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Paper Reference:	**SECP_78_1303_24**
Action:	**For Decision**

SEC Releases update

1. Purpose

The DCC has provided the testing approach it plans to follow for the June 2020 SEC Release, following discussion with the Testing Advisory Group (TAG), and the full costs for the release. The DCC is also requesting the implementation date for this release be brought forward to 6 May 2020. The Panel is invited to approve the testing approach for inclusion in the Release Implementation Document (RID) and agree to request a change of implementation date from the Authority.

We have also provided an update on the timelines for the remaining DCC System impacting modifications targeted for the November 2020 SEC Release. The DCC has also provided an update on the final costs of the November 2019 SEC Release. The Panel is invited to note these updates and approve the cost of an Impact Assessment for the November 2020 SEC Release combined scope.

2. June 2020 SEC Release

2.1 Scope

There are four modifications currently in scope of the June 2020 SEC Release:

Modification	Current status
SECMP0053 'Amend Target Response Times for Service Requests Critical to Installation and Commissioning Processes'	Approved for inclusion.
SECMP0062 'Northbound Application Traffic Management - Alert Storm Protection' part 1	Approved for inclusion.
MP084 'Other User Panel Seating Amendment'	The Change Board recommended this modification be rejected. This modification is currently with the Authority for decision.
MP088 'Power to raise modifications'	The Change Board recommended this modification be approved. This modification is currently with the Authority for decision.

MP079 'Provisions for withdrawing modifications' was targeted for inclusion but was rejected by the Authority on 2 March 2020.

The DCC is proposing that the SMETS1 Core 1.1 changes are implemented alongside this SEC Release. The modifications will be tested alongside SMETS1 Core 1.1 changes in the Systems Integration Testing A (SIT-A) and User Integration Testing A (UIT-A) environments. Both releases will uplift changes onto UIT-A and into Production concurrently.

The DCC had previously identified one further DCC Change Request, CR1088 'Production Proving', to implement alongside the June 2020 SEC Release. It notes it is now not possible to include this.

Further information can be found in the RID in Appendix A.

2.2 Testing approach

The DCC has discussed the testing approach for this release with the TAG and issued an industry consultation. This consultation is due to close on 9 March 2020, with the TAG expected to discuss any amendments needed on 18 March 2020. An update on the responses to the consultation will be provided by the DCC in the Panel meeting.

The version of the TAD issued for consultation is provided in Appendix B. We are asking the Panel to provisionally approve this document subject to any amendments following the TAG's discussions. The version produced following the TAG meeting will then be annexed to the RID.

2.3 Release costs

The DCC has completed an Impact Assessment on the combined scope of the June 2020 SEC Release. The costs are being confirmed by the DCC with its Service Providers, and an update on these will be circulated to the Panel ahead of the meeting.

The costs that will be provided will include only the costs being incurred by the SEC Release. The costs for the SMETS1 Core 1.1 changes have been accounted for separately, and the DCC has confirmed there is no overlap between these costs. The Panel will be requested to approve these costs.

The DCC notes it had inadvertently left out the SECMP0062 part 1 Design, Build and Pre-Integration Testing (PIT) costs from the rough order of magnitude costs presented last month. These had previously been reported as November 2019 SEC Release costs before the modification was taken out of that release. These will be included in the costs that will be provided.

2.4 Timetable and change of implementation date

Testing for the SMETS1 Middle Operating Capability (MOC) is due to be completed in June 2020, at the same time as testing for the June 2020 SEC Release is due to take place. The DCC is requesting the implementation date for the June 2020 SEC Release be brought forward from 25 June 2020 to 6 May 2020.

We are consulting with Parties over whether bringing this date forward would have any impact on them. We will update the Panel on the responses received in the meeting.

In order to change the implementation date, the Panel will need to write to the Authority, in accordance with SEC Section D10.5. The Authority will then be required to approve the request.

We believe it would be prudent if the Panel also requested the power to be able to further amend the implementation date to no later than 31 May 2020 without needing to write to the Authority. This

would improve efficiency should there be a small delay to the implementation of the DCC System changes.

The timetable for this release based on an implementation date of 6 May 2020 can be found in Appendix A. We highlight that this will require an ad-hoc Panel meeting on Tuesday 5 May 2020 to provide final approval to implement the release.

2.5 Next steps

If the Panel agrees, we will write to the Authority to request the change of implementation date and will inform the industry of this. We will also update the RID and publish this on the website, along with the approved TAD following the TAG's discussions. The DCC will also commence testing for this release.

3. November 2020 SEC Release

3.1 Scope

There are four modifications currently in scope of the November 2020 SEC Release:

Modification	Current status
SECMP0062 'Northbound Application Traffic Management - Alert Storm Protection' part 2	Approved for inclusion.
SECMP0067 'Service Request Traffic Management'	This modification is currently undergoing the DCC Impact Assessment, which is the final step in the Refinement Process. We are currently expecting this to be returned on 11 March 2020. The Working Group has asked to review the Impact Assessment and Modification Report prior to it being issued to the Panel; we are working to convene an ad-hoc meeting for this. We are currently expecting the Modification Report to be ready to be presented to the Panel before the end of March 2020. In order to accelerate the decision, we will request the Panel approves the Modification Report by correspondence before issuing a shortened five Working Day consultation. We will also ask the Change Board to perform the final vote, potentially at an ad-hoc meeting, as soon as possible following the end of the consultation. This modification is then expected to require Authority determination.
MP081 'Alignment of DUIS and CHISM to reflect current DCC Processing'	Approved for inclusion.
MP093 'Implementing IRP511 and CRP535 to support GBCS v3.2 devices'	The Refinement Consultation will close on 6 March 2020. The DCC Impact Assessment has been requested, although we do not currently have an expected due date. Once this

Modification	Current status
	has been completed, the Modification Report will be ready to be presented to the Panel. In order to accelerate the decision, we will request the Panel approves the Modification Report by correspondence before issuing a shortened five Working Day consultation. We will also ask the Change Board to perform the final vote under Self-Governance by correspondence as soon as possible following the end of the consultation.

Four DCC BEIS Mandated Change Requests are also expected to be implemented alongside this SEC Release:

- CR1045 'All SMETS1 IHDs to be capable of firmware update (SMETS1)'
- CR1145 'Auxiliary Proportional Control'
- CR1254 'CSP Changes to Support Proportional Load Control'
- CR1277 'Completion of CR1164 Change to Install Code Length in 8.11 (SMETS1)'

The Panel will be asked to re-baseline the RID in May 2020 to include any further non-DCC System impacting modifications targeted for the release.

3.2 Testing approach and timeline

The DCC is beginning preparation of its TAD for this release, in collaboration with the TAG. We do not have a firm date for when this will be approved. The timeline for testing and approval for this release will be agreed as part of this, and the RID will be updated accordingly. At this stage, we do not anticipate that any ad-hoc meetings will be required.

3.3 Release costs

The DCC has completed a Preliminary Assessment for the combined scope of the November 2020 SEC Release and the DCC Change Requests outlined in Section 3.1 above. The rough order of magnitude costs to implement this release are shown below:

Stage	Cost
Design, Build and Pre-Integration Testing (PIT)	£6,800,000
Systems Integration Testing (SIT)	
User Integration Testing (UIT)	
Implement to Live	
Contingency (25%)	£1,700,000
Total	**£8,500,000**

The DCC will need to complete a DCC Impact Assessment to obtain the full costs. This will cost £100,000 to complete. The Panel is asked to approve this cost.

3.4 Next steps

We and the DCC will now work to confirm the final scope of this release on the DCC Systems. The DCC will also proceed to complete a full Impact Assessment, with the full costs being presented at the May 2020 Panel meeting.

4. Update on the November 2019 SEC Release costs

The DCC has provided a letter laying out the actual costs of the November 2019 SEC Release, as required by the SEC Release Management Policy. This can be found in Appendix C.

5. Recommendations

The Panel is requested to:

- **CONDITIONALLY APPROVE** the June 2020 SEC Release Testing Approach Document subject to any amendments made by the Testing Advisory Group, and incorporate this into the Release Implementation Document;
- **APPROVE** the total cost of the June 2020 SEC Release;
- **AGREE** to request a revised implementation date for the June 2020 SEC Release of 6 May 2020 with the power to further amend this to no later than 31 May 2020 without needing further Authority approval;
- **APPROVE** the cost to complete a DCC Impact Assessment for the November 2020 SEC Release; and
- **NOTE** the DCC's update on the actual costs of the November 2019 SEC Release.

David Kemp

SECAS Team

6 March 2020

Attachments:

- **Appendix A:** June 2020 SEC Release Implementation Document v3.1
- **Appendix B:** June 2020 SEC Release Testing Approach Document v0.4
- **Appendix C:** DCC letter regarding actual costs of the November 2019 SEC Release (**RED**)

SEC
Smart Energy Code

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Smart Energy Code

June 2020 SEC Release
(25 June 2020)

SEC Release Implementation Document

Version 3.1

About this document

This document is a Smart Energy Code (SEC) Release Implementation Document (RID). It summarises the scope of the SEC Release, the impacts it will have, the timeline and testing strategy, the central costs that will be incurred, and the acceptance criteria for this release.

This document will be updated periodically as the release develops.

Contents

1. Scope 3
2. Impacts 4
3. Implementation timeline 6
4. Test strategy 8
5. Costs 9
6. Acceptance criteria 10

Appendix 1: Version control 12

Appendix 2: Glossary 13

This document also has one annex:

- **Annex A** will contain the Data Communication Company's (DCC's) SEC Release Testing Approach Document (TAD) for this release – this document will be produced by the DCC at a later date.

