Version AK 4.0

APPENDIX AK

SEC Variation Testing Approach Document for SMETS1 Services

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1 Definitions and Interpretations

1.1 In this SEC Variation Testing Approach Document for SMETS1 Services (SMETS1 SVTAD), except where the context otherwise requires, the expressions in the left-hand column within Table 1.1 shall have the meanings given to them in the right-hand column within Table 1.1. Where not defined in this SMETS1 SVTAD, capitalised terms used in this document are set out in Section A of the Amended SMETS1 SEC or in Schedules or Appendices of the Amended SMETS1 SEC.

1.2 Where there are conflicts between this SMETS1 SVTAD and any of the Testing Approach Documents, this SMETS1 SVTAD shall take precedence.

1.3 Where obligations are expressed in respect of DCC Service Providers in this SMETS1 SVTAD, these shall be construed as obligations on the DCC. Where text is included in this SMETS1 SVTAD which does not explicitly place obligations on a Party, the Panel, or Testing Participant, these shall be construed as obligations on the DCC.

Table 1.1 SMETS1 SVTAD Definitions

Term	Meaning
Active Meter Migration Testing (Active MMT)	has the meaning set out in the MTAD.

Amended SMETS1 SEC	means planned changes to the SEC that do not comprise part of a SMETS1 Uplift, and:
	• in the case of changes to Sections of the Code, those that have most recently been published by the Secretary of State setting out Services in respect of SMETS1 Smart Metering Systems and other provisions relating to SMETS1 Smart Metering Systems that apply in respect of:
	  o the Device Models and/or Device Model Combinations that are being used in testing in respect of IOC, MOC, or FOC, as the case may be and /or
	  o the Device Models and/or Device Model Combinations that are the subject of the DMCT Process; and

Term	Meaning
	• in the case of changes to Schedules and Appendices of the Code, the versions that apply in respect of: o the Device Models and/or Device Model Combinations that are being used in testing in respect of IOC, MOC, or FOC, and/or o the Device Models and/or Device Model Combinations that are the subject of the DMCT Process, which are set out in a document published by the Secretary of State entitled "SMETS1 Testing Baseline Requirements Document".
Capability Release	means each of Initial Operating Capability (IOC), Middle Operating Capability (MOC) and Final Operating Capability (FOC).
Completion Report	means a report that is produced at completion of a Test Phase, with the exception of the UTS Phase where the Completion Report is produced at the end of SMETS1 Interface Testing, setting out evidence demonstrating how the criteria for the completion of that Test Phase (or SMETS1 Interface Testing) have been met.
Depth and Breadth of Regression Testing	means the document produced pursuant to Clause 7.7 that sets out the depth and breadth of regression testing planned for a Migration Test Phase and SIT Test Phase relating to the same DMC.
Depth and Breadth of SIT	means the document produced pursuant to Clause 12.7 that sets out the depth and breadth of testing planned to be undertaken for a SIT Test Phase.
Device Model Combination (DMC)	means a combination of SMETS1 Device Models.
Dormant Meter Migration Testing (Dormant MMT)	has the meaning set out in the MTAD.
DMCT EPCL Report	means the report that is prepared pursuant to Clause 20.41.

Term	Meaning
DMCT Migration Testing (DMCT MT)	means testing undertaken for the purpose of Clause 20.15 (a).
DMCT Non-Standard Test Pack	means a test pack that is not the Standard Dormant DMCT Migration Test Pack or the Standard DMCT Service Reference Variant Test Pack.
DMCT Process	means the process, procedures and testing set out in Clause 20. DMCT stands for Device Model Combination Testing.
DMCT Schedule	means the schedule published pursuant to Clause 20.10.
DMCT Service Reference Variant Testing	means testing undertaken for the purpose of Clause 20.15 (b).
DMCT Status List	means the list produced pursuant to Clause 20.8.
DMCT Testing Report	means the report that is prepared pursuant to Clause 20.34, Clause 20.35 or Clause 20.38 as the case may be.
Eligibility Testing	comprises the undertaking of tests to demonstrate that a Party can successfully send Service Requests and receive Service Responses and Alerts in respect of SMETS1 Devices, such tests being set out in the UTSAD.
Energy Supplier	means a holder of an Electricity Supply Licence and / or a Gas Supply Licence.
Entry Criteria	means the criteria that must be met in order for a Test Phase to start.
EPCL	means the list of SMETS1 Eligible Product Combinations.
Exit Criteria	means the criteria that must be met in order for a Test Phase to complete.
Final Operating Capability (FOC)	has the meaning set out in the DCC's delivery plan for SMETS1 services produced pursuant to Condition 13 of the DCC Licence.
In-Scope DMCs	means DMCs:

Term	Meaning
	(a) which are not MOC or FOC SIT DMCs or are not IOC Migration Testing DMCs; and (b) comprising SMETS1 Smart Metering Systems that are in scope for enrolment. For this purpose the SMETS1 Smart Metering Systems that are in scope for enrolment are those which, once enrolled, would comprise SMETS1 Meters for which the Secretary of State has concluded that the DCC is required to provide SMETS1 Services (or, if such conclusions have not yet been reached, those for which the Secretary of State is consulting on as being minded to require the DCC to provide SMETS1 Services).
Initial Operating Capability (IOC)	has the meaning set out in the DCC's delivery plan for SMETS1 services produced pursuant to Condition 13 of the DCC Licence.
IOC Migration Testing DMCs	means for DMCs that would utilise the operating capability that is delivered at IOC: (a) any DMC against which Migration Testing in respect of a planned entry on the EPCL comprising that DMC has completed; or (b) where Migration Testing has not completed, any DMCs that have been selected for Migration Testing in respect of a planned entry on the EPCL comprising that DMC and have not been de-selected.
Middle Operating Capability (MOC)	has the meaning set out in the DCC's delivery plan for SMETS1 services produced pursuant to Condition 13 of the DCC Licence.
Migration Completion Report	has the meaning set out in the MTAD.
Migration Dormant Meter Readiness Testing	has the meaning set out in the MTAD.

Term	Meaning
Migration Testing (MT)	means: (a) Active Meter Migration Testing; (b) Dormant Meter Migration Testing; and/or; (c) Mixed Meter Migration Testing.
Migration Test Phase	has the meaning set out in the MTAD.
Migration Testing Approach Document (MTAD)	means a document that sets out supplementary rights and obligations in relation to Migration Testing and Migration DUST.
Migration DUST	means a Testing Service provided by the DCC within Device and User System Testing to enable testing of the interactions with the systems and processes used by the DCC to Migrate SMETS1 Installations.
Migration Solution Testing	has the meaning set out in the MTAD.
Mixed Meter Migration Testing (Mixed MMT)	has the meaning set out in the MTAD.
MOC or FOC SIT DMCs	means: (a) any DMC against which SIT for MOC or FOC (as the case may be) has concluded and demonstrated that the DCC can successfully process SMETS1 Service Requests and relevant SMETS1 Alerts in respect of that particular DMC in accordance with the Amended SMETS1 SEC; or (b) where SIT has not concluded, any DMCs that have been selected for SIT for MOC or FOC (as the case may be) and have not been de-selected.

Term	Meaning
Modified DCC Total System	means the DCC Total System as will be modified to enable the delivery of Services as set out in the Amended SMETS1 SEC.
Pre-Integration Testing (PIT)	means a set of tests undertaken by a DCC Service Provider to verify that the part of the Modified DCC Total System being provided by that DCC Service Provider meets the SMETS1 Testing Objective.
Secure Meters Device Models	means SMETS1 ESME Device Models, SMETS1 GSME Device Models, and SMETS1 CH Device Models manufactured by Secure Meters (UK) Ltd (company number 02199653).
SIT Audit	means a review, conducted by the SIT Auditor, of the testing and assurance undertaken by the DCC during a SIT Test Phase.
SIT Auditor	means the independent person appointed pursuant to Clause19.1.
SIT Auditor Report	has the meaning set out in Table 10.1.
SIT Planned Tests	means the tests that result from the Depth and Breadth of SIT document established pursuant to Clause 12.7.
SMETS1 Interface Testing	means the testing activity that further assures, through the involvement of Users, that the part of the Modified DCC Total System that comprises the DCC User Interface operates in accordance with the Amended SMETS1 SEC.
SMETS1 Interface Test Completion Report	has the meaning set out in Table 10.1.
SMETS1 Services	means Services in relation to SMETS1 Smart Metering Systems.
SMETS1 SVTAD Large Supplier	means a Supplier Party which, as of 18 September 2018, supplies electricity and/or gas to 250,000 (two hundred and fifty thousand) or more Domestic Premises.
SMETS1 Testing Objective	means the objective set out in Clause 5.

Term	Meaning
SMETS1 Uplift	means amendment(s) to the Code that are not planned to be delivered as part of a Capability Release or under the DMCT Process and, in the case of more than one amendment, that are planned to be delivered at the same time.
SMETS1 Uplift DCC Testing	means testing by the DCC of any changes to the DCC Total System that would arise as a result of a SMETS1 Uplift.
SMETS1 Uplift DCC Testing Approach Document	means any document produced pursuant to Clause 21 that sets out the approach to SMETS1 Uplift DCC Testing.
SMETS1 Uplift DCC Testing Completion Report	means the report prepared pursuant to Clause 21.11.
SMETS1 Uplift Mandated User Testing	means mandatory testing by one or more Users of all or part of any changes to the DCC Total System that would arise as a result of a SMETS1 Uplift.
SMETS1 Uplift Mandated User Testing Document	means any document prepared pursuant to Clause 21 that sets out the approach to SMETS1 Uplift Mandated User Testing.
SMETS1 Uplift Testing	means SMETS1 Uplift DCC Testing and/or SMETS1 Uplift Mandated User Testing as the case may be.
Standard Dormant DMCT Migration Test Pack	means a set of tests undertaken for the purposes of Clause 20.15 (a) in respect of SMETS1 Installations comprising only Dormant Meters.
Standard DMCT Service Reference Variant Test Pack	means a set of tests undertaken for the purposes of Clause 20.15 (b).

Term	Meaning
Solution Test	means a test stage within the System Integration Test Phase that will include testing to ensure that changes to existing interfaces, and new interfaces within the solution, as a result of the Amended SMETS1 SEC, work as intended and to confirm that integration of those parts of the Modified DCC Total System that have changed as a result of the Amended SMETS1 SEC has not caused any regression to existing functionality.
System Capacity Testing (SCT)	means additional non-functional tests that assure that the DCC is capable of meeting the SMETS1 Testing Objective.
System Capacity Testing Approach Document (SCTAD)	means a document that sets out the supplementary rights and obligations in relation to System Capacity Testing.
Systems Integration Testing (SIT)	means a set of tests undertaken by the DCC and the DCC Service Providers collectively to verify that the parts of the Modified DCC Total System being provided by those DCC Service Providers and the DCC operate together in a way that meets the SMETS1 Testing Objective (excluding those parts that are subject to Migration Testing).
TAG	has the meaning given in Clause 3.1.
Testing Approach Document(s)	means one or more of the User Testing Services Approach Document, the Migration Testing Approach Document, and the System Capacity Testing Approach Document.
Test Assurance Board (TAB)	means the DCC body established to approve or reject DCC assurance reports relating to code promotion between environments; consider Test Phase Completion Reports; and approve or revoke the issuance of Test Completion Certificates.
Test Completion Certificate	has the meaning of a certificate issued by the DCC to a DCC Service Provider when the DCC considers that the DCC Service Provider has met the relevant Exit Criteria for a Test Phase.

