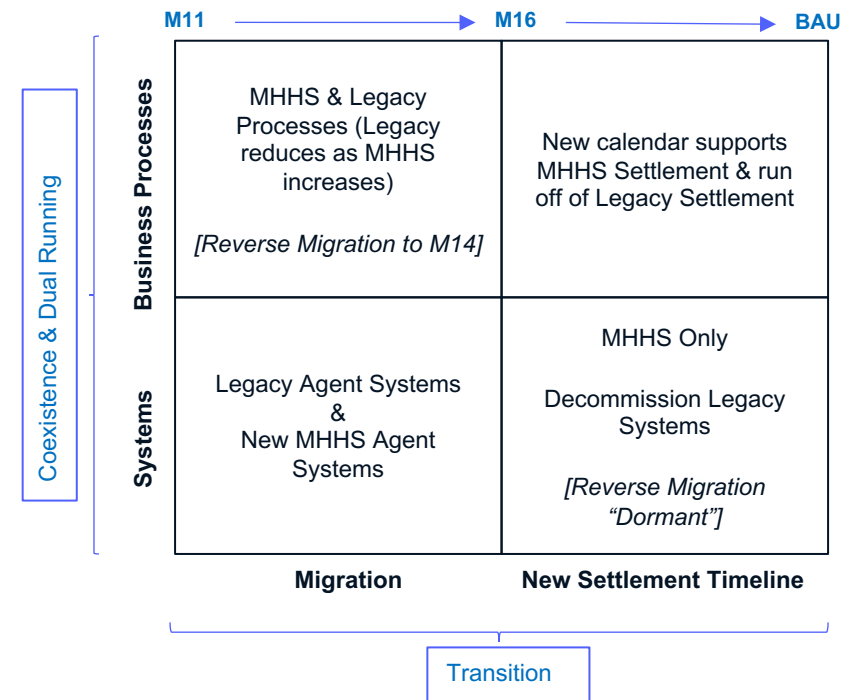
Transition. Migration is a component of Transition; however, the scope of Transition is greater as it covers the precursor activities which must occur prior to and at the M10, M11 and M16 milestones, including:

- Data Cleansing of existing industry data and population of new MHHS data.
- Design of the additional processes, which must be operated across industry, that will only be applicable whilst MPANs are operated under the Legacy and MHHS arrangements, which will span from M11 until the point that the last Legacy settlement activities occur post M16.
- Managing the cutover to the new services at M10 and enhanced service management activities within the early life of the migration.
- Defining the reporting and monitoring capabilities to support operations within the period of transition.
- Setting the criteria to support the implementation of the new Settlement Calendar at M16.
- Developing the Service Management strategy which will include the handover of activities from the programme to the BAU operations.

Migration. Migration covers the movement of individual MPANs from the legacy arrangements to the new MHHS arrangements between M11 and M15.

This covers:

- The execution, by Suppliers and their agents, of the specific migration processes
- The planning activities which the programme, in conjunction with individual Suppliers, will undertake
- The Migration Command-and-Control functions (MCC) which the programme will develop to track individual Suppliers performance against agreed plans, and the overarching delivery of the M15 milestone.



Migration Operational Considerations

Migration Design Principles *

1. **Supplier lead.** Supplier initiates the migration of each MPAN.
2. **Minimal Change.** Covers both Legacy and MHHS processes to support migration of each MPAN.
3. **Leverage legacy and MHHS processes.** Both support the transactional migration of meter and reading data.

* Design approved at DAG on 31 March

Forward Migration occurs from M11 to M15 milestones ...

- Until all MPANs are successfully migrated from Legacy to MHHS arrangements
- Design supports a natural 'obsolescence' of migration functionality (an additional release is not required at M15)
- Qualified Suppliers may choose to migrate MPANs co-incident with a Switch, but they do not have to if they prefer to continue to Switch Legacy MPANs using Legacy processes prior to M15.
- The programme, via the Migration Control Centre (MCC), operational function, will track overall migration performance, and the performance of each Supplier against their agreed plan.

Reverse Migration occurs from M11 to M14 milestones ...