1. Scope

Approved Modification Proposals

The following Modification Proposals have been approved for inclusion in this release:

- SECMP0053 'Amend Target Response Times for Service Requests Critical to Installation and Commissioning Processes' will reduce the Target Response Times for time-critical Service Requests relating to the installation and commissioning process.
- SECMP0062 'Northbound Application Traffic Management – Alert Storm Protection' will put in place a traffic management system for Alerts issued by Devices to protect the DCC System and Service Users against alert storms originating from a single Device. SECMP0062 is being implemented in two parts, with the first part of the solution, the mechanism for consolidating Alerts, being implemented in this release. The second stage of the solution will be implemented in the November 2020 SEC Release and will cover the changes to allow Users to be notified of consolidated Alerts via the metadata in the Alerts that are received.

Targeted Modification Proposals

The following Modification Proposals will be included in this release if a decision to approve is received by the respective cut-off dates:

- MP084 'Other User Panel Seating Amendment' proposes to create a seat on the SEC Panel to ensure representation from the Other Users sub-set of the Other SEC Parties category.
    - The Proposed Solution is to require one of the existing Other SEC Party seats to be filled by an Other User representative.
    - The Alternative Solution is to create a new seat on the Panel specifically for Other Users.
- MP088 'Power to raise modifications' proposes to expand the list of Parties that can raise Draft Proposals to include SECAS, the SEC Panel and Sub-Committees.

No further modifications that impact on DCC Systems are expected to be added. Further modifications that do not impact on DCC Systems may be added as exceptions to the scope of this release, subject to Panel approval.

DCC Change Requests

No DCC Change Requests will be implemented alongside this SEC Release.

Concurrent implementation with SMETS1 Core 1.1

The June 2020 SEC Release will be tested alongside the Smart Metering Equipment Technical Specifications (SMETS) 1 Core 1.1 changes. Both releases will uplift changes onto the test environments and into Production concurrently. The Core 1.1 changes do not form part of this SEC Release, and so this RID does not cover the details of the impacts these will have.

2. Impacts

This section lists the impacts that the changes included in this SEC Release will have on participants and their systems, SEC documents and other industry codes. This section assumes all targeted modifications will be approved for inclusion in this release.

SEC Party and DCC impacts

Participant impact matrix					
Modification	**Suppliers**	**Electricity Networks**	**Gas Networks**	**Other SEC Parties**	**DCC**
SECMP0053	✓				✓
SECMP0062	✓	✓	✓	✓	✓
MP084				✓	
MP088					

The impacts on the different participants are summarised below. The business requirements for each Modification Proposal are annexed to the Modification Reports for each modification, which are available on the corresponding modifications' webpages.

SEC Party impacts	
Participant	**Summary of impacts**
Supplier Parties	• Suppliers will receive a response to Service Requests 6.14.1 'Update Device Configuration (Auxiliary Load Control Description)', 6.14.2 'Update Device Configuration (Auxiliary Load Control Scheduler)' and 7.9 'Add Auxiliary Load to Boost Button' within 30 seconds, rather than 24 hours. • Suppliers may be subject to the consolidation of Alerts from Devices that exceed defined thresholds.
Electricity Network Parties	• Electricity Network Parties may be subject to the consolidation of Alerts from Devices that exceed defined thresholds.
Gas Network Parties	• Gas Network Parties may be subject to the consolidation of Alerts from Devices that exceed defined thresholds.
Other SEC Parties	• Parties may be subject to the consolidation of Alerts from Devices that exceed defined thresholds. • Other Users will have a seat on the Panel to be filled by a representative for this sub-group of Other SEC Parties.

DCC impacts	
Area impacted	**Summary of impacts**
Communications Service Providers	• The Communications Service Providers will need to ensure that a response to Service Requests 6.14.1, 6.14.2 and 7.9 are received by the User within 30 seconds.
Data Service Provider	• The Data Service Provider will consolidate Alerts issued by Devices when the number of a specific Alert exceeds the set thresholds.

SEC document impacts

The following documents will be updated in this release:

- Section A 'Definitions and Interpretation'
- Section C 'Governance'
- Section D 'Modification Process'
- Section G 'Security'
- Section H 'DCC Services'
- Section L 'Smart Metering Key Infrastructure and DCC Key Infrastructure'
- Appendix E 'DCC User Interface Services Schedule'
- Appendix AB 'Service Request Processing Document'
- Appendix AH 'Self Service Interface Access Control Specification'

Each of these documents is impacted by the following modification(s):

SEC document impact matrix				
Document	**SECMP0053**	**SECMP0062**	**MP084**	**MP088**
Section A		✓		
Section C			✓	
Section D				✓
Section G				✓
Section H		✓		
Section L				✓
Appendix E	✓			
Appendix AB		✓		
Appendix AH		✓		

The approved changes to each document are annexed to the Modification Reports for each modification, which are available on the corresponding modifications' webpages.

Other Code impacts

No other Codes are impacted as a result of this SEC Release.

3. Implementation timeline

This section lists the planned timeline for the implementation of this release.

This timeline includes the dates on which decisions on modifications are anticipated, dates for when the System Integration Testing (SIT) and User Integration Testing (UIT) test phases are planned to commence and complete, and key governance steps for the Panel, the Testing Advisory Group (TAG) and the Operations Group to complete.

The DCC has requested the implementation date be brought forward to 6 May 2020, to allow this release to be implemented prior to testing for the Middle Operating Capability (MOC). The dates below are based on this revised date, but this is dependent on the Authority first approving a change of implementation date for this release.

Release implementation timetable		
Date	**Event**	**Notes**
11 Oct 19	Panel baselines RID for system-impacting modifications	The Panel will review the RID for DCC System-impacting modifications (including modifications targeted but not approved) and baseline the document.
17 Jan 20	Panel baselines RID for non-system-impacting modifications	The Panel will review the RID for non-DCC System-impacting modifications (including modifications targeted but not approved) and re-baseline the document to include these.
17 Feb 20 – 09 Mar 20	DCC consults on draft SEC Release TAD	The DCC will consult the industry on the draft TAD.
12 Mar 20	DCC submits updated SEC Release TAD	The TAD will be updated to account for comments provided by the TAG and from the consultation.
13 Mar 20	Panel reviews plan and costs	The Panel will review the plan and costs and will be asked to give conditional approval.
18 Mar 20	TAG reviews updated SEC Release TAD	The TAG will provide a view to the Panel on whether this document is suitable for use.
18 Mar 20	DCC publishes design specifications	
19 Mar 20	SIT commences	
07 Apr 20	Operations Group reviews provisional status against the operational acceptance criteria	
14 Apr 20	Test Participants inform DCC of their regression testing plans	
20 Apr 20	DCC submits evidence against the operational acceptance criteria	
22 Apr 20	DCC submits SIT Completion Report and evidence against the testing acceptance criteria	
27 Apr 20	UIT commences	

Release implementation timetable		
Date	**Event**	**Notes**
27 Apr 20	Operations Group reviews status against the operational acceptance criteria	The Operations Group will provide a recommendation to the Panel on whether the release should be implemented as planned.
29 Apr 20	TAG reviews SIT Completion Report, UIT Completion Report and status against the testing acceptance criteria	The TAG will provide a recommendation to the Panel on whether testing has been completed successfully and on whether the release should be implemented as planned.
29 Apr 20	Test Participants provide regression testing results to DCC	
01 May 20	UIT window closes	
05 May 20	Panel go/no-go decision	The Panel will review the status of the release against the acceptance criteria and will determine if the release should be implemented as planned.
06 May 20	Release go-live	The changes are implemented.

4. Test strategy

This section covers the testing approach that will be taken by the DCC as part of the implementation of this release.

DCC's testing approach

The DCC's SEC Release Testing Approach Document will be provided as Annex A to this document in due course. This will cover the DCC's approach to SIT.

User testing approach

The DCC's SEC Release Testing Approach Document will be provided as Annex A to this document in due course. This will cover the DCC's approach to UIT.

5. Costs

This section summarises the costs that will be incurred by the DCC and the Smart Energy Code Administrator and Secretariat (SECAS) in implementing this release.

DCC costs

The total DCC implementation costs of this release are currently quoted as £1,120,042.

The DCC has provided the following cost breakdown for each DCC System impacting modification in this release:

Breakdown of DCC implementation costs				
Modification	**Design, Build & PIT**	**SIT**	**UIT**	**Implement to live**
SECMP0053	£53,572	£26,639	£5,929	£5,510
SECMP0062	£964,346	£96,995	£9,359	£17,692

No impact on operational costs have been identified.

The DCC provided the standalone costs for SIT, UIT and Implement to Live for each modification as part of the DCC Impact Assessment. Now that the scope of the release is confirmed the DCC is completing a combined DCC Impact Assessment providing a combined estimated cost for each of these stages when the modifications and the DCC Change Requests are delivered as a single package.

SECAS costs

SECAS will incur two days effort, equating to around £1,200, to update and implement the changes to the SEC. SECAS estimates a maximum of 20 days of effort, equating to around £12,000, will be needed for project management of the release. This cost has already been accounted for in the SECAS budget, and so Parties will not incur any additional costs.

6. Acceptance criteria

The following criteria will need to be met before the release can go live.

Prior to go-live, the Operations Group and the TAG will review the status of the release against these criteria. They will provide a recommendation to the Panel on whether to implement the release as planned. The Panel will review these recommendations and will determine then if the release should or shouldn't be implemented as planned.