Term	Meaning
Testing Issue Thresholds	means the maximum number of extant Testing Issues that may be permitted: (a) at Test Phase exit; (b) in the case of testing undertaken as part of the DMCT Process, at successful test completion; (c) in the case of the UTS Test Phase, at the end of SMETS1 Interface Testing; or (d) in the case of testing undertaken as part of SMETS1 Uplift DCC Testing, at successful test completion.
Test Phase	means one of the following: • Pre-Integration Testing (PIT); • in the case of IOC, System Integration Testing (SIT) in respect of the DMCs that have been selected pursuant to Clause 13 for the Capability Release, excluding any DMC that has subsequently been de-selected from SIT; • in the case of MOC and/or FOC, System Integration Testing (SIT) in respect of each planned entry on the EPCL for each DMC that has been selected pursuant to Clause 13 for the Capability Release, excluding any DMC that has subsequently been de-selected from SIT; • User Testing Services (UTS); • Active Meter Migration Testing (Active MMT) in respect of a specified planned entry on the list of SMETS1 Eligible Product Combinations; • Dormant Meter Migration Testing (Dormant MMT) in respect of a specified planned entry on the list of SMET1 Eligible Product Combinations;

Term	Meaning
	• Mixed Meter Migration Testing (Mixed MMT) in respect of a specified planned entry on the list of SMETS1 Eligible Product Combinations; or • System Capacity Testing (SCT).
Test Stage	means a sub-component part of a Test Phase that may be executed sequentially or in parallel with other sub-components within that Test Phase.
Test Traceability Matrix (TTM)	means a document employed to map requirements to test cases that is used to demonstrate how the requirements are covered by the test cases.
User Testing Services (UTS)	means a Test Phase during which Eligibility Testing and SMETS1 Interface Testing may be undertaken.
User Testing Services Guidance	means a document containing explanatory information regarding the testing undertaken by Users during the User Testing Services Test Phase as set out in Table 10.1.
User Testing Services Approach Document (UTSAD)	means the document that sets out any supplementary rights and obligations that apply to the testing undertaken during the User Testing Services Test Phase.
Work Off Plan	Means a plan produced on completion of a Test Phase or, in the case of the UTS Test Phase at the completion of Interface Testing, that specifies the outstanding Testing Issues, and the dates by which these Testing Issues should be resolved.

2 General

2.1 This document is the SEC Variation Testing Approach Document for SMETS1 Services.

2.2 Section X11.7 of the Code requires that the DCC and each person other than the DCC that participates in (or is required to participate in) testing under a SEC Variation

Testing Approach Document shall comply with the SEC Variation Testing Approach Document.

2.3 Section X11.8 of the Code specifies that Section H14 of the Code (Testing Services) and the Enduring Testing Approach Document shall apply in respect of testing under a SEC Variation Testing Approach Document as if such testing was a Testing Service under Section H14.34 (Modification Implementation Testing); and each participant in such testing shall be deemed to be a Testing Participant for such purposes.

2.4 This SMETS1 SVTAD sets out:

(a) the testing that is required to be undertaken prior to each of IOC, MOC and FOC of the SMETS1 Services and obligations to undertake such testing;

(b) the requirement for Parties to undertake Eligibility Testing prior to being eligible to send Service Requests in respect of SMETS1 Devices;

(c) the requirement for the DCC to undertake the DMCT Process; and

(d) the rules to apply to the development of any SMETS1 Uplift DCC Testing and SMETS1 Uplift Mandated User Testing.

3 Testing Approach Documents

3.1 The Testing Approach Documents shall be developed by the DCC. In developing a Testing Approach Document, the DCC shall consult with the Testing Advisory Group of the Panel ("**TAG**"), Parties and other relevant stakeholders prior to the submission of the document to the Secretary of State.

3.2 The DCC shall submit each draft Testing Approach Document to the Secretary of State, indicating:

(a) why the DCC considers the draft to be fit for purpose;

(b) copies of the consultation responses received; and

(c) any areas of disagreement that arose during the consultation process and that have not been resolved.

3.3 The DCC shall comply with any direction given by the Secretary of State to re-

consider, re-consult, and/or re-submit the draft document.

3.4 Once a Testing Approach Document has been approved by the Secretary of State, the DCC and each person other than the DCC that participates in (or is required to participate in) testing in the Test Phase to which that Testing Approach Document relates shall comply with that Testing Approach Document.

3.5 The Testing Approach Document for a Test Phase must describe the Parties or other persons who are entitled or required to participate in that Test Phase.

4 Modification of the SMETS1 SEC Variation Testing Approach Document and Testing Approach Documents

4.1 This SMETS1 SVTAD and the Testing Approach Documents shall be modified by the DCC in accordance with any direction to do so made by the Secretary of State. The DCC shall consult with Parties concerning any proposed modification to those documents in accordance with any direction to do so made by the Secretary of State.

4.2 This SMETS1 SVTAD and the Testing Approach Documents may be modified by the DCC following consultation with Parties and other relevant persons, the TAG, the Authority, and the Secretary of State, provided that:

(a) prior to making any such modification, the DCC must present to the Secretary of State a summary of the consultation responses received and an explanation of how the DCC has taken them into account; and

(b) it may not be modified to the extent that the Secretary of State directs otherwise.

4.3 This SMETS1 SVTAD and the Testing Approach Documents may be modified by the DCC without consultation where the modification is of a minor typographical nature or where the modification has no material effect on the rights or obligations of Parties or any other person who is entitled to undertake testing in accordance with this document. Prior to making such changes, the DCC shall provide notice of its intention to do so, together with the intended changes, to relevant stakeholders and the Code Administrator and shall publish such notice on the DCC Website. Additionally, the DCC shall notify relevant stakeholders and the Code Administrator and shall publish the revised document(s) on the DCC Website once the changes have taken effect.

5 SMETS1 Testing Objective

5.1 With the exception of testing undertaken pursuant to Clause 21, the objective of testing undertaken pursuant to this SMETS1 SVTAD (the "**SMETS1 Testing Objective**") is to:

(a) demonstrate that the DCC, the component parts of the Modified DCC Total System and SMETS1 SMSO Systems where used by a SMETS1 SMSO acting in the capacity of DCC Service Provider:

(i) operate; and

(ii) interoperate with User Systems, Active Meters, Dormant Meters and Smart Metering Systems comprising SMETS1 and SMETS2+ Devices,

to the extent necessary for the DCC to comply with the relevant requirements in Sections F, G, H, L, N and P of the Amended SMETS1 SEC;

(b) demonstrate the capability of a User to interoperate with the DCC User Interface that forms part of the Modified DCC Total System before becoming eligible to send Service Requests in respect of SMETS1 Devices; and

(c) provide a service to enable testing of the interactions with the DCC systems and processes used to Migrate SMETS1 Installations.

5.2 The Testing Objective is demonstrated in the following ways:

(a) SIT demonstrates that the individual systems and processes of the Modified DCC Total System can operate together and interoperate with Smart Metering Systems comprising SMETS1 and SMETS2+ Devices to meet the Testing Objective, except where the systems are those referred to in Clause 5.2 (c);

(b) User Testing Services demonstrates:

(i) for Eligibility Testing, that Parties can successfully send Service Requests to SMETS1 Devices and receive the corresponding Service Responses and Alerts; and

(ii) for SMETS1 Interface Testing, that the Modified DCC Total System can

interoperate with User Systems;

(c) Migration Testing demonstrates that:

(i) the individual systems of the Modified DCC Total System and SMETS1 SMSO Systems where used by a SMETS1 SMSO acting in the capacity of DCC Service Provider used to Migrate SMETS1 Installations can operate together and interoperate with Active Meters, Dormant Meters, User Systems, and Smart Metering Systems comprising SMETS1 Devices and SMETS2+ Devices to meet the Testing Objective; and

(ii) the systems used by a SMETS1 SMSO that apply a configuration to Dormant Meters and any associated Devices, and/or instruct the upgrade of the firmware on Dormant Meters and any associated Devices, (in each case pursuant to the requirements in clause 4.27 of the TMAD) operate and interoperate with Dormant Meters to meet the Testing Objective;

(d) System Capacity Testing demonstrates that the operational performance of the Modified DCC Total System is not adversely affected by the introduction of SMETS1 Services and that the SMETS1 Services will operate at the requisite performance levels;

(e) through the provision of Migration DUST; and

(f) the DMCT Process demonstrates that the DCC's processes and the component parts of the Modified DCC Total System interoperate with SMETS1 Smart Metering Systems and SMETS1 SMSO Systems such that the DCC is able to successfully Migrate SMETS1 Installations and process SMETS1 Service Requests and relevant SMETS1 Alerts in respect of Smart Metering Systems that comprise a particular Device Model Combination in accordance with the Amended SMETS1 SEC.

5.3 Testing shall be performed by the DCC in accordance with Good Industry Practice.

5.4 In order to achieve the SMETS1 Testing Objective the DCC shall undertake testing activities which include the following:

(a) communication tests from Users to SMETS1 Devices and from SMETS1

Devices to Users;

(b) verifying that all other functional changes, in accordance with the relevant requirements in Sections F, G, H, L, N and P of the Amended SMETS1 SEC, operate as intended;

(c) wherever practicable, the use of automated testing;

(d) monitoring and evaluation of all impacts on the Services, including regression testing of the Service, as defined in this SMETS1 SVTAD and the relevant Testing Approach Documents;

(e) monitoring and evaluation of test data used for testing under this SMETS1 SVTAD and the relevant Testing Approach Documents; and

(f) resolution of Testing Issues via the Testing Issue resolution process as set out in Clause 14.

5.5 PIT, SIT, System Capacity Testing and Migration Testing shall be performed in respect of each of IOC, MOC, and FOC. The SMETS1 Testing Objective applies in respect of each of IOC, MOC, and FOC. The DMCT Process shall apply in respect of any In-Scope DMCs and the SMETS1 Testing Objective shall apply in respect of the DMCT Process.

5.6 The DCC shall, in accordance with Good Industry Practice, develop User Testing Services Guidance. Where the DCC needs to make amendments to the User Testing Services Guidance, the DCC shall ensure that the amendments that are made reflect Good Industry Practice and shall notify Users of the changes and make the revised document available.

Overlapping of SMETS1 Testing

5.7 The DCC shall not overlap any SIT and SMETS1 Interface Testing without the prior review of the TAG and agreement of the Panel. For MOC and FOC, the DCC may overlap any Migration Test Phase and any SIT Test Phase in respect of the same, or different, planned entries on the EPCL, however when running an end of cycle for a SIT Test Phase the DCC shall use device sets that have exited end of cycle testing for a Migration Test Phase for the same DMC.

6 SMETS1 Security Testing

6.1 Security testing is integral to all Test Phases and shall be undertaken to demonstrate that the Modified DCC Total System remains Secure.

6.2 Security testing shall be managed by the DCC and undertaken in conjunction with the DCC Service Providers in accordance with Good Industry Practice.

6.3 In order to demonstrate the security of the Modified DCC Total System, during testing the DCC shall undertake activities which shall include the following:

(a) ensuring that all security-enforcing functionality has been adequately tested, including user account provisioning and resets, protective monitoring, SMKI/key management, gateway interfaces, and network infrastructure; and

(b) confirming that security needs have been taken into account in the development of test use cases and the subsequent development of test scripts, including testing of all security-relevant 'misuse' cases, i.e. error conditions that would cause a potential security alert to be raised.

6.4 The DCC shall ensure that appropriate security testing in respect of the Modified DCC Total System is performed across all Test Phases, and that it covers both applications and infrastructure. This will be achieved by:

(a) reviewing and approving IT security vulnerability/penetration test approaches and scope;

(b) reviewing testing reports, identifying outstanding Testing Issues, and ensuring that their security impacts are properly considered at TAB approval points;

(c) ensuring that all security functional and non-functional requirements are appropriately tested (or otherwise assured) and evidenced through the use of a traceability matrix for each Test Phase; and

(d) reviewing all identified Testing Issues that impact security to ensure that they are satisfactorily resolved, or where such issues remain outstanding notify the relevant persons before progression to the next Test Phase and/or before live operation.

7 Approach to Testing

7.1 This SMETS1 SVTAD sets out the generic testing requirements for all Test Phases for each of IOC, MOC, and FOC. Where there are specific testing requirements for a Test Phase these shall be set out in this SMETS1 SVTAD or in the Testing Approach Document for that phase.

7.2 The PIT, SIT, SCT, and MT Test Phases shall be conducted for each of IOC, MOC, and FOC.

7.3 SMETS1 Interface Testing shall be conducted for IOC only. Should a material change to the DCC User Interface be proposed as part of MOC and/or FOC, then SMETS1 Interface Testing shall be repeated for that operating capability. Where any change to the DCC User Interface is proposed as part of MOC and/or FOC, the DCC shall consult with the TAG on whether such change is considered to be material. The DCC shall subsequently notify the Secretary of State of the DCC's views and that of TAG as to whether the change is considered to be material. Where directed to do so by the Secretary of State, the DCC shall propose and consult upon the necessary changes to this SMETS1 SVTAD and any relevant Testing Approach Documents to support repeated SMETS1 Interface Testing in respect of MOC and/or FOC, in accordance with Clause 4. Where the Secretary of State has not issued a direction under this Clause 7.3, then Clause 5.2 (b) (ii) shall be deemed to have been met by virtue of SMETS1 Interface Testing having been successfully completed for IOC.