- Reverse Migration ends when all Suppliers are Qualified at M14 milestone
- Design supports a natural 'obsolescence' of reverse migration functionality (an additional release is not required at M14)
- A Switch, initiated by an Unqualified Supplier for a MHHS MPAN will always result in a Reverse Migration between M11 and M14,

Key supporting activities :

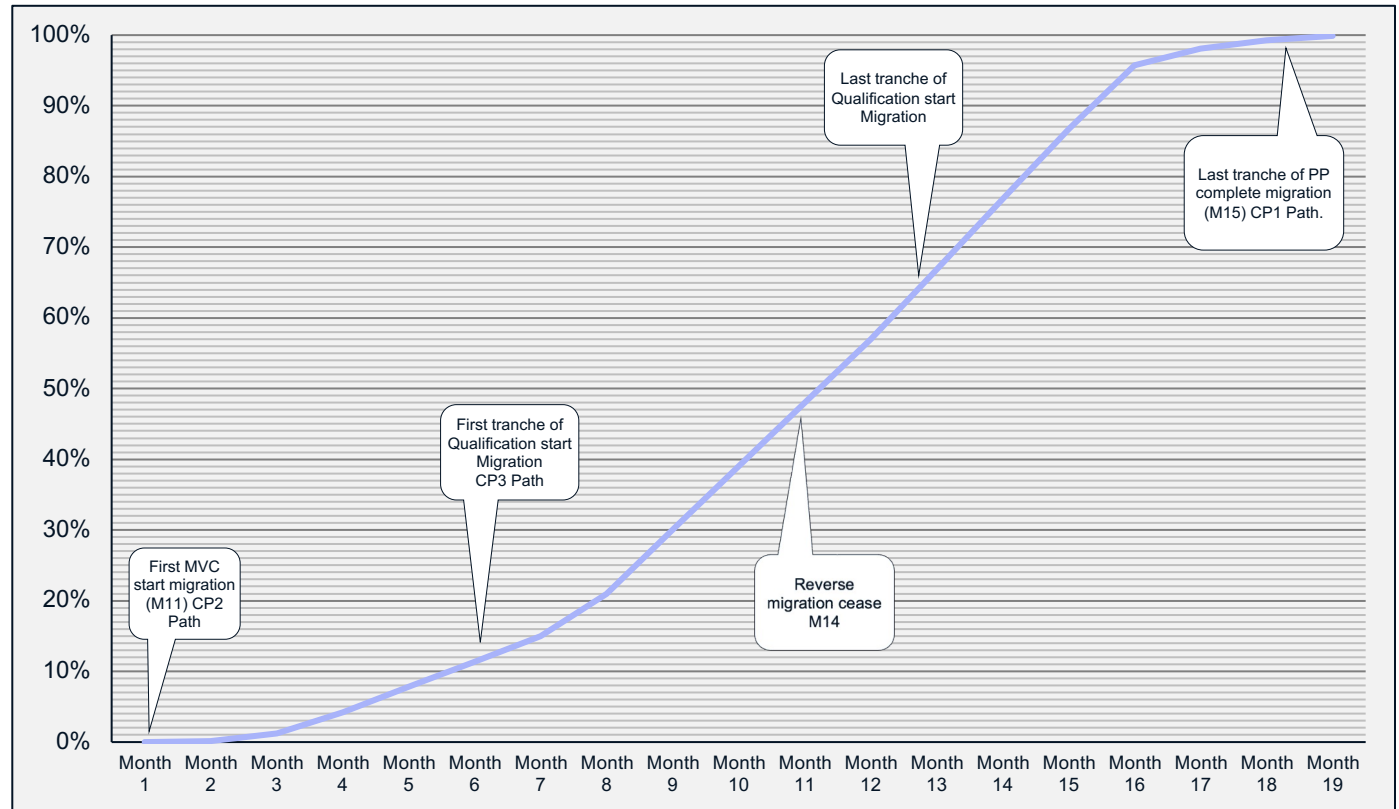
- All Legacy Parties must implement process and system changes on M11 to support forward and reverse migration
- Data Cleanse and population of data must complete by M11 to support forward migration
- Post M14 it is expected Ofgem will prevent unqualified Suppliers submitting Switch Requests to the CSS.
- Ofgem is expected to implement an incentive scheme related to Suppliers attainment of the M15 milestone.