Operational acceptance criteria

1. The DCC has brought to readiness all the new and changed components needed to provide the new services. This will include completing the service design and proving the service operations capability.
2. The DCC has demonstrated that all pre-existing services will be stable in the run-up to deployment of the release.
3. The DCC has proven that the new services can be operated alongside, and integrated with, the existing services.
4. The DCC has assessed the risk posed by existing problems and defects in the existing live service, and the implications these will have for the revised service.
5. The DCC has assessed and addressed the impact on Users arising from any issues, defects or workarounds within the new services.
6. The DCC has demonstrated that lessons learnt from previous SEC Releases and other DCC changes have been taken on board.
7. The DCC has demonstrated there will be no detrimental impact on consumers' experience.
8. The DCC has completed assurance of the Business Continuity and Disaster Recovery processes.
9. SECAS will be ready to implement the approved changes to the SEC on the agreed implementation date.
10. SECAS has brought to readiness all the new and changed components that it is responsible for that are needed to support the new services.

Testing acceptance criteria

1. The DCC has developed the coding for each approved change and confirmed it will be able to deploy this to the production environment on the agreed implementation date.
2. The DCC has completed and closed each test phase against the agreed exit criteria specified in the TAD.
3. The DCC has successfully completed regression testing.
4. The DCC has allowed adequate opportunity for Users to test the changes prior to deployment.

5. The DCC has confirmed that there are no Severity 1 or 2 defects outstanding that would be deployed to the live environment.
6. The DCC has produced a clear resolution plan for any outstanding Severity 3, 4 or 5 defects and that the number of remaining testing issues is within the agreed threshold figures specified in the TAD.
7. The DCC has demonstrated that the SIT and UIT test environments were aligned to the solution being deployed to the production environment; if there were any differences, these were identified and the risks these posed demonstrably managed.

Appendix 1: Version control

Document history		
Version	**Date**	**Changes**
0.1	09 May 19	First draft issued to the Technical Architecture and Business Architecture Sub-Committee (TABASC), the Operations Group and SEC Parties for comment.
0.2	12 Sep 19	Updated draft issued to the TABASC, the Operations Group and SEC Parties for comment.
0.3	04 Oct 19	Updated draft following comments from the TABASC and the Operations Group presented to Panel to be baselined.
1.0	11 Oct 19	Version baselined by the Panel to cover the proposed scope of the release on the DCC Systems.
1.1	10 Jan 20	Updated draft presented to Panel to be baselined.
2.0	20 Jan 20	Version baselined by the Panel to cover the proposed scope of the release on the SEC documentation and the revised acceptance criteria.
3.0	25 Feb 20	Updated for the approval of SECMP0062.
3.1	06 Mar 20	Updated draft presented to the Panel to include updated costs and timelines for approval and for the rejection of MP079.

Appendix 2: Glossary

This table lists all the acronyms used in this document and the full term they are an abbreviation for.

Glossary	
Acronym	**Full term**
DCC	Data Communications Company
MOC	Middle Operating Capability
PIT	Pre-Integration Testing
RID	Release Implementation Document
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SIT	System Integration Testing
SMETS	Smart Metering Equipment Technical Specifications
TABASC	Technical Architecture and Business Architecture Sub-Committee
TAD	Testing Approach Document
TAG	Testing Advisory Group
UIT	User Integration Testing

SEC
Smart Energy Code

Smart Energy Code

Smart Energy Code Administrator and Secretariat (SECAS)

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Testing Approach Document for June 2020 Release

Version:	**V0.4**
Date:	**24 February 2020**
Author:	**DCC**
Classification:	**DCC Public**

Document Control

Revision Date	Summary of Changes	Changes Marked	Version Number
27/11/19	Initial Draft	n/a	0.1
28/01/20	Updates Draft with details of change candidates	n/a	0.2
11/02/20	Updates following initial review with project team	n/a	0.3
21/02/20	Update to Scope and Update to the Governance Timelines and Plan on a Page	Yes	0.4

References

Table 1 – References

Ref	Title	Source	Date	Version
1	Glossary of Testing Terms	ISTQB	Mar 2016	3.1
2	Joint Test Strategy	DCC	Apr 2015	3.5
3	Testing Issue Resolution Process	DCC	Feb 2019	1.5
4	June 2020 Release Implementation Document	SECAS	TBC	TBC

Where this document references sections of the Smart Energy Code (SEC), those references shall be construed by reference to any intended future variations to those Sections (and the SEC Subsidiary Documents associated with those Sections) which are due to take effect at June 2020 Release Go Live.

Abbreviations & Acronyms

This document uses standard testing terminology. In addition, the meanings of abbreviations and acronyms specific to the Smart Energy Code and DCC services and systems are shown below.

This document uses standard testing terminology, a glossary of which can be found on the International Software Testing Qualification Board website www.istqb.org

Table 2 - Abbreviations & Acronyms

Abbreviation	Meaning
CH	Communications Hub
CHF	Communications Hub Function
CHTS	Communications Hub Technical Specification
CPA	Commercial Product Assurance
CPL	Central Products List
CR	Change Request
CRP	Change Resolution Proposal
CSP	Communications Service Provider
CSW	Critical Software (the Parse and Correlation Service Provider)
CTSD	Common Test Scenarios Document – Appendix R of the SEC
DCC	Data Communications Company
DSP	Data Service Provider
DUIS	DCC User Interface Specification
ESME	Electricity Smart Metering Equipment
ETAD	Enduring Test Approach Document – Appendix J of the SEC
FAT	Factory Acceptance Testing
FOC	Final Operating Capability
GBCS	Great Britain Companion Specification
GPF	Gas Proxy Function
GSME	Gas Smart Metering Equipment
HAN	Home Area Network
HCALCS	HAN Connected Auxiliary Load Control Switch
IOC	Initial Operating Capability
IRP	Issue Resolution Proposal
MMC	Message Mapping Catalogue
MOC	Middle Operating Capability

Abbreviation	Meaning
PIT	Pre-Integration Testing
PPMID	Pre-Payment Meter Interface Device
RDP	Registration Data Provider
SBCH	Single Band Comms Hub
SEC	Smart Energy Code (The Code)
SECAS	Smart Energy Code Administrator and Secretariat
SECMP	Smart Energy Code Modification Proposal
SI	System Integrator
SIT	Systems Integration Testing
SMETS	Smart Metering Equipment Technical Specifications
SMKI	Smart Meter Key Infrastructure
SM WAN	Smart Metering Wide Area Network
SP	DCC Service Provider
SP UAT	Service Provider User Acceptance Testing
SRV	Service Request Variant
TAB	DCC's Test Assurance Board
TAD	Testing Approach Document
TAG	SEC Panel's Testing Advisory Group
TTM	Test Traceability Matrix
TTO	Transition to Operations
UIT	User Integration Testing

Glossary

Table 3 defines only terms that are specifically not defined in Table 2.

Table 3 - Glossary

Term	Meaning
Communications Hubs	means a physical device that includes a Communications Hub Function together with a Gas Proxy Function
DCC Meter Protocol Emulators	Testing Stubs developed by DCC to emulate the functional aspects of smart metering Devices
Devices	means one of the following individual devices: (a) an Electricity Smart Meter; (b) a Gas Smart Meter; (c) a Communications Hub Function; (d) a Gas Proxy Function; (e) a Pre-Payment Meter Interface Device; (f) a HAN Connected Auxiliary Load Control Switch; and (g) any Type 2 Device.
Go Live	Deployment date of a change in production
Modified DCC System	Means the DCC System as modified in order to meet (or to be designed to meet) the DCC's obligations under the Code at the June 2020 Release Go Live, together with the Communications Hubs that form part of Enrolled Smart Metering Systems.
MM2	Meter Manufacturer 2 (related to Release 2.0 meter testing)
User	means a Party that has completed the User Entry Process (and, in respect of Services available in accordance with this Code to Users acting only in one or more User Roles, a Party that has completed the User Entry Process for that User Role).
Test Stubs	means Systems and actions which simulate the behaviour of Devices and User Systems

Approval of this Approach Document

DCC will submit the SEC Release Testing Approach Document for the June 2020 Release (this document) to the SEC Panel for review in accordance with D10.20 of the SEC.

Changes forecast for this Approach Document

At the time of producing this Test Approach Document, the exact scope of this release has yet to be determined. For the purposes of drafting this document, all pending changes targeted for this release have been included in assessing the test approach. Following the scope being finalised, this Test Approach Document will be reviewed and, where the changes are material, the content may be revised.

Table of Contents

1 Introduction 8
1.1 General 8
1.2 Approval of this Document 8
1.3 Revision of this Document 9

2 Scope 10
2.1 Documents for June 2020 Release 10
2.2 Joint Testing Strategy and other DCC Testing Approach Documents 11

3 Governance Approach 12

4 Objectives of Testing 13
4.1 Testing Objectives 13

5 Testing Approach 15
5.1 High Level Plan 15
5.2 Description of Test Phases 16
5.3 Delivery of Test Phases and Stages 18

6 Test Phase Activity Description 19
6.1 Requirements & Focus Areas for Pre-Integration Testing 19
6.2 Requirements & Focus Areas for Systems Integration Testing 19
6.2.1 Solution Testing in SIT 20
6.2.2 Service Provider User Acceptance Testing in SIT 20
6.3 Requirements & Focus Areas for User Integration Testing 21
6.4 Requirements and Focus Areas for Transition to Operations Testing 22

7 Test Activities 23
7.1 Test Method 24
7.2 Test Scenarios 24
7.3 Regression Testing 25

8 Deliverables 27
8.1 By Test Phase 27
8.2 Requirements Traceability 28

9 Test Procedure 30
9.1 Generic Entry and Exit Criteria 30
9.1.1 Generic Entry Criteria 30
9.1.2 Generic Exit Criteria 31
9.2 Specific Entry and Exit Criteria for Test Phases 31
9.2.1 Entry into SIT 31
9.2.2 Exit from SIT 31
9.2.3 Entry into UIT 32
9.3 Acceptance Process Following SIT Completion 32
9.4 Test Phase Success Criteria 32
9.5 Testing Issues Threshold 33
9.6 Work Off Plans 34

10 Test Result Management & Reporting 35
10.1 Tracking & Reporting 35
10.2 SIT Completion Reports 35

11 Acceptance and Test Assurance 36

11.1 Service Provider Self Assurance 36
11.2 Test Assurance by DCC 36
11.2.1 Quality Gating and the Test Assurance Board 36
11.2.2 Test Witnessing 37
11.2.3 Test Observation 37

12 Testing Issue Management 38

13 Test Resources 38
13.1 DCC 38
13.2 Test Stubs 38
13.3 Test Laboratories 39

14 Roles and Responsibilities 40
14.1 DCC Systems Integrator 40
14.2 DCC Service Providers 40
14.3 DCC 41

15 Environments 42
15.1 Code Management 42

1 Introduction

1.1 General

This is a Testing Approach document to cover the pending changes that are proposed for implementation in the June 2020 Release. This approach works in conjunction with the SEC Release Implementation Document for the June 2020 release, in accordance with Section D of the SEC.