7.4 In undertaking testing for a Capability Release, the DCC shall:

(a) include the testing in each SIT Test Phase of the new functionality that is introduced;

(b) for IOC, include regression testing in SIT of the functionality employed in the DCC Live Systems at the point at which regression testing begins;

(c) for MOC and FOC, prior to exiting any SIT Test Phase undertake two functional end of cycle test runs; and

(d) for MOC and FOC, undertake regression testing in accordance with the Depth and Breadth of Regression Testing document for the relevant Test Phase(s) covering both SIT and MT.

7.5 In undertaking regression testing, the DCC shall ensure that the regression testing undertaken is adequate and that it is undertaken in a suitable manner which may include a combination of automated and targeted testing. For IOC, DCC shall consult with the TAG on the scope of regression testing undertaken during each Test Phase. Where the TAG proposes a change to the regression testing undertaken by the DCC, the DCC shall assess the impact of this and where practical shall accommodate the change and inform TAG of its decision. For IOC, should TAG disagree with the DCC's decision, it may refer the matter to the Secretary of State, whose decision shall be final and binding.

7.6 In the case of MOC and FOC, for each Migration Test Phase and SIT Test Phase relating to the same DMC, the DCC shall set out its proposals to the TAG for regression testing in a draft Depth and Breadth of Regression Testing document applicable to that Migration Test Phase(s) and SIT Test Phase. Each Depth and Breadth of Regression Testing document shall include details on planned regression tests, the environment within which they shall be performed, and the codebase on which they shall be run. Any disagreements between the DCC and the TAG regarding the content of the draft Depth and Breadth of Regression Testing document shall be referred to the Secretary of State for decision whose decision shall be final and binding. Such discussion may take place prior to this Clause 7.6 coming into effect.

7.7 In the case of MOC and FOC, for each Migration Test Phase and SIT Test Phase relating to the same DMC, the DCC shall publish on the DCC Website the final version of the Depth and Breadth of Regression Testing document. The published version shall either be the version that TAG did not disagree with or, where TAG did disagree, the version that reflects any decision by the Secretary of State pursuant to Clause 7.6. Where the DCC considers it necessary, the DCC shall prepare an updated version of the Depth and Breadth of Regression Testing document and the procedures set out in Clause 7.6 and this Clause 7.7 shall apply. The DCC may combine the activities described in Clause 7.6 and this Clause 7.7 so that a single Depth and Breadth of Regression Testing document relates to more than one DMC.

8 Generic Testing Activities

8.1 For each of the Test Phases, the DCC shall perform the following activities in accordance with Good Industry Practice:

(a) implement testing infrastructure;

(b) undertake Test Phase planning;

(c) identify test scenarios;

(d) design test scripts;

(e) produce a test specification document;

(f) produce a relevant traceability matrix;

(g) design and prepare test data, and load the test data into the test environment;

(h) prepare a test execution schedule;

(i) execute testing;

(j) perform quality gate reviews;

(k) Testing Issue management;

(l) Testing Issue resolution;

(m) release and configuration management;

(n) test progress reporting;

(o) test assurance;

(p) test completion reporting; and

(q) in addition, for the User Testing Services Test Phase, the DCC shall provide support for Users undertaking testing.

Test principles

8.2 The DCC shall develop its testing methodologies, test scenarios, and regression testing in accordance with Good Industry Practice.

Test Environment

8.3 Testing of SMETS1 Services shall make use of the DCC test environments and shall

permit the use of additional cloud-based environments for DCC Service Provider development and integration activities.

8.4 SMETS1 Eligibility Testing shall be conducted against the appropriate DCC user test environment. The DCC shall notify Parties of the DCC user test environment that is to be used.

8.5 Each DCC Service Provider shall:

(a) establish, maintain, and control their own secure test environments;

(b) design, develop, and support test stubs, test data and test labs that are required for execution of the respective Test Phases; and

(c) ensure the firmware and software versions required for each Test Phase are installed on the SMETS1 Devices that are used for testing.

Environment Management

8.6 The DCC shall manage and communicate to persons participating in a Test Phase any changes and/or fixes arising from production that are to be deployed into the SIT and UIT environments. Such deployments shall be undertaken in accordance with Good Industry Practice.

Timetable for Testing

8.7 Test Phases shall be commenced in the timescales that are necessary to facilitate testing in accordance with the DCC's delivery plan for SMETS1 Services produced pursuant to Condition 13 of the DCC licence.

9 General Requirements for SMETS1 Testing

9.1 The DCC Service Providers shall produce a test plan & test schedule for each Test Phase for the DCC which shall detail:

(a) the extent of testing to be carried out; and

(b) the responsibilities of the DCC Service Providers including the provision of test data.

9.2 Testing Issues logs shall be produced and retained by the DCC detailing all Testing

Issues found during test execution.

9.3 An adequate level of regression testing shall be used to test the Modified DCC Total System to ensure defects are not introduced or uncovered as a result of changes made when the software or its environment is changed.

9.4 Where the DCC considers that a Test Phase (other than the UTS Test Phase) should complete, or where the DCC considers that code should be promoted from one DCC test environment to another, the DCC shall have its DCC Service Provider produce a report that shall include:

(a) an overview of the testing that was planned, that details the breadth and depth of the planned tests;

(b) information on the actual number of tests run, passed, failed, and not run, mapped to the overview of testing referred to in Clause 9.4 (a);

(c) an explanation of why any tests were not run;

(d) the details of any failed tests, including impact, severity, and quantity;

(e) details on the number and severity of any Testing Issues that were raised;

(f) information on any outstanding Testing Issues and their severity;

(g) specification of the test environment used;

(h) recommendations for any additional tests to be included in subsequent testing; and

(i) lessons learnt during the testing.

9.5 Following receipt of a report as referred to in Clause 9.4, the DCC shall produce a DCC assurance report that shall include:

(a) details of the test assurance activities undertaken by DCC in the Test Phase;

(b) data on tests executed and assured as passed;

(c) an evaluation of whether the governing exit criteria have been met; and

(d) a view on the acceptability of any open Testing Issues and the associated Work Off Plans.

9.6 The DCC assurance report and supporting documentation will be presented to the TAB for their approval or rejection. Where approved, the DCC assurance report shall be provided to the TAG for information. Where requested by a TAG member, the DCC shall also make available supporting documentation including the report referred to in Clause 9.4 and shall include the appropriate confidentiality markings when doing so.

9.7 For SIT, following approval of the report referred to in Clause 9.6 and where the DCC considers that the SIT Test Phase is completed, the DCC shall produce a Completion Report for that Test Phase (as specified in Table 10.1 which shall include the reports produced pursuant to Clause 9.4 and Clause 9.5) and shall provide the Completion Report for the SIT Test Phase to the TAG for recommendation to the Panel. The DCC may combine the activities described in this Clause 9.7 so that a single Completion Report covers the completion of more than one SIT Test Phase. For MOC or FOC, a Completion Report for a SIT Test Phase may also be combined with a Completion Report for a Migration Test Phase where they are in respect of the same planned entry on the EPCL. Furthermore, for MOC or FOC, a Completion Report for a SIT Test Phase and a Completion Report for a Migration Test Phase in respect of the same planned entry on the EPCL may be combined with other Completion Reports in respect of other planned entries on the EPCL. Each Completion Report for a SIT Test Phase shall be accompanied by the SIT Auditor Report (as an Annex) where the report is required to be prepared pursuant to Clause 19, which shall also be provided to the TAG for information.

9.8 Where the DCC considers that code should be promoted from a DCC test environment into production, the DCC shall produce a report setting out the testing that has been undertaken, which shall be provided to such persons or bodies as directed by the Secretary of State.

9.9 The DCC shall discuss with TAG the format and content (including the level of granularity) of any reports that are to be produced pursuant to this Clause 9 in advance of them being produced and sufficiently early such that any information that needs to

be reported is captured as part of the DCC's test activities.

9.10 Prior to promoting code into an environment in which a Testing Participant(s) is undertaking testing, the DCC shall provide to the Testing Participant(s) a release note. The DCC shall provide such release note in advance of promoting such code to enable the Testing Participant(s) to consider any possible impacts.

10 Specific Deliverables

10.1 The DCC shall publish or update published versions of the documents detailed in Table 10.1.

10.2 The development of the User Testing Services Guidance specified in Table 10.1 shall include a review process via the DCC's Testing Design Expert Group. The structure of the Completion Reports specified in Table 10.1 shall be discussed with the TAG prior to production.

Table 10.1 Specific Deliverables

Deliverable	Description	Created by	Audience	Timing	Where available
User Testing Services Guidance	Guidance for Testing Participants testing in an environment where Eligibility Testing is being undertaken and other Testing Services are being provided. As a minimum, shall include details of triage, defect and fix management, change management, and device management in UTS.	DCC	Testing Participants	To be provided by the DCC as soon as possible following the UTS Testing Approach Document being approved	Publish on DCC Website

SIT Auditor Reports	Using the SIT Auditor as referenced in Clause 19, a range of independent assurance activities shall be conducted and reports relating to said activity shall be produced in accordance with Clause 19	DCC	Panel / TAG	As determined by the timing for the reports in Clause 19	Provided to Parties in accordance with Clause 13.20
Completion Report for a SIT Test Phase	Evidence of success against the SMETS1 SIT Exit Criteria. For IOC this is a single SIT Test Phase and for MOC and FOC there are multiple SIT Test Phases.	DCC	Panel / TAG	Following TAB approval of SIT Exit for IOC, and each SIT Test Phase exit for MOC, and FOC.	Provided to Parties in accordance with Clause 13.20
SMETS1 Interface Test Completion Report	Evidence of success against the SMETS1 Interface Testing Exit Criteria	DCC	Panel / TAG	As determined by the timing for the completion of SMETS1 Interface Testing	Publish on DCC Website (in line with any arrangements specified in the UTS Approach Document)

11 Traceability

11.1 The overall scope of testing in SIT shall be validated by the DCC to ascertain that it is correct through the use of a TTM, assured by the DCC, which shall set out the requirements in Sections F, G, H, L, N and P of the Amended SMETS1 SEC that are to be tested and the associated test scenarios.

11.2 In respect of IOC, the DCC shall assure the TTM (and any subsequent updates to it) in timescales that do not adversely impact upon the timely undertaking of SIT. In respect of MOC and FOC, the TTM shall be assured by the DCC prior to the

commencement of SIT for those operating capabilities. If, during SIT, further changes are made to the Sections F, G, H, L, N and P of the Amended SMETS1 SEC, the TTM will be updated to reflect these changes.

11.3 The TTM shall be used by the DCC to track SIT progress and to demonstrate the completion of SIT and shall form a key element of each and every SIT Audit produced pursuant to Clause 19.4 or each and every Completion Report produced pursuant to Clause 19.6 (as the case may be).

12 Test Procedure

12.1 Progression through the Test Phases for SMETS1 Services shall be gated using Entry Criteria and Exit Criteria.

12.2 The generic Entry Criteria for any Test Phase are set out in Clause 12.5. The generic Exit Criteria for PIT and SIT are set out in Clause 12.9.

12.3 Additional specific Entry Criteria and Exit Criteria shall be established for other Test Phases where required. These shall be set out in the relevant Testing Approach Document (with the exception of SIT where, should such specific Entry Criteria or Exit Criteria be required, they shall be set out in this SMETS1 SVTAD). The DCC shall not commence Migration Testing or the User Testing Services Phase unless the Test Approach Document for that Test Phase has been approved. The DCC shall produce any other Testing Approach Document in timescales that do not have an adverse impact upon the timely undertaking of the Test Phase to which it relates.

12.4 Test Phases may be subdivided into Test Stages. In these circumstances, Entry and Exit criteria may be established at the Test Stage level to support internal DCC Test Stage gating. Where this occurs, this will be specified in the relevant test plan.

Generic Entry Criteria

12.5 The fulfilment of the following generic Entry Criteria is required to permit entry to all Test Phases:

(a) test plan signed off by the DCC;

(b) Test Completion Certificates for any precursor Test Phase issued, unless in accordance with Clause 5.7 it is determined that the Test Phase may overlap;

(c) test specification prepared, including the production of a TTM, with the exception of SIT for IOC;

(d) confirmation that the required test laboratories, SMETS1 Devices, tools, stubs, environments, and data are in place, secure and are ready for testing;

(e) in the case of each SIT Test Phase for MOC or FOC, the DCC has concluded its discussions with TAG for the depth and breadth of testing to be undertaken in accordance with a draft Depth and Breadth of SIT document applicable to the SIT Test Phase (such discussion may take place prior to this Clause 12.5 (e) coming into effect); and

(f) an approval to proceed certificate for the Test Phase has been issued by the DCC.