Migration (1/2) – Current Approach and Migration Profile M11 – M15 (18 month duration)

Current Status

- The migration design was approved at the end of March 2023
- High level deployment model produced and shared with MWG.
- M10 to include service management and hypercare readines
- Migration approach modelled on three stages (see next slide :
 - 1. Ramp up.** 1-4 months - successful SIT parties commence migration of their MPANs (M11). Assuming 5m+ MPANs available from SIT. All LDSOs have qualified so no geographic restriction.
 - 2. Full scale.** 5-15 months – SIT and non SIT (qualification) parties migrate at scale. Full scale migration completes when 95% migrated.
 - 3. Ramp down.** Final 5% of MPANs migrated (M15)

Modelled MPAN Migration Profile through Migration (M11-M15)



Migration (2/2) – Modelling Assumptions and MPAN Volumes

Key Assumptions

- Total of 33m MPANs to migrate
- Potential volume of MPANs available through SIT will be verified once SIT participants agreed May 23 – assumed 5-10m (inc 1-2 large suppliers)
- Qualification will be the test path for the majority of MPANs
- Further modelling to be performed in Apr-May 23 and shared with MWG
- First supplier will pass SIT at end Jan 25, start migration on 7 Apr 25 and has 18 months to complete – supported by several R3 responses
- First supplier will qualify on 29 Sep 25 so can start migration and has 12 months to complete – deemed sufficient time for a large supplier provided they are in the first tranche
- Last supplier will qualify on 16 Mar 26 so can start migration and has 6.5 months to complete. Note - Risk that a large supplier qualifies in the last tranches and has max 6 months to migrate their MPANs

Migration Stage / Timing	Assumptions	From SIT	From Qualification Tranches 1-7
M11 – M15	MPAN volume 33m	5-10m	23-28m
First Cohort / First Qualification Tranche	Starting date (As per R3 / CR022)	7 Apr 25	30 Sep 25
Ramp Up 1-4 months	First 7.5% No geographic restriction as all DSOs qualified Peak 40k MPANS per day	2.5m	-
Full scale 5-15 months	87.5% Remaining SIT at volume All of qualification Peak 165k MPANS per day (aligns with FSP peak)	2.5-7.5m	21.35-26.35m
Ramp Down 16-18 months	Final 5% Peak 40k MPANS per day	-	1.65m
End date	End date	5 Oct 26	5 Oct 26

Service Management - Overview

A Service Management Approach and Strategy is being developed which will include:

- 1. Scope of Elexon's role within the e2e Service Management of the new arrangements:** the most efficient model needs to be determined to support the new arrangements, e.g. a federated model (each Service Provider operates their own service management tool and practices) vs a centralised model (Elexon provide a service management tool utilised by all participants and a single service management model); or a hybrid model (which would encompass elements of both approaches).
- 2. Service Management SLAs and responsibilities:** The creation of defined SLAs for Incidents, Problems, Service Requests etc.
- 3. Responsibilities of operational change management:** Processes and governance of operational change, such as planned outages.
- 4. Hypercare:** roles, responsibilities and targets for the initial period of Hypercare which will cover early operational life and the exit from Hypercare.

Participants will ...

- Require certainty as to how incidents within specific services within the e2e arrangements will be managed and resolved.
- Operate to specific SLAs related to service management activities.
- Operate specific processes and interactions between different service management functions (operating to different SLAs / Code requirements).

MHHS SI will ...

- Engage the appropriate participants to develop an approach and strategy covering the e2e service management framework.
- Engage participants via the working groups and seek approval of the approach and strategy within the Programme governance framework.
- Develop service level requirements and identify other code drafting requirements.
- Develop an approach to Hypercare, setting out the programmes assurance responsibilities and the role of individual services, including when Hypercare will commence and the exit criteria.
- Define the roles and responsibilities of the Programme and Code bodies related to service management between M10 and M16.

Elexon will ...

- Define the service management model needed for effective support during migration and new settlement roll-out
- Ensure Service Management arrangements are compliant against Code obligations
- Define service transition arrangements as old systems are decommissioned post M16 to mitigate potential outages

A number of industry Legacy and MHHS processes will need to ‘co-exist’ throughout the Migration Period, supporting designs need to be completed:

1. MHHS Design Team will define the scope of the design and capture the requirements, utilising the Migration Design Sub-working Group
2. Participants will:
 - Review and feed into the capture of requirements via the Migration Design Working Group.
 - Respond to consultation and approve the design via the Programme governance structure (the MDWG is a subgroup of DAG), planned for DAG approval in May 2023.
3. Code Drafting will document the required Transition text
4. Transition considerations will be grouped into two tranches of work as follows...