The June 2020 Release includes 2 SEC modifications and 1 additional elements of scope added by DCC, which are DSP changes only or which do not impact DCC systems e.g. documentation only changes. The changes delivered in the June 2020 release are outlined in the Scope section of this document.

This document sets out the information required of the SEC Release Testing Approach Document, Section D10.18-D10.20 of the SEC, including the manner in which testing will be conducted by DCC for the June 2020 Release.

1.2 Approval of this Document

NB: Sections 1.2 and 1.3 confirm the SEC Panel as the authorising authority for this document and any subsequent material changes to it. Should delegated authority be given to the Panel's Test Assurance Group (TAG), these sections will be amended.

This document:

- Shall be produced by DCC and a draft provided to the Panel's TAG for their review
- In parallel the draft document shall also be issued to SEC Parties for consultation. SEC Parties will have 10 working days to review and provide feedback via the DCC website. The link to this will also be provided on the SECAS website; DCC shall consider the feedback from these consultations and, where appropriate, will revise the draft document
- The revised draft shall be presented to the Panel's TAG for recommendation to the SEC Panel
- The SEC Panel shall consider the views of the TAG and shall either:
    - Approve the Test Approach Document

    Or,

    - Reject the Test Approach Document and specify to the DCC the areas requiring further work

1.3 Revision of this Document

Following approval of this document it:

- Shall be revised by DCC in accordance with any direction to do so made by the SEC Panel
- May be revised by DCC following consultation with the Panel's TAG and, the Panel, provided that:
  - Prior to making any such revision, DCC must present to the SEC Panel a summary of the views of the Panel's TAG and an explanation of how the DCC has taken them into account
  - The document may not be revised to the extent that the SEC Panel directs otherwise
- It may be revised by DCC without consultation where the revision is of a minor typographical nature, or where the revision does not have any material effect on the rights or obligations of SEC Parties or any other person who is entitled to undertake testing in accordance with this document.

2 Scope

The June 2020 Release will modify the DCC System to accommodate the changes detailed in Table 4.

Table 4 Testing Scope for June 2020 Release

CR #	SEC Modification #	CRP/IRP#	Implementing Parties	Description
CR1084	SECMP0053	N/A	DSP	Amend Target Response Times for Service Requests Critical to Installation and Commissioning Processes
CR1066	SECMP0062	N/A	DSP	Northbound Application Traffic Management - Alert Storm Protection

2.1 Documents for June 2020 Release

Table 5 lists the links to the SEC modification documents that were used to create this test approach document for the June 2020 Release. All non-SEC modification (additional CRs) documentation is stored within the DCC change management tool. These have been considered, but no link is available.

Table 5 Referenced Documents for June 2020 Release

SEC modification link	Number
https://smartenergycodecompany.co.uk/modifications/amend-target-response-times-for-service-requests-critical-to-installation-and-commissioning-processes/	SECMP0053
https://smartenergycodecompany.co.uk/modifications/northbound-application-traffic-management-alert-storm-protection/	SECMP0062

2.2 Joint Testing Strategy and other DCC Testing Approach Documents

Where relevant, or where there is an apparent conflict with the Joint Testing Strategy and, this Testing Approach Document for June 20 and any related Solution Test Plans developed for this Release will take precedence.

Out of Scope

The following assurance activities are outside the scope of the testing approach for the June 2020 Release:

i. Testing of firmware for Meters and Other Devices (individual manufacturers are responsible for this activity)

ii. DCC is not responsible for proving Devices are compliant with SMETS2 requirements

iii. Testing the inter-changeability of Devices connected to the Home Area Network

iv. Local Command Delivery testing as there is no pertinent device or GBCS changes

3 Governance Approach

The June ’20 SEC Release are proposing to deliver via a ‘Minor Release’ approach and as such have requested a more flexible governance approach.

Proposal for governance is as follows:

PIT will follow the standard governance approach and will move through a PIT Exit TAB for approval to move into SIT.

Capacity testing will follow the standard governance approach and will move through a Capacity testing Exit TAB.

SIT Exit proposed governance is as follows:

- SIT Exit TCR Submitted to TAB and TAG – 21 April 2020 (6 W/D paper day)
- SIT Exit TAB Approval – 24 April 2020 (3 W/D paper day)
- SIT Exit TAG Approval – 29 April 2020 (TAG 66)
- SEC Panel Approval - 05 May 2020 (Extra ordinary SEC Panel request)
- Go Live – 05 May 2020

This timeline has been proposed to maximise the time available for TAG members to review SIT Completion Reports which is proposed as 5 working days.

TAB for SIT completion is proposed for 24 April 20

There is an assumption that results from the SIT Exit TAB will be taken to TAG on 29 April providing that actions from TAB are minor and would not require further testing and further reviews by TAG members.

If any major actions are raised at TAB which require additional work and reviews with TAG members, then this would result in the June ’20 SEC Release would not proceed, and changes would be backed out from/switch off in the SIT-A environment and changes will not be uplifted to UIT-A

4 Objectives of Testing

4.1 Testing Objectives

The following testing objectives shall apply:

i) Demonstrate that the changes brought into the DCC System by the in-scope items conform to the requirements and do not have any adverse impact on the DCC System

ii) Demonstrate that DCC and the component parts of the Modified DCC System and GBCS technical specifications operate and interoperate with each other, and with User Systems and to the extent necessary that DCC can comply with its obligations for Security and DCC Services

iii) Enable (to the extent that it is reasonably practicable to do so for the June 2020 Release Go Live):

   i. Users to test the interoperability of their User Systems with the Modified DCC System together with selected versions of SMETS1 and SMETS2 devices on the CPL

   ii. Demonstrate that Users can continue to successfully install and commission and operate a number of devices in CPL using the Modified DCC System

   iii. Demonstrate that the Modified DCC System can operate successfully within the wider Smart metering ecosystem comprised of multiple Devices operating to different technical specifications in a consistent manner

   iv. Test end-to-end communication from an authorised User device and back again for all technical specifications in operation, together with security modules

   v. Verify that all other functional changes that are part of the June 2020 Release are functionally correct including consequential amendments

   vi. Throughout the process, testing will be in accordance with Good Industry Practice, and with wider DCC objectives in Condition 5 of the DCC Licence

   vii. Wherever practicable, use of automated testing will be undertaken to improve the efficiency and lower the cost of testing

   viii. Assure SMETS2 Single Band Communications Hubs against June 2020 Release changes

   ix. Ensure that the changes do not materially adversely impact the security risks associated with the Modified DCC System, and that any changes impacting security are identified, tested (where necessary), and accepted. Consideration should be given to the security capabilities in the DCC security architecture including the protection of data and infrastructure

   x. Assessment, of any DCC operational impacts and regression testing of the service to ensure continuity

xi. Validation, of the end-to-end flows via the Modified DCC System (including reporting);

xii. SMETS2 SBCH variants in production will be subject to testing in the June 2020 release to evidence that:

i. The June 2020 Release development has not introduced any unintended issues to existing functional or non-functional behaviours

ii. Modified functional or non-functional behaviour which is required for the Modified DCC System in order to meet the June 2020 Release requirements has been developed and implemented and are fit for purpose

iii. The testing objective may be met in parallel with meeting the testing objective of other changes to Modified DCC Systems and

In respect of the testing objectives described above:

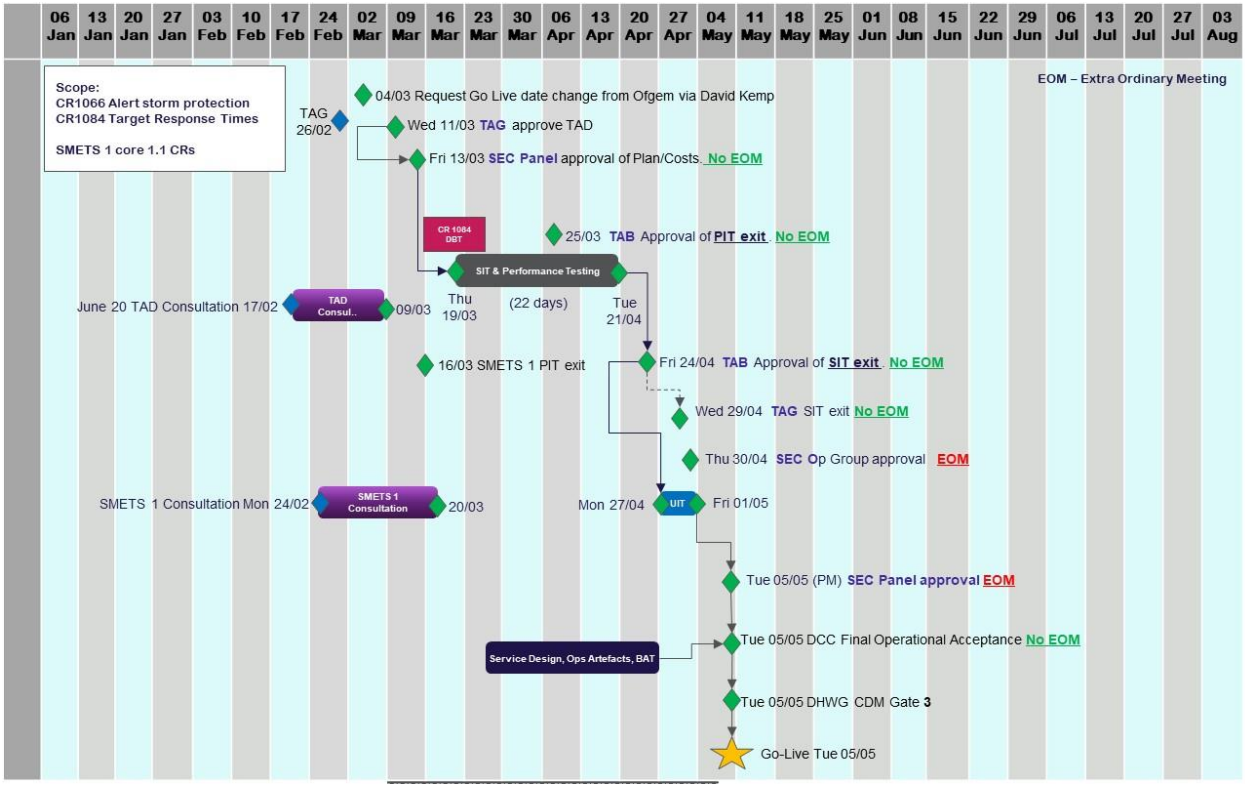
i) References to the Smart Energy Code shall be construed as a reference to the version of the Smart Energy Code (including any Subsidiary Documents) which are due to have effect with the June 2020 Release

5 Testing Approach

This section describes the testing approach for each testing phase, and then describe the common approach requirements that apply across the release.

5.1 High Level Plan

A high-level outline plan is shown below.



SECMOD 53

The elements below form the high-level areas of change which will be applied in the June 2020 release for SEC MOD 53 for On demand only

- Change DSP Target Response Time (SLA) as part of June 2020 for the following SR's
  - SRV 6.14.1 - Update Device Configuration (Auxiliary Load Control)
  - SRV 6.14.2 - Update Device Configuration (Auxiliary Load Control Scheduler)
  - SRV 7.9 - Add Auxiliary Load To Boost Button

These will change from 24hrs to 30 seconds

- SRV 4.8.1 - Read Profile Data (Active Import)

This will change from 30 seconds to 5600 Seconds

Testing will be completed before and after the change to prove change.

SECMOD 62

June ’20 SEC release will look to switch on the Alert Storm protection feature switches which were deployed as part of the Nov 19 SEC MOD Release.

Alert Storm protect will count the number of Alerts originating from a specific Device within a defined time window. If the Device sends the same Alert above a pre-determined threshold value, the mechanism will discard excess Alerts from the Device and only forward one copy of that Alert for a designated period.

Device Selection

The DCC shall recommend which of the existing devices that are in use in production shall be employed to test the June 2020 Release against.

The DCC shall notify TAG which devices it recommends to test the June ‘20 SEC Release against. Where TAG believe that a device has been wrongly excluded, they should notify the DCC within [3] working days setting out its reasons for objecting. The DCC shall respond to the objection within [3] working days. Should the DCC and TAG continue to disagree on the exclusion of a device, then the decision will be referred to the SEC Panel for determination. The SEC Panel decision will be binding.

5.2 Description of Test Phases

The June 2020 Release changes will be delivered using waterfall delivery methodology. The approach to testing of the June 2020 Release will include defined Test Phases. Table 6 contains the test phases / stages, mandatory / optional, organisations involved to deliver and environments to be used.

Table 6 – Glossary of Phases and Stages

Test Phase	Test Stages	Mandatory (Y/N)	Organisation Involved	Environment Used
PIT	System Test (to include FAT)	Y	•DSP •DCC	PIT
SIT	Solution Test (using Devices/Appropriate Firmware for devices)	Y	•DSP •CSP •DCC	SIT A

	Solution Test (using Emulators)	Where Devices/Appropriate Firmware devices are not available)	•DSP •CSP •DCC	SIT A
	SP UAT	Y	•DSP •CSP •DCC	SIT A
UIT	Pre UTS	Y	•SI •DCC	UIT A
	User Test	N	•Users •DCC	UIT A

The Test Phases are as follows:

- The Pre-Integration Test (PIT) phase covers the testing by DCC Service Providers, undertaken individually, to verify that the solution meets the requirements. In this case it will be the DSP only

- Capacity Testing covers testing by DCC Service Providers to verify that the solution does not have any detrimental impact on performance and capacity

- Systems Integration Testing (SIT) confirms:

    - Solution Testing by DCC Service Providers collectively, to verify the end to end functionality using devices and where not available, emulators. It also confirms interoperability between the modified DCC System and existing devices in production

    - Service Provider User Acceptance Testing (SP UAT) to initiate the Quality Gate Review for exiting the SIT phase

- User Integration Testing (UIT) allows Users to test their systems and devices with the Modified DCC System before changes are made available in the production environment.

    - Pre-UTS will be completed following code deployment into the UIT environment to test the changes and shakedown the UIT environment before opening up testing for Service Users.

    - For the June 2020 Release, Users with devices deployed in Production will be invited to undertake testing of their DUIS systems against the Modified DCC Solution and to self-certify the results of this testing to the DCC. All such evidence will be collated and presented.

5.3 Delivery of Test Phases and Stages

The execution of the testing to support the June 2020 Release will be undertaken in appropriate test environments as per Table 6.

The testing phases and stages to support the June 2020 Release will be subject to the DCC quality gating process including the DCC Test Assurance Board (TAB).

The SI will manage the usage of environments (except DSP PIT). Should there be any contention in resources this will be escalated to the DCC for determination and any impact notified to test participants.

6 Test Phase Activity Description

This section of the June 2020 Release Testing Approach Document defines the testing activities and assurance requirements for individual Test Phases.

The provision of the testing deliverables detailed in section 7 shall ensure that these requirements and focus areas are suitably covered by each DCC Service Provider and each testing phase and are assured accordingly. All requirements and deliverables for each phase shall ensure that the test objective is met.

6.1 Requirements & Focus Areas for Pre-Integration Testing

The PIT phase for the June 2020 Release is required to provide assurance of the quality of the Service Provider solutions early in the development cycle.

As an overall requirement, any and all testing which can be reasonably and cost effectively undertaken prior to SIT should be undertaken in PIT.

Table 7 PIT Requirements

Ref	Requirement
PIT.1	DCC Test Assurance will perform assurance activities in PIT across all activities except unit and link testing, as subsequent activities within PIT provide assurance of outputs from those tests
PIT.2	DCC Service Provider PIT shall include performance testing of the Modified DSP solution
PIT.3	DCC Test Assurance shall review the PIT test cases, where used, for appropriateness and suitable functionality coverage
PIT.4	DCC Service Provider PIT shall cover all functional areas impacted for testing the June 2020 Release
PIT.5	DCC Service Provider shall produce and maintain the PIT approach document, the System and FAT plan, test completion reports and Work Off Plans

6.2 Requirements & Focus Areas for Systems Integration Testing

SIT for the June 2020 Release shall be planned and based on successful testing in PIT. It shall confirm the successful integrated operation of the Service Provider solutions and shall support delivery of final, assured code for User testing. It shall comprise of Solution Testing and Service Provider User Acceptance Testing (SP UAT).

The SI shall produce a SIT Approach Document detailing the testing to be undertaken during this Test Phase. This document shall be approved by the DCC and shall be shared with the Panel's TAG for information.

6.2.1 Solution Testing in SIT

Table 8 SIT Requirements

Ref	Requirement
SIT.1	Regression will be employed throughout the SIT phase
SIT.2	Where possible an EOC run for June 20 changes will be executed following SIT functional and regression completion
SIT.3	SIT will be undertaken using scenario testing and will ensure that Service Requests are validated for the correctness and consistency of content, alongside the correctness of formatting
SIT.4	SIT coverage will be proved using a test traceability matrix. This will be used to report the SIT progress.
SIT.5	SIT will be designed to make use of automation where practicable to improve testing throughput rates
SIT.6	SIT will use agreed unique devices available in CPL to perform the Service Request testing
SIT.7	SIT will include verification of the correct operation of all interfaces in DCC Systems
SIT.8	SIT will include verification that the correct end-to-end data is contained in all relevant DCC enterprise system produced report feeds
SIT.9	Where SIT makes use of the DCC SIT and UIT Emulator, testing must include emulator configuration to provide valid data in a Service Response. A blank / null response cannot result in a passed test. The response must include valid data that can be successfully parsed and where relevant decrypted, to prove the response data received is as expected based on the emulator configuration for that test
SIT.10	SIT will ensure • Agreed selection of devices are installed and commissioned in the test environment prior to the deployment of the changes, then deploying the code and carrying out regression testing of the existing functionalities only for backwards compatibility. • Agreed selection of devices can be installed and commissioned and can operate as per the requirement using the changed code

6.2.2 Service Provider User Acceptance Testing in SIT

The SIT Phase includes the DCC Service Provider User Acceptance Testing (SP UAT) activity. This activity will operate concurrently with Solution Test and is undertaken to provide additional assurance.

SP UAT allows DCC to witness an agreed subset of the tests carried out in Solution Test. The subset of tests will be described in a SP UAT plan produced by the Service Provider.

The DCC Systems Integrator will provide DCC with a schedule of when and where tests will be executed and invite DCC to witness either on-site or via WebEx where appropriate

and in adherence with the SI WebEx Policy, giving at least 1 Working Days' notice should there be a change to the agreed schedule.