12.6 For purposes of Clause 12.5 (b) in respect of MOC and FOC, an MT Test Phase in respect of the same planned entry on the ECPL (or any MT Test Phase) shall not be considered to be a precursor to a SIT Test phase in respect of the same planned entry on the EPCL (or any SIT Test Phase).

12.7 For any SIT Test Phase related to MOC and FOC, any disagreements between the DCC and the TAG regarding the content of the draft Depth and Breadth of SIT document (following discussions concluding as per Clause 12.5 (e)) shall be referred to the Secretary of State for a decision, whose decision shall be final and binding. For each of MOC and FOC, the DCC shall publish on the DCC Website the final version of the Depth and Breadth of SIT document. The published version shall either be the version that TAG did not disagree with or, where TAG did disagree, the version that reflects any decision by the Secretary of State. Where the DCC considers it necessary, the DCC shall prepare an updated version of the Depth and Breadth of SIT document and the procedures set out in Clause 12.5 (e) and this Clause 12.7 shall apply.

12.8 In the case of MOC and FOC, the DCC may combine the activities described in Clause 12.5 (e) and Clause 12.7 so that a single Depth and Breadth of SIT document covers more than one SIT Test Phase. For MOC or FOC, a Depth and Breadth of SIT document may also be combined with a Depth and Breadth of MT document (as described in clause 8 of the MTAD) where they are in respect of the same planned entry on the EPCL. Furthermore, for MOC or FOC, a Depth and Breadth of SIT

document and a Depth and Breadth of MT document in respect of the same planned entry on the EPCL may be combined with other Depth and Breadth of SIT documents and Depth and Breadth of MT documents in respect of other planned entries on the EPCL.

Generic Exit Criteria for PIT and SIT

12.9 The following generic Exit Criteria are required to exit and complete any PIT and SIT Test Phase:

(a) all planned tests have been executed. In exceptional circumstances, the DCC may propose to de-scope a planned test. Such de-scoping shall be subject to approval by the TAB. In the case of SIT, the DCC shall refer the TAB's recommendation to the Secretary of State and the test shall only be de-scoped if the Secretary of State approves;

(b) the test success rate that is achieved shall be at or above the minimum levels specified in the relevant Testing Approach Document (for the purposes of SIT this is set out in Table 13.1);

(c) the number and severity of any outstanding Testing Issues is at or below the Testing Issue Thresholds specified in Clause 13 for PIT or SIT as appropriate;

(d) test results and other requisite evidence is documented;

(e) test issue logs are produced;

(f) regression testing is successfully completed in accordance with the criteria specified in the relevant Testing Approach Document (for the purposes of SIT this is set out in Table 13.1);

(g) production of Work Off Plans for any outstanding Testing Issues that occurred in the Test Phase;

(h) Work Off Plans from preceding Test Phases have been completed and the associated tests successfully re-run; and

(i) the reports referenced in Clauses 9.4 and 9.5 have been produced and, where specified, the associated Test Completion Certificates have been issued by the

DCC.

12.10 Supplementary information on the SIT Exit Criteria (detailed in Clause 12.9) is set out in Table 13.1.

13 SMETS 1 System Integration Testing

Selection of DMCs for use in testing for each of IOC, MOC, and FOC

13.1 Each Supplier Party shall provide the DCC with any information that the DCC reasonably requests relating to the SMETS1 Devices in respect of which it is the current Supplier Party. This information may include:

(a) corresponding SMETS1 Device Models;

(b) configuration settings of the SMETS1 Devices;

(c) DMC quantities;

(d) the number of Smart Metering Systems that the Supplier Party intends to enrol in relation to IOC, MOC, and FOC;

(e) the mapping of numbers of SMETS1 Devices to the associated DMCs; and

(f) notification of any changes or proposed changes to such SMETS1 Devices including to firmware and configuration settings.

13.2 When selecting DMCs for use in testing pursuant to the SMETS1 SVTAD for a Capability Release, the DCC shall do so with the objective of facilitating the enrolment of all SMETS1 Smart Metering Systems that are in scope for enrolment as soon as reasonably practicable. For the purposes of this Clause 13, the SMETS1 Smart Metering Systems that are in scope for enrolment are those which, once enrolled, would comprise SMETS1 Meters for which the Secretary of State has concluded that DCC should be required to provide SMETS1 Services (or, if such conclusions have not yet been reached, those for which the Secretary of State is consulting on as being minded to require DCC to provide SMETS1 Services).

13.3 For IOC, the DCC shall determine the DMCs with which to start testing pursuant to this SMETS1 SVTAD. For MOC and FOC, the DCC shall determine the DMCs with which to start testing in respect of a SIT Test Phase or a Migration Test Phase pursuant

to this SMETS1 SVTAD. Prior to making such a determination, and with the exception of the SMETS1 ESME Device Model component(s) of the DMC(s) for FOC (as further set out in Clauses 13.10 to 13.12), the DCC shall discuss its proposals with stakeholders and set out the rationale for its selection.

13.4 This Clause 13.4 and Clauses 13.5 to 13.9 do not apply in respect of the SMETS1 ESME Device Model component(s) of the DMC(s) for FOC (as to which see Clauses 13.10 to 13.12). For IOC, the DCC shall notify Supplier Parties of the DMCs with which it has decided to start testing. For MOC and FOC, the DCC shall notify Supplier Parties of the DMCs with which it has decided to start testing for particular Test Phases. Where any Supplier Party disagrees with any DCC decision made pursuant to this Clause 13.4, the matter may be referred to the Secretary of State within 10 Working Days of the DCC's decision, and the decision of the Secretary of State shall be final and binding for the purposes of this Code.

DMC De-selection (excluding SMETS1 ESME for FOC and Secure Meters Device Models for MOC)

13.5 Where:

(a) a Testing Issue has arisen with a DMC selected pursuant to Clause 13.4 (but not Secure Meters Device Models for MOC, as to which see Clauses 13.10 to 13.12), and:

(i) the resolution reached pursuant to the Testing Issue resolution process specified in Clause 14 requires action to be taken in respect of the DMC; and

(ii) where the DCC considers that either completion of SIT for IOC should not be delayed, or a SIT Test Phase or a Migration Test Phase for MOC or FOC should not continue as a consequence, having regard to the objective of facilitating the enrolment of all SMETS1 Smart Metering Systems that are in scope for enrolment as soon as reasonably practicable; or

(b) the DCC having taken all reasonable steps to do so, is unable to obtain a selected DMC for use in testing,

then the DCC shall consult with the TAG on de-selection of the DMC from testing, and in so doing shall anonymise and redact information where appropriate.

13.6 Following the TAG consultation, the DCC shall decide whether to de-select the DMC from testing pursuant to this SMETS1 SVTAD and notify the TAG and Supplier Parties accordingly.

13.7 Where a Supplier Party disagrees with the DCC de-selection decision, the Party may refer the issue to the Secretary of State within 10 Working Days of the DCC's decision. Pending the determination by the Secretary of State, the Secretary of State shall inform the DCC as to whether it should continue testing with the DMC in SIT for IOC or in the Migration Test Phase and/or SIT Test Phase for MOC or FOC.

13.8 Where the Secretary of State determines that the DMC should not be omitted from SMETS1 testing, the DCC shall not de-select it from either:

(a) SIT for IOC; or

(b) the SIT Test Phase and/or Migration Test Phase for either MOC or FOC (as the case may be).

13.9 In the case of Clause 13.5 (b), the DCC shall recommend to the Secretary of State any alternative course of action, having regard to the objective of facilitating the enrolment of all SMETS1 Smart Metering Systems that are in scope for enrolment as soon as reasonably practicable.

Varying Device Models for FOC and MOC Secure

13.10 The SMETS1 ESME Device Model(s) used in respect of Migration Test Phases and SIT Test Phases for FOC shall be the Device Model(s) chosen by DCC from time to time. The Secure Meters Device Models used in respect of Migration Test Phases and SIT Test Phases for MOC may be varied by DCC from time to time. It is acknowledged that the following may need to change as testing progresses:

(a) the SMETS1 ESME Device Model(s) used in Migration and/or SIT Test Phases for FOC; and

(b) the Secure Meters Device Models used in Migration and/or SIT Test Phases for

MOC.

When initially choosing the ESME Device Model(s) for FOC, and when changing any of the Device Models referred to in Clause 13.10 (a) or Clause 13.10 (b) in respect of FOC or MOC (as applicable), the DCC shall choose the one(s) that it considers will successfully interoperate with the DCC Systems, and shall have regard to the objective set out in Clause 13.2.

13.11 The DCC shall first notify the SMETS1 ESME Device Model(s) chosen to form component(s) of DMC(s) used in FOC Test Phases alongside its notification made pursuant to Clause 13.4. The DCC shall promptly notify any change in Device Model(s) pursuant to Clause 13.10 (a) or Clause 13.10 (b) and the rationale for such change. Such notifications shall be via the reports produced pursuant to Clause 16.1.

13.12 In the case of FOC, with the exception of references in Clauses 13.3 to 13.11 references in the Code to DMCs selected for use in Migration Test Phases or SIT Test Phases shall be deemed to include the SMETS1 ESME Device Model components from time to time chosen by the DCC pursuant to this Clause 13. In the case of MOC, with the exception of Clauses 13.5 to 13.11, references in the Code to DMCs selected for use in Migration Test Phases or SIT Test Phases shall be deemed to include the DMC(s) including Secure Meters Device Models, determined or chosen from time to time pursuant to this Clause 13.

DCC Witnessing of SIT Testing

13.13 For IOC, the DCC shall produce and maintain a document (the "**SMETS1 SIT Approach Release**"). This document shall contain supplementary information setting out the testing to be undertaken in SIT for IOC including a description of the testing to be undertaken, the scope of planned tests, test methods and test procedures. The DCC shall provide this SMETS1 SIT Approach Release to the TAG as part of the ongoing oversight of SIT for IOC.

13.14 The DCC shall observe a subset of the tests carried out in each and every SIT Test Phase. The subset of tests to be observed shall be selected by the DCC having regard to providing assurance that the Testing Objective has been met.

13.15 The DCC shall observe test execution, and record results produced from executed

tests. There shall be:

(a) no deviation from test scripts; and

(b) no involvement by observers in the execution.

13.16 The DCC shall in its Completion Report for a SIT Test Phase describe the results of DCC's witnessing including:

(a) the number of successfully completed tests;

(b) the number and reason for tests that have failed; and

(c) the number of successfully completed tests as a ratio or percentage of the total number of tests executed.

SIT Exit Criteria

13.17 The Exit Criteria in Clause 12.9 apply to any SIT Test Phase and are supplemented with the additional details and additional Exit Criteria set out in Table 13.1. SIT testing shall be performed for each of IOC, MOC, and FOC and these additional details and Exit Criteria will apply for each of IOC, MOC, and FOC.