Tranche 1 – Elements that impact PP near term DBT activity

Expectation is that resulting design collateral will be a single requirements document and a single interface specification covering:

- Parallel running and GSP Group Correction
- Transitional Interfaces
- Transition approach and requirements: LLFs and UMS Charge Code and Switch Regimes

Tranche 2 – Governance and Transition to new settlement timetable

- Transition Approach and Requirements: ISD and MDD
- Transition Approach and Requirements: SVAA, SAA Calendars and Master Settlement Timetable
- Transition Approach and Requirements: ISD Originators and Authorisation Routes
- Transition to the New Settlement Timetable

Roles and Responsibilities (RACI) – Migration

Activity	SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
		CPT	PMO	PPC	SI							
Complete Migration Artefact Development and Publication	A				R	C	C	C, MWG		C	I	
Document Migration Approach	C	A	I	I	R	C	C	C, MWG		C	I	
Document Migration Design	C	A			R			C, MDSG		C	I	
Complete Data Assessment Report	C	A			R	C	C	C, MWG		C		
Document Migration, Cutover & Data Strategy (including Entry Criteria)	C	A			R	C	C	C, MWG		C	I	
Complete Migration Period Planning	C	A			R	C	C	C, MWG		C	C	
Document Migration Implementation Plan (including Exit Criteria)	C	A			R	C	C	C, MWG		C	I	
Document Migration Processes & Procedures	C	A			R	C	C	C, MWG		C	I	
Complete Migration Period Plan Review	C	A			R	C	C	C, MWG		C	C	
Complete Go-Live Dress Rehearsals	C	A			C	R, C	R, C	I, MWG		I	I	
Preparation for Cutover to Live	C	A			C	R, C	R, C	I, MWG		I	I	
Complete Migration of Advanced Segment	C	A		C	C	R, C	R, C	I, MWG		I	I	
Complete Migration of Unmetered Segment	C	A		C	C	R, C	R, C	I, MWG		I	I	
Complete Migration of Smart Segment	C	A		C	C	R, C	R, C	I, MWG		I	I	
Perform Migration Management	C	A		C	R	C	C	I, MWG		I	I	
Perform External Programme Dependency Management	C	A		C	R	C	C	I, MWG	C			
Implement BSC CP1558 changes	C	I		I	C		R	I, MWG	A	C	I	
Implement REC CP R0032 changes	C	I		I	C		R	I, MWG	A	C	I	
Implement BSC Mod P432 & REC CP R0015 changes	C	I		I	C		R	I, MWG	A	C	I	
Implement BSC Mod P434 changes	C	I		I	C		R	I, MWG	A	C	I	
Deliver DCC System Capacity Upgrade	C	C			C	A, R	R	I, MWG		I	I	
Complete Performance Assurance Arrangements	C	C			C			I, MWG	A, R	I	I	