Witnessing of the test execution, or reviewing evidence of executed tests, will adhere to three key rules;

- There will be no deviation from test scripts
- There will be no hands-on execution by witness
- Where a gap in testing is witnessed, this will be recorded as an observation for further testing

SP UAT will report to DCC before SIT exit on test completion, test failures and test pass rate independently of Solution Test, in order to ensure that 100% coverage and other success criteria of SP UAT are met.

6.3 Requirements & Focus Areas for User Integration Testing

The provision of User Integration Testing (UIT) environments and associated services is part of DCC's ongoing activities, this section describes the specific requirements and focus areas for the June 2020 Release.

DCC shall provide a Testing Service (User Integration Testing) that allows Users to test the interoperability of its User Systems and devices with the Modified DCC System (including via the Self-Service Interface). UIT shall be made available on the same basis as Testing Services under Section H14 (Testing Services), but subject to this Testing Approach Document.

There will be a period between the completion of SIT and promoting functionality to live operations where Users will be asked to volunteer to demonstrate that they can successfully operate the new June 2020 Release functionality prior to using it in production. Users can also carry out User Regression Testing to demonstrate that the June 2020 code does not adversely affect their existing production service.

There are no changes required to the Enduring Test Approach Document (ETAD) and Common Test Scenarios Document (CTSD) for any of the June 2020 Release testing requirements.

Table 10 UIT Requirements

Ref	Requirement
UIT.1	UIT will enable Parties to test the June 2020 Release functionality
UIT.2	UIT will be planned for Parties to be able to test against their systems and devices ahead of the Release "Go Live"
UIT.3	The deployment of releases into UIT will be subject to specific entry criteria to ensure minimal risk of disruption to ongoing participant testing in the environment
UIT.4	UIT shall include the capability for Users to verify their end-to-end data is operating correctly over DUIS

UIT.5	Volunteer Users with Devices deployed in production are asked to confirm whether and what they intend to test during the UIT window [10] working days prior to its start and agree to complete testing within the time frame given. The findings will be provided at the end of the UIT window

It is noted that DCC maintains its obligations to provide and support an integrated environment for the purposes of user testing, which includes ongoing assurance of the provision of CSP and remote test labs used within UIT and demonstrating that the UIT environment is secure.

6.4 Requirements and Focus Areas for Transition to Operations Testing

The TTO Test Phase may include Business Acceptance, Operational Acceptance, and Security related requirements as focus areas to transition the June 2020 Release solution to operations. TTO Testing shall focus upon the service management processes as SIT will have tested technical end-to-end functionality. Support from the DCC Systems Integrator and CSPs is required to carry out internal and external testing as part of TTO Testing.

The above TTO activities will be tracked by the Service Transition Manager who will be responsible for ensuring they are completed as part of the Operational Acceptance activities, supported by specific Service Acceptance Criteria specified by the impacted Operations team. Where the delivery of TTO activities sit outside of Operations, the Service Transition Manager will work with the programme to identify the Accountable person for delivering the required level of assurance that the TTO activities have been completed to the required level of satisfaction. The Service Transition Manager will track and ensure the activities are completed in line with the agreed Service Acceptance Criteria as documented in order to meet Operational Assurance

7 Test Activities

For each mandatory Test Phase, the following activities will be performed;

- Prepare and maintain Solution Test Plans
- Implementation of the testing infrastructure
- Test Phase planning
- Identification of appropriate test scenarios
- Design of test scripts
- Produce a test specification document
- Produce a test traceability matrix, or equivalent
- Design and preparation of test Data, including loading of test Data into the test environment
- Preparation of a test execution schedule
- Execution of testing
- Performance quality gate reviews
- Test issue management
- Test issue resolution
- Release management
- Configuration management
- Test progress reporting
- Production of a Test Phase Completion Report
- Test assurance of third-party components
- Definition and execution of a Work Off plan
- Test metrics collected for each test run; execution time, triage cycle time and daily volume report for Test Assurance

7.1 Test Method

For the June 2020 release, DCC is seeking to further improve testing throughput. By making more effective use of automation in SIT and extending the SMETS 1 solution to encompass SMETS 2 functionality we are aiming to increase throughput and regression coverage. DCC shall also seek to measure the effectiveness of the use of automation in SIT by collecting metrics that quantify both the level of automation present in a test pack as well as test execution time and triage cycle time. DCC will require the systems integrator to provide the detail of how we shall achieve this in the SIT approach document, including reporting to establish a baseline of automation effectiveness as well as reporting to demonstrate that expectations around the use of automation have been met.

For manual and automated testing, DCC shall use scenarios that based on DCC SMETS 2 Business scenarios in addition to existing SMETS 1 testing. The supporting test phase approach documents will specify the detailed testing methodologies employed in each test phase.

Test design for June 2020 release will have the following critical areas for testing.

- Devices are installed and commissioned in the test environment prior to the deployment of the changes for SECMP0053 and SECMP0062.
- Devices can be installed and commissioned and can operate as per the requirement using the changed code
- Changes introduced as part of the June 2020 release are working as per the requirement

Priority, within the design of testing for the June 2020 Release, shall be on the changes introduced by the scope of the Release, and on the functionality and Service Requests that are considered to be of highest risk to Users in the production system and on validating there is no adverse effect on the existing devices in the DCC system. These will be derived from the heat map and the TTM.

Testing will cover both functional and non-functional aspects of the dynamic interaction between solution elements and shall cover, to an agreed level, of the DCC service request variables – user role, command variant and mode of operation. Where a changed interface is to be tested, all associated or impacted interfaces shall also be tested. Similarly, testing should account for all elements of the Modified DCC System, for example the internal DCC-Enterprise components that support billing and reporting.

In general, testing with combinations of real devices will form the basis of a default test setup. Testing with emulators in SIT shall in general only be conducted where devices are unavailable to be tested. Where testing makes use of the SIT emulator necessary, testing shall include emulator configuration to provide valid data in a service response. Where new emulator functionality is required, the device will be subject to testing and assurance.

In relation to the design of testing for SIT, consideration has been given to the coverage of DUIS and how testing between regression and new elements is balanced across the interfaces and Communications Hubs types and CHTS versions.

7.2 Test Scenarios

Test scenarios may, within the context of the individual Test Phases, be represented by defined sequences of Service Requests and/or other relevant activities.

Each Test Phase will define test scenarios as a deliverable as appropriate, but as a minimum the definition of test scenarios will include:

- Description
- Responsibility for development
- Type (Normal, Exception, Alternative)
- Prerequisites
- Test conditions
- Verification method
- Traceability to requirements (or use case for DSP PIT)
- Test variations – User Roles, Communications Hub, mode of operation, Command variant, Device, DUIS and GBCS versions

The definition of Test Scenarios for SIT shall include and consider:

- Key common scenarios that will be experienced by the Parties in production: and
- A relevant subset of scenarios (or Service Request sequences) to reflect Network Operator Party use cases

DCC will review the proposed Test Scenarios, or sequences of Service Requests, for SIT with Parties at the DCC monthly testing forum – the Testing Design and Execution Group (TDEG).

Test Scenarios may be updated to take account of activities from live operation, subject to suitable change controls.

Test scenarios must cover exercising all interfaces in DCC Systems in an end-to-end manner verifying functionality as well as that data is reported correctly.

Where emulators are needed to be used, test scripts should define the required emulator configuration to provide valid data in a Service Response.

7.3 Regression Testing

All new releases of any element of the solution from every DCC Service Providers will be subject to completion of a successful regression test prior to being accepted into subsequent Testing Phases and environments.

The following requirements for regression testing shall apply:

- A Test Coverage approach will be produced and assured to gain maximum test coverage with minimal testing effort
- Wherever practicable, regression testing will be automated

- Regression testing will be an ongoing activity
- All regression testing must include security testing– even if that element has not been changed[1]
- The regression test approach for each phase will be described in each Test Phase Approach Document
- The scope of regression, where appropriate, is permitted to be risk-based with regard for combinations of User Role, command variant etc. The exact scope of regression shall be defined in the Test Phase Approach Document for each phase
- If risk-based regression testing is used within a Test Phase, as a minimum it should include key Service Requests. The key Service Requests will be derived from the heat map and TTM. This will then be discussed and agreed between DCC and Users
- The Regression Test Pack (test scripts, test data and documentation) will be available to the DCC during the test phase within ALM, with any agreed omissions being rectified promptly
- Regression testing for SIT shall be completed using devices in production and in CPL

[1] Not in scope for PIT

8 Deliverables

DCC will follow the testing documentation practices established for earlier releases. These are described at a high level in this section, and specific enhancements and requirements for the June 2020 Release are highlighted.

8.1 By Test Phase

Various deliverables will be produced for each Test Phase. The Test Phase Approach Documents will detail the deliverables required for the individual Test Phase.

The author for individual Test Phases will create the deliverable, which will be subject to the established governance processes. Below is a list of responsible teams for various test phases.

- PIT – DSP
- SIT – DCC Systems Integrator
- TTO – DCC

The table below describes the generic content and anticipated timing of the deliverables that may be required to be produced for each Test Phase.