Table 13.1 SIT Exit Criteria

#	Exit Criteria	Success	Evidence
1A	Functional SIT Execution (For IOC)	For IOC, successful completion will be 100% of planned tests (unless as set out in Clause 12.9 tests have been de-scoped and such de-scoping approved by the Secretary of State) for functional testing have been executed, with a 90% pass rate for any planned tests on the same DMC (excluding those tests that have been de-scoped).	Completion Report for the SIT Test Phase and TAB Test Completion Certificate
1B	Functional SIT Execution (For any SIT Test Phase for MOC and FOC)	For MOC and FOC, successful completion will be 100% of SIT Planned Tests (unless as set out in Clause 12.9 tests have been de-scoped and such de-scoping approved by the Secretary of State) for functional testing have been executed, with a 90% pass rate for any planned tests for the SIT Test Phase (excluding those tests that have been de-scoped).	Completion Report for the SIT Test Phase and TAB Test Completion Certificate

#	Exit Criteria	Success	Evidence
2A	SIT End of Cycle Testing	Successful completion will be 100% of SIT Planned Tests for end of cycle testing established pursuant to Clause 12.7 have been executed, with a pass rate of 100% excluding: (a) defects known at the start of end of cycle testing; (b) any new defects arising since the start of end of cycle testing where such exclusion is approved by the TAG. Where the TAG does not approve exclusion of a new defect in (b) above, the DCC may refer the matter to the Secretary of State for determination. The Secretary of State's determination shall be final and binding for the purposes of this Code.	Completion Report for the SIT Test Phase and TAB Test Completion Certificate
2B	SIT Regression Execution	Successful completion will be 100% of planned tests for regression testing (pursuant to Clause 7) have been executed: (a) for IOC, on the stage exit versions of the software; and (b) for MOC and FOC, in accordance with the relevant Depth and Breadth of Regression Testing, with a 100% pass rate excluding known defects.	Completion Report for the SIT Test Phase and TAB Test Completion Certificate
3	Testing Issue Thresholds	Extant Testing Issues are within the relevant Testing Issue Threshold (Clause 13)	Completion Report for the SIT Test Phase and TAB Test Completion Certificate
4	Test results documented and evidence captured	Results of testing documented and evidence stored	Completion Report for the SIT Test Phase
5	Complete set of Testing Issue logs produced	Logs have been produced and stored for all Testing Issues identified in Testing	Referenced in the Completion Report for the SIT Test Phase
6	Full Test traceability to the requirements	Test Traceability (as defined in the TTM) demonstrated and documented as set out in Clause 11	Completion Report for the SIT Test Phase (where Clause 19.6 applies) or the SIT Auditor Report

#	Exit Criteria	Success	Evidence
7	Full Test traceability of executed tests	Test heatmap produced that shows coverage and success of testing, and traceability to the TTM as set out in Clause 11	Completion Report for the SIT Test Phase (where Clause 19.6 applies) or the SIT Auditor Report
8	DCC assurance report approved	TAB approval of the DCC assurance report referred to in Clause 9.6	Issuing of a Completion Report for the SIT Test Phase by the TAB for consideration by the Panel

Process for agreeing SIT Completion

13.18 SIT for IOC and each SIT Test Phase for MOC and FOC shall only complete when the Panel determines that the SIT Exit Criteria have been met. When the DCC considers that such completion ought to occur, the DCC shall:

(a) notify the Secretary of State, the Authority, the Panel, and the Parties that the DCC considers that SIT has been completed;

(b) provide the Authority, the Panel, and the Secretary of State with copies of the SIT Completion Report (including any corresponding SIT Auditor Report), and a list of the sections of such reports that the DCC considers should be redacted; and

(c) review the supporting documentation and evidence with regards to the relevant entry and exit criteria with the TAG.

13.19 The Panel shall confirm the completion of SIT, for the Test Phase or shall highlight where it believes the Exit Criteria have not been met. Where the Panel believes the Exit Criteria have not been met, it shall direct the DCC to continue SIT for the Test Phase and to address outstanding matters and submit further documentation and evidence to support the completion of SIT for the Test Phase, following receipt of additional materials the Panel shall determine whether or not SIT for the Test Phase has completed (and this Clause 13.19 shall apply again).

13.20 On direction from the Panel, the DCC shall provide the Parties with copies of the Completion Report (including any corresponding SIT Auditor Report), having first

redacted any sections specified by the Panel.

Testing Issue Thresholds

13.21 Testing Issue Thresholds shall be applied as a component of the Exit Criteria for a Test Phase in each of IOC, MOC, and FOC (except in the case of the UTS Test Phase, where they shall be applied to the Exit Criteria for SMETS1 Interface Testing which is only applicable for IOC). Within a Test Phase, all Testing Issues that are raised during that Test Phase or that were raised in any equivalent Test Phase for IOC or MOC, and which remain open shall be counted as extant Testing Issues within that Test Phase for that Test Phase exit or for SMETS1 Interface Testing exit. In addition, in the case of SMETS1 Interface Testing, any extant Testing Issues identified elsewhere across the DCC test environments, or production issues identified in the production environment, which could impact the decision to deploy the SMETS1 code into the production environment will also be assessed and where agreed by TAG shall be treated as extant Testing Issues and included in the overall assessment for SMETS1 Interface Testing exit as further set out in Clause 13.27.

13.22 Except in the case of a Test Phase for SIT for MOC or FOC, the Testing Issue Thresholds per DCC Service Provider in each Test Phase for a Capability Release are set out in Table 13.2 below, with the exception of Testing Issue Thresholds for the Migration Test Phase (which shall be detailed in the MTAD). The Testing Issue severity levels shall be applied where the Testing Issue has arisen as a consequence of the DCC or the Modified DCC Total System and shall be defined by reference to the testing issue severity descriptions in clause 12 of the Common Test Scenarios Document.

Table 13.2 Testing Issue Thresholds per DCC Service Provider

Testing Issue Severity	PIT	SIT (IOC only)	UTS - SMETS1 Interface Testing (IOC Only)	SCT
1	0	0	0	0
2	0	0	0	0
3	15	15	5	15
4	30	30	10	30
5	60	60	20	60

13.23 In the case of a Test Phase for SIT for MOC or FOC, the Testing Issue Thresholds set out in Table 13.3 apply. The Testing Issue Thresholds are calculated across all DCC Service Providers collectively and comprise both:

(a) a threshold for the individual Test Phase for SIT; and

(b) an aggregate threshold that takes into account any open Testing Issues for MOC or FOC.

Table 13.3 SMETS 1 SVTAD Testing Issue Thresholds for SIT in the Circumstances of MOC or FOC

Testing Issue Severity	For Clause 13.23 (a) SIT Test Phases for MOC or FOC	For Clause 13.23 (b) Aggregate limit across SIT Test Phases for MOC or FOC
1	0	0
2	0	0
3	15	30
4	30	60
5	60	120

13.24 In the case of a SIT Test Phase for MOC, or FOC, on completion of any SIT Test Phase, any Testing Issues that are open that would affect the functioning of the solution for the planned entry on the EPCL shall be counted for the purpose of the SIT Test Phase for that planned entry on the EPCL, irrespective of the Test Phase in which they arose.

13.25 If during the SIT Test Phase or the SMETS1 Interface Testing component of the UTS Test Phase, a Testing Issue is opened that the DCC believes should not be counted against the Testing Issue Threshold for that Test Phase, the DCC shall inform the TAB, the TAG, and the Panel; and shall state its rationale for proposing the exclusion. The Testing Issue shall be excluded for the purposes of calculating whether the Testing Issue Threshold has been exceeded only if the TAG agrees. Information on all Testing Issues so excluded from the calculation shall be included in the Completion Report produced pursuant to Clause 16.5.

13.26 Where the DCC's initial exclusion proposal is not supported, the Testing Issue shall be counted when calculating whether the Testing Issue Threshold has been exceeded. Should the TAG and the DCC disagree on the exclusion of a Testing Issue and where

this decision has a material impact on the ability to:

(a) deliver IOC; or

(b) complete SIT or MT in respect of a planned entry of the EPCL for either, MOC, or FOC,

the DCC (having regard to the objective of facilitating the enrolment of all SMETS1 Smart Metering Systems that are in scope for enrolment as soon as reasonably practicable) may refer the matter to the Secretary of State, within 5 Working Days of the TAG's decision, for determination. The Secretary of State's decision shall be final and binding for the purposes of this Code.

13.27 In reviewing extant Testing Issues for a SIT Test Phase, the DCC shall discuss with TAG whether any Testing Issues that have been raised in the SCT Test Phase to date, should be counted for the purposes of determining whether the SIT Test Phase Testing Issue Threshold has been exceeded and therefore whether the Testing Issue Threshold exit criterion for the SIT Test Phase has been met.

13.28 In reviewing extant Testing Issues for SMETS1 Interface Testing exit for the UTS Test Phase, the DCC shall present:

(a) all open severity 1-3 Testing Issues raised by any Testing Participant; and

(b) all open severity 4-5 Testing Issues raised by any Party that has completed Eligibility Testing; and

(c) any other open severity 1-3 issues that have arisen in DCC test or production environments that the DCC believes could impact the decision to deploy the SMETS1 code into the production environment,

to the TAG, to:

(d) confirm that the correct severities have been assigned; and

(e) determine which of the issues in (a), (b) and (c) should be counted for the purposes of determining whether the Testing Issue Threshold has been exceeded and therefore whether the Testing Issue Threshold exit criterion for SMETS1 Interface Testing has been met.

13.29 Should the DCC disagree with the TAG on whether a Testing Issue raised in the SCT Test Phase should be counted under Clause 13.27, or on the matters set out in Clause 13.28 (d) or Clause 13.28 (e), the DCC may refer the matter to the Secretary of State for determination, whose decision shall be final and binding for the purposes of this Code.

Eligibility Testing

13.30 Each Party that has completed User Entry Process Testing for a particular User Role without having undertaken Eligibility Testing must successfully complete Eligibility Testing in respect of that User Role prior to being eligible to send Service Requests in respect of SMETS1 Devices in that User Role. The UTS Approach Document shall set out the scope of and process for undertaking Eligibility Testing.

13.31 Each SMETS1 SVTAD Large Supplier shall take all reasonable steps to complete Eligibility Testing as soon as reasonably practicable.

13.32 Each Supplier Party that is a SMETS 1 SVTAD Large Supplier shall notify the DCC of their status as such within one month after the time that this SMETS1 SVTAD comes into effect.

14 Testing Issue Resolution

14.1 The process set out in Section H14.37 onwards of the Code shall apply for the purposes of Testing Issue resolution during SIT, UTS, SCT, and MT; subject to Clause 14.2 and Clause 14.3.

14.2 Where a Testing Participant disagrees with a determination by the DCC pursuant to Section H14.39(a) (with regards to the severity level only) then the matter may be referred to the TAG, whose decision will be final and binding for the purposes of this Code.

14.3 Where the Testing Participant disagrees with the DCC's determination pursuant to Section H14.41 of the matters set out at Section H14.39(c) (but not otherwise), then the Testing Participant may request that the DCC refers the matter to the Secretary of State.

14.4 Except in the circumstances set out in Clause 14.5, where a disagreement exists

pursuant to Clause 14.2, the determination of the DCC including assigned Testing Issue severity shall remain and be included in any evaluation until the TAG reaches its determination and notifies the DCC and the Testing Participant for the purposes of this Code.

14.5 If the matter being disputed pursuant to Clause 14.2 could affect whether the Exit Criteria for a Test Phase have been met, a decision on whether the Exit Criteria have been met cannot be made until the TAG determination has been made.

15 Work Off Plans

15.1 At the point of Test Phase exit and, in the case of the UTS Test Phase, SMETS1 Interface Testing completion, all open Testing Issues shall be documented in a Work Off Plan which shall be approved by the TAB. The Work Off Plan will form part of the underlying evidence considered by the DCC which is referenced in the Completion Report presented for agreement to the Panel. Any Work Off Plans shall set out the following timescales within which all open Testing Issues are to be resolved:

(a) for severity 3 Testing Issues, within 20 Working Days from the issuing of a Test Completion Certificate;

(b) for severity 4 Testing Issues, within 40 Working Days from the issuing of a Test Completion Certificate; and

(c) for severity 5 Testing Issues, within 60 Working Days from the issuing of a Test Completion Certificate.

15.2 The DCC shall monitor the discharge of Work Off Plans and report progress to the TAB. If the timescales for resolution of a Work Off Plan are not going to be met, as soon as reasonably practicable after the person responsible for implementing the Work Off plan becomes aware that this is the case, a correction plan shall be produced and presented to the TAB for its approval. The TAB will consider the correction plan and may elect to revoke any Test Completion Certificate that it has issued pending resolution of the open Testing Issues contained in the correction plan. The resolution of Work Off Plans shall be reported to the TAG and the Panel and the resolution of production issues shall be reported to the Panel.

16 Test Reporting

Weekly DCC Test Execution Report

16.1 The DCC shall provide a weekly test execution report to the Panel and the Secretary of State; the content shall be anonymised and redacted where appropriate.

16.2 The test execution report shall detail progress of testing undertaken pursuant to this SMETS1 SVTAD, including relevant test phases, test issue reporting, capacity, and the availability of Eligibility Testing.

16.3 In the case of Eligibility Testing the DCC shall report progress of testing prior to SMETS1 Interface Testing completion.

16.4 During SIT, the test execution report shall, in addition to the requirements specified in Clause 16.1 to Clause 16.2, detail progress of testing and testing coverage of functional areas, including functional groups as detailed in the heatmap.

Completion Reports

16.5 With the exception of PIT, the DCC shall produce Completion Reports covering the matters set out in Table 10.1 where it considers the relevant Exit Criteria for the Test Phase or, in the case of the UTS Test Phase the Exit Criteria for SMETS1 Interface Testing, have been met.

17 Test Resources

Test Stubs

17.1 The DCC may during SIT use a service user simulator Testing Stub to simulate a User.

18 Additional Obligations

All Testing Participants and the DCC

18.1 The DCC and all Testing Participants involved in SMETS1 Services testing undertaken pursuant to this SMETS1 SVTAD shall:

(a) undertake testing in accordance with Good Industry Practice; and

(b) take all reasonable steps to facilitate achievement of the SMETS1 Testing Objective.