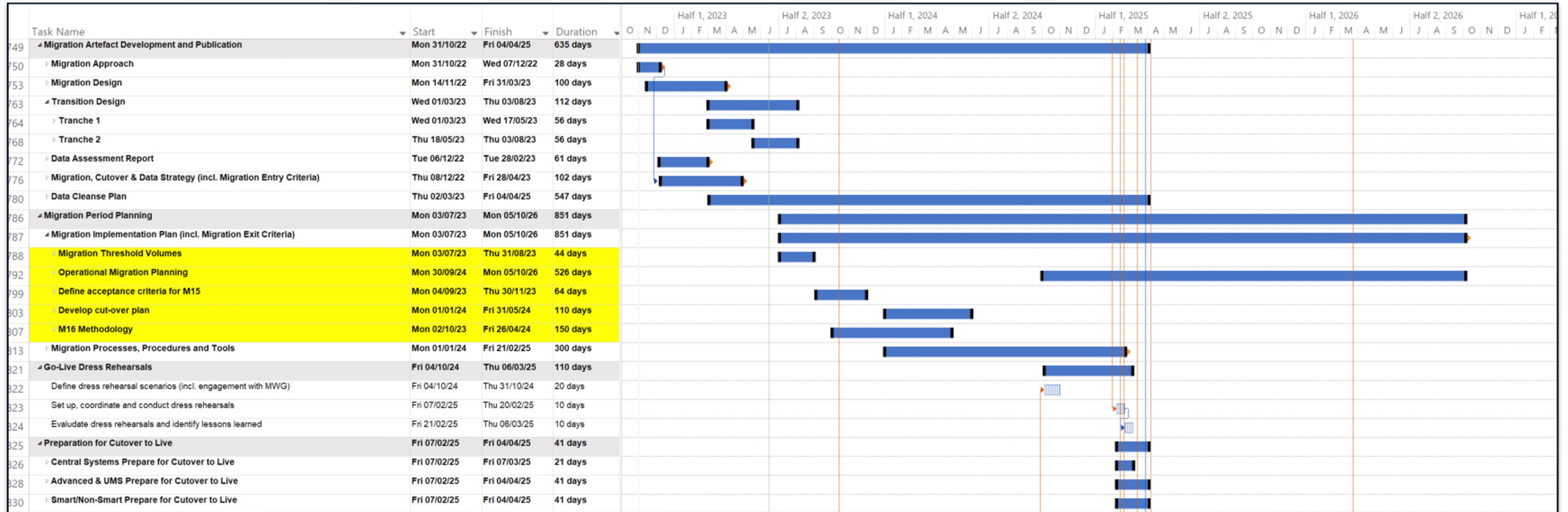
RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

Roles and Responsibilities (RACI) – Post-Live

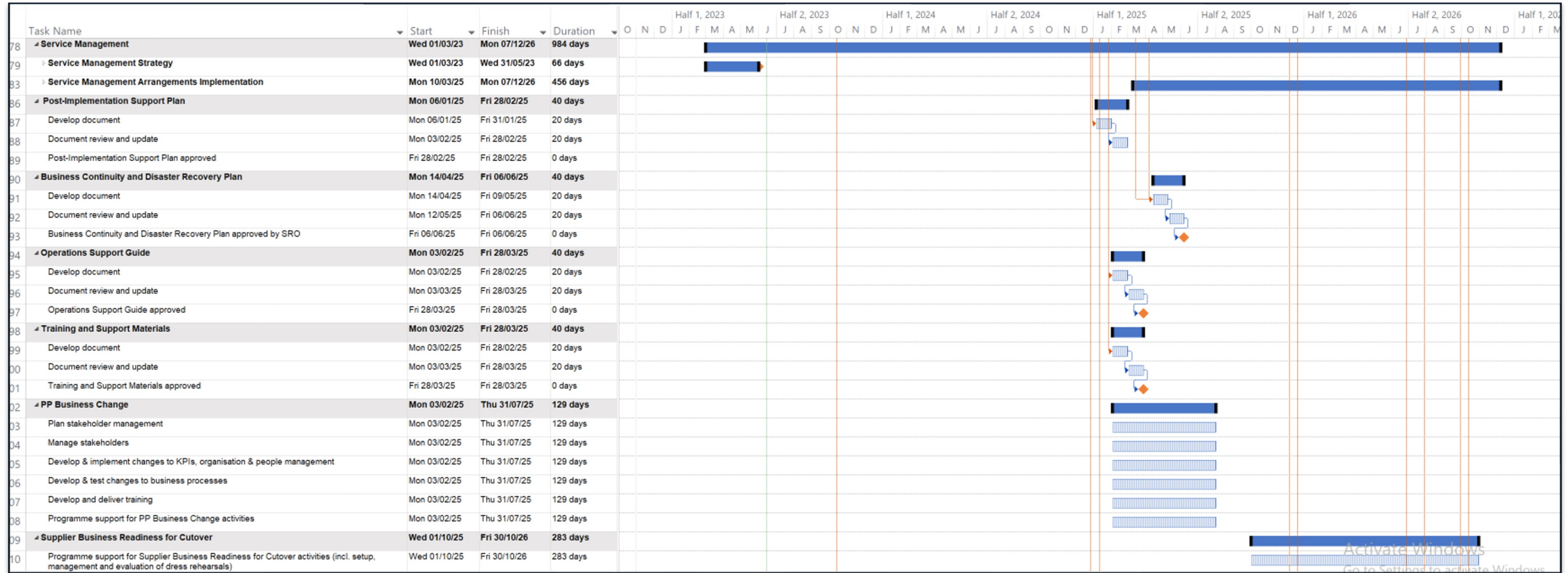
		SRO Function	LDP				Central Parties	Industry Parties	PSG or delegated to other Governance Body	Code Bodies	IPA	Sponsor (Ofgem)	Elexon Board
			CPT	PMO	PPC	SI							
Activity													
Business and Operational Readiness	Develop Service Management Strategy	C	A	I	I	R	C	C			I	I	
	Service Management Arrangements Implementation	C	C	I	I	C	A, R	A, R					
	Plan PP Business Change	I	C	I	C	C	A, R	A, R					
	Plan stakeholder management	I	C	I	C	C	A, R	A, R					
	Develop & implement changes to KPIs, organisation & people management	I	I	I	I	C	A, R	A, R					
	Develop & test changes to business processes	I	I	I	I	I	A, R	A, R					
	Develop and deliver training	I	I	I	I	I	A, R	A, R					
	Provide Programme support for PP Business Change activities	I	A	I	R	C	C	C					
	Review Supplier Business Readiness for Cutover	I	A	I	R	C	C	C					
Early Live Running	Complete Early Live Running data clean-up	I	I	I	I	I	A, R	A, R					
	Manage Early Live Running data clean-up	I	I	I	I	I	A, R	A, R					
	Monitor Early Live Running data clean-up	I	A	I	C	R	C	C					
Other	Facilitate Readiness Assessments	I	A	I	R	C	C	C					
	Prepare for Control Point (CP5)	C	A	R	C	C	C	C	I, PSG		I	I	C