Table 11 – Deliverables

Deliverable	Description	Timing
Solution Test Plan	Describes the relevant test phase: the activities, participants, resources, roles and responsibilities, assurance requirements, reporting, success criteria, and other information relating to the execution of the Test Phase. Where relevant, the Test Phase Approach Documents shall also define the entry and exit criteria, and the basis of any risk for regression	Following any review cycles, a final version shall be submitted to DCC by the relevant DCC Service Provider no later than [10] Working Days before the commencement of test execution.
Test Specifications	Requirements Traceability Matrix, Test Scenarios and Heatmap	To be provided to DCC by DCC Service Providers no later than [10] days before the commencement of test execution
Test Results	Details may vary by Test Phase – report content and frequency will be defined by the Test Phase Approach Document	Made available by DCC Service Providers for review by DCC throughout test execution
Test Issue Log	Outstanding Testing Issues	Made available by DCC Service Providers for review by DCC throughout test execution

Deliverable	Description	Timing
Regression Test Pack	A Regression Test pack is a set of test cases run to ensure the core product remains unaffected by new feature additions.	Access granted to DCC by DCC Service provider to review beforehand and monitor throughout
Test Phase Completion Report	Will follow the format and content established for earlier DCC releases, and will include; • Overview of testing undertaken • Actual number of tests run, passed, failed, and not run • Explanation of any tests not run • Test issue I.D. detail for failed tests • Number of test issues outstanding, split by severity • Number and severity of test issues raised • Specification of test environment used • Recommendations for tests to be included in the next Test Phase • Lessons learnt during the Test Phase	DCC will work closely with the DCC Service Providers during test execution window to ensure the completion report is issued on the final day of testing.
Test Scenarios	Shall comprise of planned and sequenced series of Service Requests.	To be available from DCC Service Providers at the same time as the finalised Solutions Test Plan
Work Off Plan	A plan to resolve (fix, retest and close) outstanding issues. Once the fix is made available, retesting of the issue should be completed within [5] Working Days.	To be provided to DCC by DCC Service Providers with the final Test Stage Completion Report.

8.2 Requirements Traceability

The DSP will use their own tools to manage their requirements and demonstrate traceability to both the solution design and the Pre-Integration Tests. The DSP will provide DCC with a PIT Requirement Traceability Matrix (RTM), extracted from these separate tools.

The scope of testing will be validated by use of TTM, setting out how each requirement within the scope of the release is met. The TTM supersedes the RTM developed and used within PIT.

The TTM will be prepared by the SI, based on the updates to the specifications listed in section 2.1, and will consider the resulting impact of those changes and resulting coexistence of enrolled devices operating to different variations of versions of those specifications as well as current version of those specifications. Production of the TTM is a requirement for SIT to commence.

At the completion of SIT, any additional tests which have been created during SIT will be added to the TTM.

The TTM will be used by DCC to demonstrate the completion of SIT, alongside the heat map.

9 Test Procedure

This section describes the requirements for the testing process to prove the solution for June 2020 Release.

The Solution Test Plans will define specific Entry and Exit Criteria for the individual Test Phases, with generic requirements for these described below.

The Solution Test Plans will also define specific entry and exit criteria for individual Test Phases, the governance process relating to the approval of the criteria, and the evaluation of success against them.

9.1 Generic Entry and Exit Criteria

Progression through Testing Phases for the June 2020 Release will be gated using generic and specific Entry and Exit Criteria.

The Solution Test Plans will provide detail of the evidence to be gathered in the form of an evidence pack.

9.1.1 Generic Entry Criteria

The following generic Entry Criteria will gate the entry to all Test Phases, except for UIT which shall have no Test Plan, or Test Specification:

- Solution Test Plans signed off
- Test Phase Completion Certificate for preceding Test Phase issued, unless advanced agreement that Test Phases may overlap
- Test Specification & heat map prepared, including traceability to Requirements / Design documents
- Test labs, Devices, tools, stubs, environments, and data are assured and accepted as fit for purpose, including external assurance, where applicable
- Regression test pack has been prepared or updated
- DCC and all relevant Service Providers have confirmed they have resources with the requisite skills and access available to support the Test Phase
- Approval to proceed certificate issued by DCC, unless the plan states that Test Phases may overlap
- A device selection process will be used to select a subset of Devices, from the CPL, to be used for testing. These devices will be used to successfully complete SIT

9.1.2 Generic Exit Criteria

The following generic Exit Criteria will gate the exit of all Test Phases except UIT:

- For PIT all tests run, or any exceptions documented and agreed by TAB
- For SIT all tests run, or any exceptions documented and agreed by TAG
- All test success criteria achieved, or any exceptions documented and agreed by TAB
- The number and severity of any outstanding Test Issues is at or below the target thresholds, or any exceptions documented and agreed by TAB
- Test results documented, and evidence captured
- Set of test issue logs have been produced
- Regression testing successfully completed
- Production of agreed Work Off Plans for any outstanding Test Issues that have been identified during the Test Phase
- Work Off Plans from preceding Test Phases have been completed
- Test Phase Completion Reports have been produced and, where required, test Completion Certificates have been issued by DCC

9.2 Specific Entry and Exit Criteria for Test Phases

Specific Entry and Exit criteria for individual Test Phases shall be detailed in the relevant Solution Test Plans.

9.2.1 Entry into SIT

The Entry Criteria for SIT shall include, among other things:

- DCC to ensure all required devices are available 2 weeks before commencement
- The remaining generic entry criteria has been met 1 week before SIT commencement
- Successful assurance of SIT test data
- A device selection process will be used to select a subset of Devices, from the CPL, to be used for testing. These devices will be used to successfully complete SIT

9.2.2 Exit from SIT

All specific Exit Criteria for SIT documented within the Solution Test Plan has been met and any exceptions to this must be agreed at TAB

9.2.3 Entry into UIT

The Entry Criteria for UIT shall include:

- Successful completion of testing, assurance and DCC governance of the SIT phase for the functionality to be promoted into UIT

9.3 Acceptance Process Following SIT Completion

Following the completion of SIT, DCC will notify the Panel and Parties that SIT has ended.

DCC will provide the Panel with copies of the SIT Completion Report(s) along with a list of those sections of such reports that it considers should be redacted.

DCC will review the documentation and evidence to support the relevant Entry and Exit Criteria with the Panel's TAG to inform the Panel to enable their decision regarding the completion of SIT.

On direction from the Panel, DCC will provide the Parties and Service Providers with copies of the Test Completion Report(s) having first redacted any sections specified by the Panel.

9.4 Test Phase Success Criteria

For SIT and the testing for SP UAT the following Test Success Criteria will be included in the Exit Criteria:

- 100% of tests listed in the Test Specifications have been executed, or any exceptions documented and agreed with TAB, and subsequently reported to the Panel's TAG, and to the Panel

- at least 90% of the tests executed relating to the new functionality have been passed, and all failures are documented, and defects related to failures are as per the agreed defect threshold in Section 8.5 of this document

- regression testing in SIT achieves a 100% pass rate or any exceptions documented and agreed with TAB, and subsequently reported to the Panel's TAG, and to the Panel

9.5 Testing Issues Threshold

Table 13 lists the standard thresholds for outstanding testing issues in each test phase. These shall be calculated by Service Provider.

Table 13 – Threshold

Test Issue Severity	PIT	SIT
1	0	0
2	0	0
3	15	15
4	30	30
5	60	60

Note that:

- The defect thresholds are applied as part of the Exit Criteria for relevant Test Phases and apply cumulatively if there are iterative deliveries within a Test Phase. For example, there will never be more than 15 Severity 3 defects per Service Provider at an exit gate

- Meter manufacturer defects shall not be included in the testing Issues mask. Evidence will be sought that the meter manufacturer has accepted the Testing Issue

- Testing Issues identified as a known production testing issue will not be included in the testing issues mask

- TAB may judge that the SIT Phase can start even if the thresholds set in the PIT Exit Criteria have been exceeded, provided that an agreed Work Off Plan is in place. This decision will be reported to the Panel's TAG and Panel, but is not subject to their agreement

- As part of confirming the completion of SIT the DCC shall present all extant Severity 3 defects identified during the June 2020 Release testing to the Panel's TAG to confirm that the correct Severity has been assigned

- Where the DCC and the Panel's TAG cannot agree on the Severity of a Testing Issue identified in SIT or UIT, and this matter impacts achievement of a Test Phase Defect threshold, the DCC may refer the matter to the Panel for its determination, which shall be final

9.6 Work Off Plans

Work off plans, shall be produced detailing the defects that are outstanding and a plan for resolving them.

As this is a DSP change only, they shall resolve all items within the Work Off plan within the following timescales;

- For Severity 3 defects, within 20 Working Days from the quality gate meeting
- For Severity 4 defects, within 40 Working Days from the quality gate meeting
- For Severity 5 defects, within 60 Working Days from the quality gate meeting

The resolution of a test issue will require the Service Provider to fix, retest and close the Testing Issue.

If the timescales for the Work Off plan are not going to be met, the Service Provider shall promptly produce and agree a correction plan with DCC.

If a Test Phase Complete Certificate has been issued subject to completion of a Work Off plan, and the Work Off plan has not been completed within the applicable time period, then DCC shall revoke the Test Phase Complete Certificate unless the failure relates solely to Severity 5 test issues.

10 Test Result Management & Reporting

Test Result Management and Reporting is to be provided to DCC by the DSP for PIT and the SI with input from SPs SIT and UIT Test phases, in adherence to the Joint Test Strategy, on a frequency to be detailed in the Solution Test Plans.

10.1 Tracking & Reporting

HP's Application Lifecycle Management (ALM) Test Management tool will be used to manage testing and testing issues[2].

All requirements, scripts, tests, execution results and defects are to be maintained in ALM. Connectivity between requirements, tests and defects is to be maintained for traceability and reporting purposes.

Overall responsibility of maintaining traceability of test and defects lies with the SI for all Test Phases.

The SI shall provide enhanced visibility and reporting of the progress, completion, and coverage of testing for SIT across a number of parameters. This should include test automation metrics previously referenced in section 6.

10.2 SIT Completion Reports

DCC will produce its own Test Completion Reports when it considers that the Exit Criteria required by the SIT Solution Test Plan have been met. The report will provide evidence of the testing undertaken, the results of testing and how the Exit Criteria have been met.