The DCC

18.2 The DCC shall ensure that:

(a) test activities are conducted in accordance with this SMETS1 SVTAD and the associated Testing Approach Documents;

(b) test plans are produced and employed;

(c) the necessary test scenarios, test scripts, Test Traceability Matrices, test data, and test environments are put in place;

(d) planned tests are executed and evidence captured;

(e) test issues are documented, diagnosed, and where it is within the remit of the DCC they are resolved;

(f) test progress is monitored and progress is reported;

(g) tests are assured, through witnessing and the review of evidence;

(h) Completion Reports are produced and submitted;

(i) the TAB is managed and supported;

(j) the Panel is supported in making their SMETS1 recommendations and decisions; and

(k) the Secretary of State is supported in making his or her SMETS1 decisions.

19 SIT Audit and Independent Assurance

19.1 The DCC shall appoint an independent SIT Auditor through the existing DCC audit and assurance framework agreement available on the DCC website.

19.2 Tender responses shall be assessed against criteria which inter alia shall include:

(a) independence from the DCC and the DCC Service Providers;

(b) proposed audit approach;

(c) relevant experience; and

(d) cost.

19.3 The identity of the SIT Auditor shall be notified to the Authority, the Panel, Parties, and the Secretary of State following contract award.

19.4 For the SIT Test Phase in respect of the first planned entry on the EPCL in respect of a SMETS1 SMSO, the SIT Auditor shall produce a SMETS1 SIT Audit Report (to accompany the Completion Report for the SIT Test Phase) that shall include:

(a) a review of the Test Traceability Matrix documentation produced by the DCC, to confirm that it provides a mapping of test scenarios to the Code requirements (being those requirements that need to have been tested in order to demonstrate the SMETS1 Testing Objective in Clause 5);

(b) a review of the test heatmap produced by the DCC to confirm that the planned tests map to the test scenarios and test them adequately;

(c) confirmation that DCC testing and assurance has been conducted in accordance with this SMETS1 SVTAD (including confirming its coverage and completeness);

(d) confirmation that each of the test Exit Criteria have been met;

(e) confirmation that all open Testing Issues have been captured and either closed or, where still open, Work Off Plans are in place; and

(f) a view on the acceptability of any open Testing Issues and the associated Work Off Plans.

19.5 In the case of SIT for IOC, the DCC shall require the SIT Auditor to, as soon as reasonably practicable after SIT has commenced, provide an interim opinion on the matters set out in Clause 19.4 (a) and Clause 19.4 (b). This opinion shall reflect the Test Traceability Matrix and heat map in use at that point. DCC shall share and discuss the interim opinion with the TAG.

19.6 The obligation in this Clause 19.6 shall apply in respect of SIT Test Phases in relation to any subsequent planned entries on the EPCL in respect of a SMETS1 SMSO. The DCC shall ensure that the matters prescribed in this Clause 19.6 shall be undertaken

by DCC personnel that are sufficiently independent from those undertaking the testing activities. Within each Completion Report for the SIT Test Phase, the DCC shall include:

(a) confirmation that the DCC has assured that the Test Traceability Matrix documentation provides a mapping of test scenarios to the Code requirements (being those requirements that need to have been tested in order to demonstrate the SMETS1 Testing Objective in Clause 5);

(b) confirmation that the DCC has reviewed the test heatmap to confirm that the SIT Planned Tests map to the test scenarios and test them adequately;

(c) confirmation that the DCC's testing and assurance has been conducted in accordance with this SMETS1 SVTAD (including confirming its coverage and completeness);

(d) confirmation that each of the test Exit Criteria have been met;

(e) confirmation that all open Testing Issues have been captured and either closed or, where still open, Work Off Plans are in place; and

(f) a view on the acceptability of any open Testing Issues and the associated Work Off Plans.

19.7 The DCC may combine the activities described in this Clause 19 for several SIT Test Phases undertaken pursuant to this SMETS1 SVTAD into a single set of activities and report to align to each Completion Report where a single report is being produced for those SIT Test Phases pursuant to Clause 13.

20 Process for Device Model Combination Testing (DMCT Process)

20.1 The DCC shall undertake the DMCT Process for any In-Scope DMCs and shall do so in timescales and in a manner designed to facilitate the enrolment of all SMETS1 Smart Metering Systems that are in scope for enrolment as soon as is reasonably practicable. For this purpose, the SMEST1 Smart Metering Systems that are in scope for enrolment are those which, once enrolled, would comprise SMETS1 Meters for which the Secretary of State has concluded that the DCC is required to provide SMETS1 Services (or, if such conclusions have not yet been reached, those SMETS1

Smart Metering Systems for which the Secretary of State is consulting on as being minded to require the DCC to provide SMETS1 Services).

20.2 Within 5 Working Days of the start of (i) the first full calendar month that follows the date on which this Clause 20 comes into effect, and (ii) every second calendar month thereafter, each Supplier Party shall provide the data reasonably requested by the DCC in respect of the SMETS1 Smart Metering Systems that the Supplier Party is planning to enrol (excluding Smart Metering Systems that are comprised of an MOC or FOC SIT DMC or an IOC Migration Testing DMC). A minimum of 10 Working Days in advance of the calendar month for which the data is being requested, the DCC shall notify each Supplier Party of the data reasonably required by the DCC for this purpose, and a reasonable format for submission. Each Supplier Party shall ensure that it provides the most accurate and up to date data available at the time of its submission to the DCC. The DCC shall be entitled to rely upon the data submitted for the purposes of this Clause 20. However, an obligation to provide data in respect of Smart Metering Systems that a Supplier Party is planning to enrol in respect of MOC or FOC shall not apply until such time as the DCC has determined the MOC or FOC SIT DMCs for the relevant Capability Release pursuant to Clause 13.

20.3 For any particular submission required to be made pursuant to Clause 20.2, where a Supplier Party confirms in writing to the DCC that the data relating to all or part of its submission is wholly unaltered from that previously provided to the DCC (whether under Clause 20.2 or otherwise), then the Supplier Party shall not be required to resubmit the data that has remained unchanged. For the purposes of this Clause 20.3, a Supplier Party shall be entitled to refer to any data submitted to the DCC prior to this Clause 20 coming into effect.

20.4 Where a Supplier Party has been unable to provide part of the data requested pursuant to Clause 20.2, the DCC shall take all reasonable steps to obtain the data from the relevant Meter Manufacturer and/or SMETS1 SMSO. Additionally, for the purposes of undertaking the DMCT Process, the DCC shall source data relating to SMETS1 Installations comprising all or part Dormant Meters from SMETS1 SMSOs acting in the capacity of DCC Service Provider.

20.5 Where the DCC is unable to source all of the data that it reasonably requires, then the

DCC shall be entitled to exclude the impacted DMC from the remainder of the DMCT Process, and the DCC shall notify any Supplier Party that included the DMC in its submission accordingly. The Supplier Party may include Device Model Combinations for which the DCC has not been able to source all data required in subsequent submissions made pursuant to Clause 20.2.

20.6 Where all of the data required by the DCC has been provided to, or sourced by, the DCC, the DCC shall then consider:

(a) whether the DMC proposed for testing is already on the list of SMETS1 Eligible Product Combinations or is already proposed for addition onto that list;

(b) whether the DMC is currently an MOC or FOC SIT DMC, an IOC Migration Testing DMC or is being tested in PPCT;

(c) whether Migration Testing and SIT in respect of the Capability Release of which the DMC will form a part are unlikely to be completed in timescales that would allow the testing of the DMC to be scheduled with a reasonable degree of confidence;

(d) whether, in the DCC's opinion, the DMC proposed is substantively equivalent to:

(i) an entry for an existing DMC that is on the list of SMETS1 Eligible Product Combinations; or

(ii) an entry for a DMC that is proposed for addition onto the list of SMETS1 Eligible Product Combinations; or

(iii) a DMC that is planned for testing;

(e) whether the DCC has been unable to source suitable devices for testing (which may include sourcing them for Supplier Parties), or does not yet know whether it can source them; and

(f) whether, in the DCC's opinion, it is not economic to test the DMC.

20.7 The DCC may propose to the Secretary of State any DMC which, in the DCC's opinion, should not be tested on the grounds that it is not economic to test. Prior to

making such proposals the DCC shall first discuss with stakeholders its views and the associated rationale and invite stakeholder views. As part of the proposals submitted by the DCC to the Secretary of State, the DCC shall include any stakeholder views received. The decision of the Secretary of State as to whether the DCC should test the DMC shall be final and binding for the purposes of this Code. Where the Secretary of State agrees with the DCC's proposal, the DCC shall exclude the DMC from this DMCT Process. Where the Secretary of State disagrees with the DCC's proposal, the DCC shall continue to progress the DMC through the DMCT Process.

20.8 The DCC shall publish and keep up to date a list ('a DMC Status List') that shows the status of the DMCs in the DMCT Process. The DCC shall change the classification of the status of the DMC on the DMCT Status List as it progresses through the DMCT Process.

20.9 The DCC shall include within a schedule ("the DMCT Schedule") those DMCs for which the DCC is reasonably confident of the proposed dates for testing along with:

(a) the planned start and completion dates for testing of any planned entries on the SMETS1 Eligible Production Combinations that are comprised of that DMC (together with details of those entries) and either;

(b) the test pack planned to be used for DMCT Migration Testing and DMCT Service Reference Variant Testing (as further set out in Clauses 20.16 and 20.17); or

(c) where the DCC proposes to use a DMCT Non-Standard Test Pack in respect of a DMC, the rationale for doing so; and

the DCC shall publish any changes from the previously published DMCT Schedule. Where the DCC is planning to test in respect of an EPCL entry for a SMETS1 Installation that comprises only Dormant Meters, the DCC may choose not to additionally test entries for the same DMC in respect of SMETS1 Installations that comprise Active Meters or both Dormant and Active Meters where it considers that the testing in respect of the entry containing only Dormant Meters will suffice.

20.10 The DCC shall publish the DMCT Schedule (and any subsequent updates to it) on the DCC Website and shall notify Supplier Parties, the SEC Panel, the Authority and the

Secretary of State of its publication (and of any update to it). The DCC shall also provide the DMCT Schedule (and any updates to it) to SECAS for publication on the SEC Website.

20.11 For those DMCs that are on the DMCT Status List but where the DCC considers that testing is not required and so is not planned, or testing is planned but the DCC is not reasonably confident of the proposed date for testing, or testing is not planned as the DCC cannot source test devices, the DCC shall notify any Supplier Party that included the DMC in its submission that it has been excluded from the DMCT Schedule indicating:

(a) which of the reasons in Clause 20.6 (a) to 20.6 (e) apply; and

(b) in the case of Clause 20.6 (c), 20.6 (d) or 20.6 (e) the associated rationale.

Such notification shall also be published on the DCC Website and provided to Supplier Parties by the DCC prior to the next submission of information to the DCC pursuant to Clause 20.2.

20.12 Within 20 Working Days of the notification by the DCC to the Supplier Party pursuant Clause 20.11, where a Supplier Party that included a DMC in its submission to the DCC pursuant to Clause 20.2 disagrees with the DCC's decision that:

(a) the DMC proposed is substantively equivalent to an entry for an existing DMC that is on the list of SMETS1 Eligible Product Combinations or is already proposed for addition onto that list or is planned for testing then the Supplier Party shall notify the DCC (including the rationale for their disagreement) and the DCC shall update the DMCT Schedule to include planned testing of that DMC; or

(b) Migration Testing and / or SIT in respect of the Capability Release of which the DMC will form a part are unlikely to be completed in timescales that would allow DCC to schedule the testing of the DMC with a reasonable degree of confidence, then the Supplier Party shall notify the DCC (including the rationale for their disagreement) and the DCC shall refer the matter to the Secretary of State for determination and the DCC shall update the DMCT Schedule to include planned testing of the DMC where directed to do so by the Secretary of

State.

20.12A Where planned testing of a DMC is included in the DMCT Schedule pursuant to 20.12 (a) but the DCC disagrees and considers that testing is not required for the reason in Clause 20.6 (d), the DCC may refer the matter to the Secretary of State for determination , in which case the DCC shall provide the associated rationale for its position to the Secretary of State as part of the referral, and the DCC shall update the DMCT Schedule to remove the planned testing of the DMC where directed to do so by the Secretary of State, in which case the DCC may continue to progress the DMC through the DMCT Process on the basis of Clause 20.6 (d). The DCC must notify any Supplier Party that included the DMC in its submission to the DCC pursuant to Clause 20.2 that it has referred the matter to the Secretary of State and provide the associated rationale for its view that testing is not required.