RACI Key	
R	Responsible
A	Accountable
C	Consulted
I	Informed

Migration - Plan-on-a-Page (PoaP) 1 of 2



Transition Pre M10 - Plan-on-a-Page (PoAP)



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Go to Settings to activate Windows

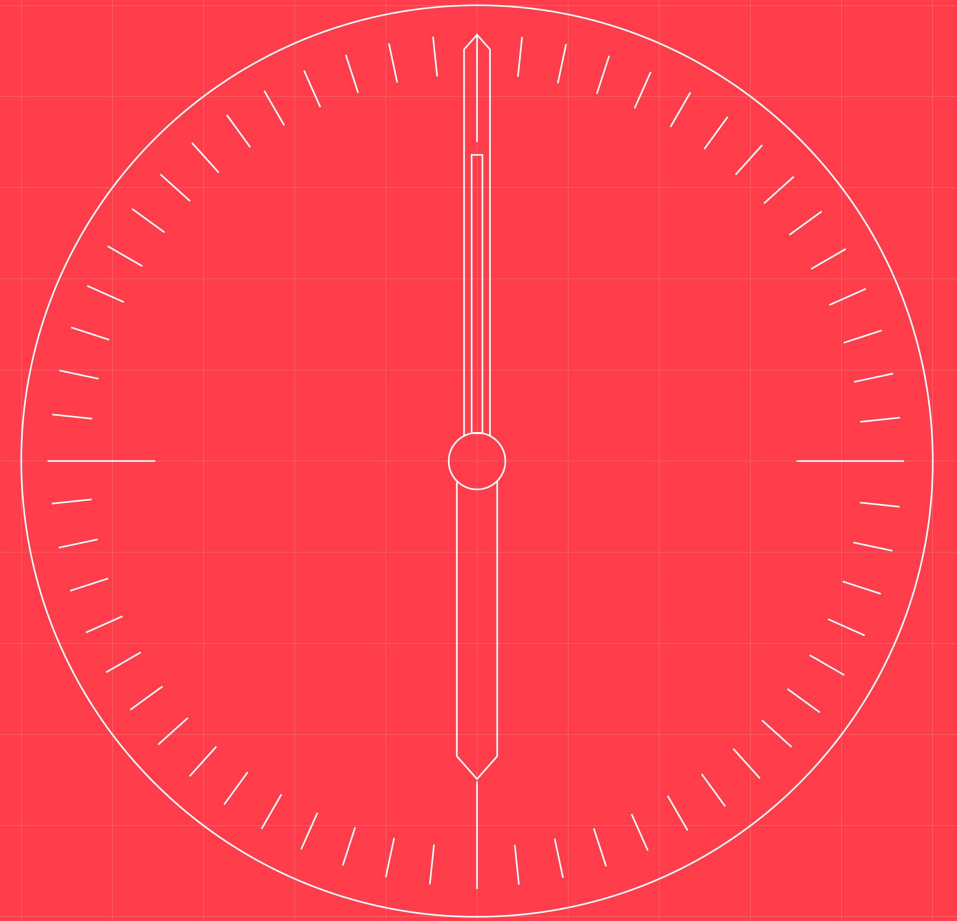
Migration and Transition - Key RAID Items