This report, together with any relevant independent assurance reports, will be provided to the TAB, Panel's TAG and the Panel.

[2] Except where not applicable for PIT

11 Acceptance and Test Assurance

DCC has established processes for the acceptance of testing activity completion – these will continue for the June 2020 Release. The TAB will conduct quality gate meetings and review testing completion reports before issuing Test Completion and Approval to Proceed Certificates.

11.1 Service Provider Self Assurance

Service Providers will continue to assure their own PIT activities against this Testing Approach Document and their specific PIT Phase and Test Plan. Service Providers will also continue to make their relevant testing deliverables available to the other Service Providers and exchange constructive comments to ensure solution and testing compatibility.

11.2 Test Assurance by DCC

DCC will continue to assure Service Provider testing using the processes and activities established for earlier releases, and will include the following methods, at times determined by the individual Solution Test Plans:

- Test Assurance Board quality gates
- Test Witnessing
- Test observation
- Test Quality Audits
- Product Inspections
- Document Review

11.2.1 Quality Gating and the Test Assurance Board

DCC will continue to operate the Quality Gating process developed for prior Releases and enhanced through experience.

The Quality Gate process provides:

- Controlled entry of functionality into subsequent Test Phases;
- Confirmation that the scope of tests shall provide adequate assurance of the changes introduced to the DCC System
- Formal and objective evidence that test criteria have been met for a stage / Phase
- Transparency of test activities and outcomes to facilitate DCC Test Assurance
- Formal evidence for signoff of Service Provider test milestones and/or associated payments

- A mechanism for managing remedial work associated with closure of test stages / Phase

The Quality Gates from PIT into SIT and exiting SIT are operated as TAB gates.

11.2.2 Test Witnessing

DCC will agree, in advance, with the SPs which tests it wants to witness during Factory Acceptance Testing (FAT) and SP UAT. Details of these tests (which will be a subset of System Tests for FAT and a subset of Solution Tests for SP UAT) will be described in the FAT and SP UAT plans. The SPs will provide DCC with a schedule of when the tests will be executed and invite DCC to witness on-site or via Web-Ex. The witness will have the skills required to fulfil the role. The SP will provide the witness with relevant documentation and access.

For the June 2020 Release DCC Test Assurance must be given full access to attend and witness such testing.

Execution of the agreed set of tests will be performed by the relevant SP test analyst, and there will be:

- No deviation from the scripts (e.g. in response to “what if” questions raised by witnesses)
- No hands-on execution by witnesses
- Where a gap in testing is witnessed, this will be recorded as an observation for further testing

Test issues raised during witnessing will be entered in to the relevant Test Issue Management tool and progressed through the Test Issue Management process.

As far as possible, any queries and issues arising during the witnessing period will be addressed at the time with the relevant Subject Matter Experts (SMEs). A wash-up session will be convened at the end of the witnessing period to discuss the outcome of witnessing and to agree any outstanding queries and issues.

11.2.3 Test Observation

With prior agreement with the SPs on the timing, duration, and scope, DCC staff may observe test execution and test issue management activities during System Testing and Solution Testing in order to familiarise themselves with SP processes and the systems under test. The DCC observers will have the skills required to fulfil the role.

12 Testing Issue Management

The process defined in the Testing Issues Resolution Process covers SIT testing. However, there are small variations that arise due to the requirement to interact with User Testing Participants. The Testing Issues Resolution Process will be reviewed and updated where appropriate.

13 Test Resources

This document will not provide detail of the DCC internal teams or the Service Providers who will be undertaking the actual testing but does provide details of the DCC Test Assurance Team and Testing Services Team who are responsible for assuring compliance with this Testing Approach Document.

This section also describes the Testing Stubs which will be used, and the other Testing Tools.

13.1 DCC

Notwithstanding, any organisational change at DCC affecting the structure of the team, dedicated DCC resources will support the assurance of testing described in this document.

The functions and services delivered by the DCC shall include:

i) Test Assurance – responsible for reporting progress to industry, assuring the progress of testing, including witnessing, and observing testing within PIT, SIT, and TTO; reviewing test plans, scripts, and scenarios; co-ordinating with Product and Design teams to provide Device assurance, assuring reporting by Service Providers, providing evidence and documents into the TAB meetings, conducting TAB meetings; managing independent audit and assurance providers; maintaining this Testing Approach Document; submitting evidence and reporting to Panel and the Secretary of State as required

ii) Issue Management – responsible for operating the issue management process; including chairing the Issue Resolution Board and reporting on issues for all test phases except PIT. Responsible for producing reports on testing issues, including providing regular reporting to DCC problem management on issues potentially affecting the DCC production solution

iii) Testing Services – responsible for being the point of escalation for testing participants, responsible for supporting user testing and managing relationships with Testing Participants; reporting on user testing.

13.2 Test Stubs

This Testing Approach Document allows for the use of Testing Stubs, where appropriate, across each of the Testing Phases to support entry into and completion of those phases. Individual Service Providers, DCC and Testing Participants may utilise Testing Stubs to simulate or emulate elements of the solution which are either not available or practical for use in the relevant test phase.

For example, within SIT, a User Simulator will be used to act in the role of a DCC User.

DCC uses a variety of device emulators capable of emulating:

- ESME
- GSME
- IHD
- PPMID
- IHD
- HCALCS (Supplied by Critical Software)
- HHT (Supplied by Critical Software)

Each emulated device is capable of operating in single or dual band mode.

Our emulators have specific functionality which will be used to generate test scenarios for:

Alert Storm Protection – We have the capability to generate any alert, continuously and as fast as the hardware platform will allow for

The emulator suite does not require uplift for the June 2020 release.

13.3 Test Laboratories

The DCC will provide a test lab facility and supporting services to enable Parties to test with their own Devices and DCC Communications Hubs and SM WAN infrastructure in the User Integration Testing environment.

14 Roles and Responsibilities

All parties involved in the June 2020 Release testing shall:

- Follow Good Industry Practice, as define in the SEC
- Take all reasonable steps to facilitate achievement of the testing objectives
- Ensure that all testing issues are evaluated for the potential impact on the DCC production solution, at the point of raising the issue or during triage, and recorded as such on the test management tool

14.1 DCC Systems Integrator

DCC shall ensure that the SI will manage SIT and be responsible for the following activities:

i) Producing and maintaining the SIT Solution Test Plan, and the SP UAT Plan

ii) Ensuring that SIT activities are carried out in accordance with the SIT Approach, the Solution Test Plan, and the SP UAT Plan

iii) Overall planning and control of SIT, including chairing entry Quality Gates between FAT and Solution Test, and between Solution Test and User Interface Testing

iv) Maintaining Risk, Assumption, Issue, and Dependency Logs for SIT

v) Leading the design and creation of test scenarios, test scripts, test data and test environments for SIT

vi) Preparing test execution and environment usage schedules for SIT

vii) Supporting the other SPs in their assigned test preparation and execution activities within SIT

viii) Managing test issue resolution, and supporting SPs in the resolution process for selective test phases

ix) Producing the Test Stage Plans, Test Specifications, Test Traceability Matrices, Progress Reports, and Test Completion Reports for SIT

x) Operating the master Configuration Management Plan

xi) Operating the master Release Schedule

xii) Operating the Environment Plan

xiii) Support the Interoperability Test Events

14.2 DCC Service Providers

DCC shall ensure that the Service Providers (including DCC in its role as provider of Enterprise Systems) shall:

i) Support the Systems Integrator in:

- Planning and control of test phases
- Design and creation of test scenarios, test scripts, test data and test environments
- Preparing test execution and environment usage schedules
- Diagnosing test issues
- Producing Test Plans, Test Specifications, TTM, Progress Reports, and Test Completion Reports
- Contributing to the master Configuration Plan
- Contributing to the master Release Schedule
- Contributing to the Environment Plan
- Establish, maintain, and control their own test environments, in terms of software / hardware configuration and access control

For tests within their agreed test boundary, under the direction of the Systems Integrator

- Execute and monitor test scripts
- Capture evidence
- Report progress

Resolve test issues for their solution elements and undertake PIT testing (including regression testing) of any fixes required

14.3 DCC

DCC shall:

i) Comply with its obligations under this Testing Approach Document (this document);

ii) Ensure that activities attributed to Service Providers that are described in this document are undertaken

iii) Use its reasonable endeavours to ensure that SIT is completed as soon as is reasonably practicable to do so

iv) Enter into agreements with Device manufacturers to provide and support Devices for use in SIT, following appropriate qualification or selection activity

v) Support the DCC Systems Integrator in the planning, control, and operation of testing

vi) Assure planning, preparation and execution activities undertaken by the DCC Systems Integrator and Service Providers as detailed in this document and through the Test Traceability Matrix

vii) Operate and Chair the DCC TAB process to review and approve the relevant Test Documents and issue the Approval to Proceed certificates, including the approval of test phase Completion Reports

viii) Participate in Quality Gate Reviews

ix) Agree with the DCC Systems Integrator and Service Providers the subsets of Solution Tests to be witnessed in the SP UAT stage

x) Witness the execution of SP UAT

xi) Specify, procure, provide, and maintain the DCC Meter Protocol Emulator Devices and Service

xii) Appoint and manage the independent audit and assurance activities described in this document

15 Environments

The June 2020 Release will use the A-stream DCC environments.

These environments will be available as required by the overall plan for the June 2020 Release. Specific deliverables relating to the management and use of environments, particularly co-existing with other programmes, has been published by DCC. This will clarify the approaches to usage of the environments by the June 2020 Release and other projects. DCC will also be presenting regular portfolio level updates to TAG on use of environments.

15.1 Code Management

DCC will operate a process to merge code changes into the test environments used by the June 2020 Release. The SIT Approach Document will provide detail of the frequency of the operation of this process.