Tests undertaken against a DMC

20.13 When testing in respect of a planned entry on the EPCL in respect of a DMC, the objective of the tests shall be to verify that:

(a) the DCC can successfully Migrate SMETS1 Installations that are comprised of the DMC; and

(b) once Enrolled, the DCC can successfully process SMETS1 Service Requests and relevant SMETS1 Alerts in respect of Smart Metering Systems that are comprised of the DMC (in whole or in part).

20.14 Where the DCC considers that the DCC Systems used to Migrate SMETS1 Installations comprising the DMC should be tested under Migration Testing pursuant to the MTAD, the DCC shall notify the TAG along with the associated rationale. In circumstances where Migration Testing is not going to be undertaken pursuant to the MTAD for the DMC, the DCC shall execute DMCT MT and DMCT SRVT for that DMC. However, in the alternate case, the DCC shall only be required to execute DMCT SRVT and may do so once the TAB has determined that the Migration Test Phase for the DMC under the MTAD has been completed. Notifications for the purposes of this Clause 20.14 may take place prior to this Clause coming into effect.

20.15 Subject to Clause 20.17 when undertaking:

(a) DMCT MT, the DCC shall execute the Standard Dormant DMCT Migration Test Pack for the Capability Release; and

(b) DMCT SRVT, the DCC shall execute the Standard DMCT Service Reference Variant Test Pack for the Capability Release.

20.16 Each standard test pack referred to in Clause 20.15 shall set out the tests which shall be executed as part of that test pack for the relevant Capability Release. The test pack in respect of each Capability Release shall be proposed by the DCC and agreed with the TAG. Where the DCC and the TAG cannot reach agreement, the DCC may refer the matter to the Secretary of State, whose decision shall be final and binding for the purposes of this Code.

20.17 The DCC may propose to execute a different set of tests (a DMCT Non-Standard Test Pack) for DMCT MT and/or DMCT SRVT in respect of a particular DMC. Prior to doing so, the DCC shall discuss the proposed set of tests with the TAG and seek agreement from the TAG. Where the DCC and the TAG cannot reach agreement on the set of tests which shall be executed and contained within the relevant test pack(s), the matter may be referred to the Secretary of State by the DCC, whose decision shall be final and binding for the purposes of this Code.

20.18 Where the versions of the DCC Systems and environments against which DCC is planning to execute tests (pursuant to this Clause 20) are not the ones that most closely match those that are (or will be) in the production environment at the time at which the Smart Metering Systems that are comprised of the DMCs that are being tested will be eligible to be Migrated, then the DCC shall discuss its proposals with the TAG and shall only execute tests against the alternate version of the DCC Systems and environments if the TAG agrees.

20.19 Once testing in respect of a particular DMC has commenced, the DCC shall be relieved of its obligations to complete testing of a DMC pursuant to this Clause 20 should it no longer have sufficient devices available for use in testing. Where this is the case, the DCC shall notify all Supplier Parties, the Panel, the Authority and the Secretary of State. Such DMCs may be included in a subsequent Supplier Party submission pursuant to Clause 20.2.

DMCT Testing Issues

20.20 Where a DMCT Testing Issue arises whilst executing tests under the DMCT Process which could result in one or more of:

(a) a change to the DCC Internal Systems but no change to the Code; or

(b) a change to the DCC Systems and a change to the Code; or

(c) a change to a SMETS1 Device; or

(d) a change to the Code (but no change to the DCC Systems),

the DCC shall discuss the issue with affected stakeholders and recommend which of the above options should be followed, notifying stakeholders, the SEC Panel, the Authority and the Secretary of State of its recommendation.

20.21 When progressing a DMCT Testing Issue pursuant to Clause 20.20, where appropriate the DCC may pause (and recommence) the DMCT Process (including testing) for the impacted DMC(s). Where the DMCT Process is paused (or recommenced), the DCC shall inform the Panel and the Secretary of State via the reports produced pursuant to Clause 16.1.

20.22 Where the DCC recommends that the option in Clause 20.20 (a) is followed, the DCC shall:

(a) where there is no material impact to the timescales for testing the DMC (or other DMCs), progress the change to the DCC Internal Systems in accordance with Section H8.9 to H8.12, re-run the test pack accordingly and update the DMCT Schedule with the revised completion dates in respect of the DMC(s); or

(b) where there is a material impact to the timescales for testing the DMC (or other DMCs), progress the change to the DCC Internal Systems in accordance with Section H8.9 to H8.12, re-run the test pack accordingly and update the DMCT Schedule with the revised completion dates in respect of the DMC(s), unless the Secretary of State directs otherwise. Where the Secretary of State directs otherwise, the DCC shall comply with any alternative course of action set out in such direction.

The DCC shall inform SEC Parties, the Panel, the Authority and the Secretary of State which of (a) or (b) above that the DCC is planning to undertake in advance of doing so.

20.23 Where the DCC's recommendation is that the option in Clause 20.20 (b) is followed, the DCC shall first consult with the Secretary of State as to whether, in his opinion, the Code change should be consulted upon. Where the Secretary of State agrees that the change ought to be consulted upon the DCC shall propose an approach for testing for agreement by the TAG. The proposed approach shall include:

(a) the DCC's approach to testing the change (including when and where testing should be undertaken, the tests to be undertaken and the approach to regression testing), rules for test completion and the associated governance; and

(b) an indication of whether testing by Users is required.

Where the Secretary of State does not agree that the Code change should be consulted upon, the DCC shall reconsider and recommend an alternative option for resolving the Testing Issue from the options outlined in Clause 20.20.

20.24 Where an approach for testing (pursuant to Clause 20.23) cannot be agreed by the DCC and the TAG, the matter shall be referred to the Secretary of State for determination whose decision will be final and binding for the purpose of this Code. The DCC shall undertake testing in accordance with the approach and governance as agreed with the TAG or determined by the Secretary of State (as the case may be).

20.25 Where the DCC's recommendation is that the option in Clause 20.20 (c) is followed it shall recommend this to the Secretary of State indicating whether it considers a firmware upgrade or a configuration change or both is required. Where the Secretary of State agrees with the DCC's recommendation and the change requires:

(a) a firmware upgrade, the DMCT Process shall no longer be undertaken in respect of that DMC; or

(b) a change to the configuration applied to a Device or Devices that comprise part of the DMC, the DMC shall be excluded from the DMCT Process until such time as evidence can be provided by any Supplier Party proposing its inclusion

(through a subsequent request for information pursuant to Clauses 20.2 and/or 20.3) that the change has been applied or will be applied prior to enrolment; or

(c) a firmware upgrade and a change to the configuration applied to a Device or Devices that comprise part of the DMC, the DMC that results from the new firmware version shall be excluded from the DMCT Process until such time as evidence can be provided by any Supplier Party proposing its inclusion (through a subsequent request for information pursuant to Clauses 20.2 and/or 20.3) that the configuration change has been applied or will be applied prior to enrolment.

20.26 Where the Secretary of State disagrees with the recommendation of the DCC that the option in Clause 20.20 (c) should be followed, the DCC shall reconsider and recommend an alternative option for resolving the Testing Issue from the options outlined in Clause 20.20.

20.27 Where the DCC's recommendation is that the option in Clause 20.20 (d) is followed, but the Secretary of State has indicated that such change(s) should not be progressed, then the DCC shall reconsider and recommend an alternative option from the options outlined in Clause 20.20.

DMCT Testing Exit Criteria

20.28 Testing under the DMCT Process in respect of a planned entry on the EPCL cannot successfully complete where the open Testing Issues in respect of that planned entry on the EPCL exceed the thresholds set out in Table 20.1. The Testing Issue Thresholds are calculated across all DCC Service Providers (including the relevant SMETS1 SMSO, acting in the capacity of DCC Service Provider) collectively and comprise both:

(a) a threshold for the individual planned entry on the EPCL that is the subject of testing under the DMCT Process; and

(b) an aggregate threshold that takes into account any open Testing Issues, irrespective of where they arose.

Table 20.1 SMETS 1 SVTAD Testing Issue Thresholds for DMCT

Testing Issue Severity	For Clause 20.28 (a) Planned entry on the EPCL	For Clause 20.28 (b) Aggregate limit across DMCT
1	0	0
2	0	0
3	15	30
4	30	60
5	60	120

20.29 If there are any open Testing Issues that the DCC believes should not be counted against the Testing Issue Thresholds for the purposes of Clause 20.28 in respect of a planned entry on the EPCL, including where the DCC considers that the open Testing Issues would not affect the functioning of the solution for the planned entry on the EPCL, the DCC may propose to exclude such Testing Issue(s) from its count. Where the DCC proposes to exclude such Testing Issue(s) from its count, the DCC shall:

(a) describe the Testing Issue(s) that it proposes to exclude and the DCC's rationale for exclusion in a draft DMCT Testing Report; and

(b) provide the TAG with a description of the Testing Issue(s) excluded and the DCC's rationale for exclusion for the TAG to review pursuant to Clause 20.38.

20.30 The DCC shall provide the TAG with a description of all open Testing Issues in respect of a planned entry on the EPCL and their assigned severity, indicating whether the extant Testing Issues exceed the relevant Testing Issue Thresholds (pursuant to Clause 20.28).

DMCT Testing Completion

20.31 Where testing is required under the DMCT Process for a planned entry on the EPCL, the DCC shall not produce a draft DMCT Testing Report (pursuant to Clause 20.34 or Clause 20.35 as the case may be) until testing has completed (as determined in Clause 20.32 or Clause 20.33 as the case may be).

20.32 Testing for a planned entry on the EPCL shall be considered to have been completed and to be successful when:

(a) all DMCT Process tests related to the planned entry on the EPCL have been executed;

(b) all Testing Issues raised during testing of the planned entry on the EPCL have been through the processes outlined in Clauses 20.20 to 20.27, as applicable;

(c) where, pursuant to Clause 20.14 the DCC has undertaken Migration Testing for the planned entry on the EPCL pursuant to the MTAD, the Panel has determined that the Migration Test Phase for the planned entry on the EPCL has completed; and

(d) subject to Clause 20.28, any extant Testing Issues do not exceed the relevant Testing Issue Threshold.

20.33 Testing for a planned entry on the EPCL shall be considered to have been completed and to be unsuccessful either,

(a) when:

(i) all DMCT Process tests related to the planned entry on the EPCL have been executed;

(ii) all Testing Issues raised during testing of the planned entry on the EPCL have been through the processes outlined in Clauses 20.20 to 20.27, as applicable;

(iii) subject to Clause 20.28, extant Testing Issues exceed the relevant Testing Issue Threshold; and/or

(iv) where, pursuant to Clause 20.14 the DCC has undertaken Migration Testing for the planned entry on the EPCL pursuant to the MTAD, the Panel has determined that the Migration Test Phase for the planned entry on the EPCL has not completed; or

(b) when it was not possible for all DMCT Process tests related to the planned entry on the EPCL to be executed having been through the processes outlined in Clauses 20.20 to 20.27, or where Migration Testing was planned pursuant to Clause 20.14 and it is not possible to complete it, or where a blocking defect has arisen and the Secretary of State agrees that testing should not continue.

DMCT Testing Reports

20.34 Where the DCC has undertaken testing in respect of the proposed entry on the EPCL and testing has completed successfully, prior to producing the associated DMCT EPCL Report for the purposes of Clause 20.41, the DCC shall produce a draft DMCT Testing Report which shall include:

(a) the version of the DCC Systems and environments against which tests were executed, which, subject to Clause 20.18, shall be those versions and environments that most closely match those that are or will be in the production environment at the time at which Smart Metering Systems that are comprised of the DMC are eligible to be Migrated;

(b) the tests run as per the relevant test pack;

(c) the results of the tests run;

(d) confirmation that all open Testing Issues have been captured and either closed, or where still open, Work Off Plans are in place;

(e) the approach to re-running tests following the deployment of any fixes during testing;

(f) details for any Testing Issues that were excluded pursuant to Clause 20.29 including the rationale for exclusion;

(g) supporting detail setting out the rationale for the severity assigned to any open Testing Issues and the associated Work Off Plans (excluding any Testing Issues reported pursuant Clause 20.34 (f));

(h) any other information as prescribed in the relevant test pack; and

(i) a statement of why the planned entry on the EPCL has successfully completed testing (including, where relevant, reference to any Migration Completion Report).

20.35 Where testing under the DMCT Process has completed unsuccessfully pursuant to Clause 20.33 and therefore the DCC is not proposing a corresponding entry on the EPCL, the DCC shall produce a draft DMCT Testing Report which shall include.