ID	Risk	Risk Rating
R131	There is a lack of clarity on roles and responsibilities around Migration preparation activities such as adding data items or data cleansing	Medium
R281	There may not be sufficient time for later-qualified participants to complete their Migration activities between M14 and M15	Medium
R332	Suppliers may require maximum amount of time to complete their DBT and subsequently qualify, resulting in backlog in final tranche	Medium
R346	The progression from the end of Migration (M15) and into the new settlement code arrangement (M16) may take longer than originally estimated (2 months)	Medium
R353	The actual volume / rate of MPANs which can be migrated does not align with the current modelling and assumptions being made by the Programme	Medium
R427	New MHHS data will not be populated prior to M10. Failure to populate the data for each MPAN will impact Migration	Medium
R488	Significant volume of export MPANs created within Programme transition timescales will impact the ability of suppliers and DNOs to deliver Programme Migration	Medium
R499	Ofgem have not defined the mechanism for managing suppliers who are unable to become qualified or for incentivising suppliers who are qualified, to support migrating their portfolios by M15	Medium

ID	Assumption	Assumption Uncertainty
A145	A mechanism will be devised to call Migration 'complete' at M15, with potential consequences for participants who have not completed Migration by that date	Medium
A146	All Core Capability Providers must be live at M11 for Migration to commence	Medium
A147	Sufficient MPANs are available from SIT Participants for the first months of Migration	Medium
A148	All LDSOs will have completed SIT and be operational at M11 for Migration to commence	Medium
A149	The volume of full-scale Migration is not constrained by system or regulatory constraints, such as existing CSS, ERDS/SMRS or Smart Metering non-functional service levels	Medium
A152	There will be service management capabilities in place for M10 – this will be defined by the Service Management Strategy, which will propose a federated model in place of a highly centralised model, based on the loosely coupled nature of the event driven architecture	Medium
A162	Elexon (Helix) will be doing most of the Transition requirements build	Medium
A164	Ofgem will define the mechanism for preventing suppliers who aren't qualified by M14 from taking on new customers	Medium
A139	There is a minimum of a 2-month lapse time between M15 and M16	Low

ID	Dependency	Manage-able?
D118	Each qualified supplier needs to contract with qualified MHHS service providers before starting migration of MPANs	Yes
D119	Agreement from Ofgem / Programme Governance on the acceptance criteria associated with M15 (e.g., 100% MPANs migrated or acceptable exceptions)	Yes
D120	DCC capacity upgrade to be in place for MHHS to be ready for Migration (M10). (This is per the instruction from Ofgem (separated from MP162))	Yes
D134	Each participant needs to have production environments connected to live services (e.g., DIP) to start Migration	Yes

Readiness Assessments, Control Points and Date Range Checkpoints



Readiness Assessments, Control Points, Range Checkpoints

Description and Purpose.

- 1. Readiness Assessments.** Readiness assessments are an essential tool in ensuring all Parties are meeting their obligations to allow the Programme to deliver on time and identifying risks and issues where readiness has not been met. Readiness assessments form part of the data-driven approach to targeting PPC support where most needed. .
- 2. Control Points.** Control Points represent significant points in the plan, where there should be an explicit decision about whether to proceed into the next major programme phase (or not). These decisions are based primarily on progress so far, extent of uncertainty (volume of change and level of risk) and suitability of the forward plan and assumptions.
- 3. Date Range Checkpoints.** CR022 sets out the introduction of data ranges across milestones M10 – M16. Three months month prior to each Tier 1 milestone falling due, MHHSP reaffirm whether the planned Tier 1 date remains on schedule and whether the planned date for the milestone will change. The checkpoints are Tier 2 milestones.