(a) the version of the DCC Systems and environments against which tests were executed, which, subject to Clause 20.18, shall be those versions and environments that most closely match those that are (or will be) in the production environment at the time at which the Smart Metering Systems that are comprised of the DMC are eligible to be Migrated;

(b) the tests run as per the relevant test pack;

(c) the results of the tests run;

(d) confirmation that all open Testing Issues have been captured and either closed, or where still open, Work Off Plans are in place;

(e) the approach to re-running tests following the deployment of any fixes during testing;

(f) details for any Testing Issues that were excluded pursuant to Clause 20.29 including the rationale for exclusion;

(g) supporting detail setting out the rationale for the severity assigned to any open Testing Issues and the associated Work Off Plans (excluding any Testing Issues reported pursuant Clause 20.35 (f));

(h) any other information as prescribed in the relevant test pack; and

(i) a statement of why the planned entry on the EPCL has unsuccessfully completed testing (including, where relevant, reference to any Migration Completion Report).

20.36 The DCC shall make available each draft DMCT Testing Report to any Supplier Party that was planning to enrol one or more SMETS1 Installations that are comprised of the planned entry on the EPCL that is the subject of the DMCT Testing Report (based on the information provided pursuant to Clause 20.2). In addition to the notice provisions set out in Section M10 of the Code, the DCC shall also use any additional contact details provided to DCC pursuant to Clause 20.2 when making available the draft DMCT Testing Report. Such notification of additional contact details by the Supplier Party can include notifications made in submissions received pursuant to Clause 20.2 prior to this Clause 20.36 coming into effect.

20.37 Where a draft DMCT Testing Report has been provided to a Supplier Party pursuant to Clause 20.36 and that Supplier Party considers that a different determination on the successful completion or unsuccessful completion should be arrived at, or might be arrived at because:

(a) the approach to re-running tests following the deployment of any fixes during testing is considered inappropriate;

(b) one or more Testing Issues should not have been excluded pursuant to Clause 20.29; and/or

(c) the severity assigned to one or more Testing Issues should be reduced or increased (as the case may be);

that Supplier Party may (within 10 Working Days of the relevant draft DMCT Testing Report being provided) refer the matter to the Secretary of State for a determination (pursuant to Clause 20.40), setting out its supporting arguments.

20.38 Where the TAG considers that a different determination of the number or severity of the extant Testing Issues against the relevant Testing Issue Thresholds should be arrived at, or might be arrived at, because:

(a) the TAG considers that the severity of one of more of the open Testing Issue(s) (provided pursuant to Clause 20.30) should change; and/or

(b) the TAG disagrees with the exclusion of one or more Testing Issues (where the details were provided to the TAG pursuant to Clause 20.29 (b)),

and that different determination would result in the status of testing changing from successful to unsuccessful, then the DCC shall either:

(c) continue testing under the DMCT Process for the relevant planned entry on the EPCL (and Clause 20.13 onwards shall apply again) and notify any Supplier Party that was provided with the draft DMCT Testing Report accordingly; or

(d) refer the matter to the Secretary of State for determination (pursuant to Clause 20.40).

20.39 Where,

(a) each Supplier Party that received a draft DMCT Testing Report (pursuant to Clause 20.36) has confirmed to the DCC that they will not refer the matter to the Secretary of State for a determination (pursuant to Clause 20.37), or no referral has been made within 10 Working Days (pursuant to Clause 20.37);

(b) any TAG disagreement with the DCC's proposed excluded open Testing Issues (pursuant to Clause 20.38) would not result in changing the status of testing from successful to unsuccessful; and

(c) any TAG disagreement with the severity assigned to open Testing Issues (pursuant to Clause 20.38) would not result in changing the status of testing from successful to unsuccessful,

the draft DMCT Testing Report shall be updated as necessary and deemed to be final.

20.40 Where a referral has been made by a Supplier within 10 Working Days (pursuant to Clause 20.37) and/or by the DCC (pursuant to Clause 20.38) the determination of the Secretary of State shall be final and binding for the purposes of this Code as follows:

(a) where the Secretary of State agrees with the DCC's treatment of the matters in the draft DMCT Testing Report that have been referred by the Supplier Party and/or the DCC, the draft DMCT Testing Report shall be deemed to be final;

(b) where the Secretary of State disagrees with the DCC's treatment of any of the matters in the DMCT Testing Report and as a consequence the status of the testing changes to successful (as referred to in Clause 20.32) the DCC shall update the draft DMCT Testing Report and it shall be deemed to be final; and/or

(c) where the Secretary of State disagrees with the DCC's treatment of any of the matters in the DMCT Testing Report and as a consequence, the status of the testing changes to unsuccessful (as referred to in Clause 20.33) or further tests need to be run, as determined by the Secretary of State, either,

(i) the DCC shall update the draft DMCT Testing Report and it shall be deemed to be final; or

(ii) the DCC shall continue testing under the DMCT Process for the relevant planned entry on the EPCL (and Clause 20.13 onwards shall apply again).

DMCT EPCL Reports

20.41 Where the DCC considers that an entry on the EPCL should be made in respect of a particular In-Scope DMC as a result of the DMCT Process, it shall produce a DMCT EPCL Report:

(a) specifying the proposed entry for the EPCL; and

(b) setting out why the DCC considers that the entry should be made including, where applicable:

(i) a final DMCT Testing Report which provides for successful completion for the proposed entry on the EPCL; or

(ii) a reference to a prior final DMCT Testing Report or other Completion Reports that are relevant for the proposed entry on the EPCL.

For the avoidance of doubt, a DMCT EPCL Report is also required where testing of the DMC under the DMCT Process is not required (as the DCC considers that a planned entry on the EPCL is substantially equivalent pursuant to Clause 20.6 (d) and the DCC's view has not been over-ridden pursuant to Clauses 20.12 (a) and 20.12A). In such circumstances, where Clause 20.6 (d) (iii) applies, the DMCT EPCL Report shall not be produced until the relevant final DMCT Testing Report or other test completion reports on which it relies have been produced.

20.42 The DCC may combine the activities described in Clause 20.41 so that a single DMCT EPCL Report may cover more than one planned entry on the EPCL.

20.43 The DCC shall publish each DMCT EPCL Report (which shall be anonymised and redacted where appropriate by the DCC) on the DCC Website and shall notify the Panel, the Secretary of State, the Authority and SEC Parties of the publication of the report.

21 <u>SMETS1 Uplift Testing</u>

21.1 Only Clauses 1, 2, and 16 of this SMETS1 SVTAD shall apply to SMETS1 Uplift Testing, unless expressly stated in the relevant SMETS1 Uplift DCC Testing Approach Document or SMETS1 Uplift Mandated User Testing Document.

21.2 SMETS1 Uplift Testing shall be performed by the DCC and any other Party that participates in it in accordance with Good Industry Practice. The DCC may overlap SMETS1 Uplift Testing if provided for in the relevant SMETS1 Uplift DCC Testing Approach Document(s) and/or SMETS1 Uplift Mandated User Testing Document(s).

21.3 Each time that a SMETS1 Uplift is planned which would require a change to the DCC Total System, the DCC shall prepare a draft SMETS1 Uplift DCC Testing Approach Document, which shall set out the DCC's proposals for SMETS1 Uplift DCC Testing including:

(a) the proposed amendments to this Code that are the subject of the testing, an explanation of the associated changes to the DCC Total System, and the testing objective;

(b) the SMETS1 Device Models and/or the combinations of SMETS1 Device Models that are to be used in testing or a statement as to why testing using Devices is not considered necessary;

(c) the testing environments to be used;

(d) the requirements (if any) for security testing;

(e) the requirements (if any) for system capacity testing;

(f) the testing that shall be undertaken, both in terms of the scope of testing and the extent of testing (including negative tests) and the approach to regression testing;

(g) the applicable Testing Issue Thresholds and the process for excluding Testing Issues;

(h) the exit criteria for testing to complete successfully;

(i) any perceived risks associated with the approach to testing and the proposed mitigations;

(j) the approach to providing for assurance of the testing undertaken; and

(k) matters to be included in the SMETS1 Uplift DCC Testing Completion Report

(to be prepared pursuant to Clause 21.7).

21.4 The DCC shall submit each draft SMETS1 Uplift DCC Testing Approach Document to the TAG for review (and such submission by the DCC and review by the TAG may take place prior to this Clause 21.4 coming into effect):

(a) where the TAG and the DCC can reach an agreement, the relevant draft SMETS1 Uplift DCC Testing Approach Document shall be updated by the DCC as necessary and deemed to be final; or

(b) where the TAG and the DCC cannot reach an agreement, the relevant SMETS1 Uplift DCC Testing Approach Document shall be referred by the DCC to the Secretary of State for determination (whose decision shall be final and binding for the purposes of this Code) and the relevant draft SMETS1 Uplift DCC Testing Approach Document shall be updated by the DCC as necessary and deemed to be final.

21.5 The DCC shall take all reasonable steps to complete the tests set out in each SMETS1 Uplift DCC Testing Approach Document in accordance with the milestone plan published by the DCC for the relevant SMETS1 Uplift DCC Testing.

21.6 Revisions to a SMETS1 Uplift DCC Testing Approach Document finalised pursuant to Clause 21.4 may, from time to time be submitted by the DCC to the TAG for agreement in accordance with the provisions of Clause 21.4, and the provisions of Clause 21.5 shall apply (again) to the revised version of the document.

21.7 Where the DCC considers that User testing is required as part of SMETS1 Uplift Testing it shall set out its proposals for User testing in a draft SMETS1 Uplift Mandated User Testing Document, including those Users that should be required to participate in the testing, the approach to testing, the arrangements for test completion and notification of test completion. In developing a SMETS1 Uplift Mandated User Testing Document, the DCC shall consult with the TAG, Parties and other relevant stakeholders prior to the submission of the document to the Secretary of State.

21.8 The DCC shall submit each draft SMETS1 Uplift Mandated User Testing Document to the Secretary of State, indicating:

(a) why the DCC considers the draft to be fit for purpose;

(b) copies of the consultation responses received; and

(c) any areas of disagreement that arose during the consultation process and that have not been resolved.

21.9 The DCC shall comply with any direction given by the Secretary of State to re-consider, re-consult, and/or re-submit the draft document.

21.10 Should a SMETS1 Uplift Mandated User Testing Document be approved by the Secretary of State, the DCC and each Party other than the DCC that participates in (or is required to participate in) testing, as set out in such approved document, shall comply with that SMETS1 Uplift Mandated User Testing Document.

21.11 Where the DCC reasonably considers that the DCC's solution testing is complete for an instance of SMETS1 Uplift DCC Testing (or a subset of the solution), the DCC shall prepare a report (being a SMETS1 Uplift DCC Testing Completion Report) as provided for in the SMETS1 Uplift DCC Testing Approach Document. The DCC shall present each SMETS1 Uplift DCC Testing Completion Report to the TAB for their acceptance or rejection. Where accepted by the TAB, a SMETS1 Uplift DCC Testing Completion Report shall be provided to the TAG for approval as follows:

(a) where the TAG approves the SMETS1 Uplift DCC Testing Completion Report (subject to the TAG and the DCC reaching an agreement regarding resolution of any issues raised by the TAG) the relevant SMETS1 Uplift DCC Testing Completion Report shall be updated by the DCC as necessary and deemed to be final; or

(b) where the TAG declines to approve the SMETS1 Uplift DCC Testing Completion Report, the DCC shall, if necessary, update the SMETS1 Uplift DCC Testing Completion Report (to reflect resolution of any issues where the DCC and the TAG reached an agreement), and the DCC shall either:

(i) refer the SMETS1 Uplift DCC Testing Completion Report to the Secretary of State for determination pursuant to Clause 21.12; or

(ii) continue with SMETS1 Uplift DCC Testing (and Clause 21.5 onwards

shall apply again).

21.12 Where a referral has been made by the DCC (pursuant to Clause 21.11 (b) (i)) the determination of the Secretary of State shall be final and binding for the purposes of this Code as follows:

(a) where the Secretary of State agrees that SMETS1 Uplift DCC Testing is complete, the relevant SMETS1 Uplift DCC Testing Completion Report shall be updated by the DCC as necessary and deemed to be final; or

(b) where the Secretary of State disagrees that SMETS1 Uplift DCC Testing is complete, the DCC shall continue with SMETS1 Uplift DCC Testing (and Clause 21.5 onwards shall apply again).

21.13 The DCC shall publish each final SMETS1 Uplift DCC Testing Completion Report (which shall be anonymised and redacted where appropriate by the DCC) on the DCC Website and shall notify the Panel, the Secretary of State, the Authority and the SEC Parties of the publication of the report.