Tracked Version AM 1.~~0~~1 draft

APPENDIX AM

SMETS1 Supporting Requirements

1 Introduction

1.1 This document lays out supporting requirements in relation to SMETS1 Devices and communications relating to SMETS1 Devices. None of the provisions in this document apply to SMETS2+ Devices nor to communications relating to them.

2 Defined Terms

Term	Meaning
||	X || Y shall mean the concatenation of the two octet strings X and Y.
Alert Code	For a SMETS1 Alert, shall mean the value placed in the GBCSHexAlertCode field (with its Message Mapping Catalogue meaning).
Authorising Remote Party Signature	Shall have the meaning specified in Clause 16.1.
Category 1 Device	Shall mean for the purposes of Section G2.44A of this Code, all SMETS1 Devices for which the S1SP is the Secure Meters Group.
Category 2 Device	Shall mean for the purposes of Section G2.44A of this Code any SMETS1 Device that is not a Category 1 Device.
Certificate ID	In relation to an Organisation Certificate, shall be the combination of `serialNumber` and Issuer X520 Common Name (each with their Organisation Certificate Policy meanings) and so shall be a unique identifier for that Certificate.
Critical Instruction	Shall mean an Instruction that has the potential to affect the supply of energy to the premises or the security of any Device installed in the premises (but excluding any Instruction that is expected to increase the amount of credit available to the consumer).
SMETS1 CHF Device Log	Shall have the meaning specified in Clause 17.49.
CoS Execution Counter	Shall have the meaning specified in Clause 11.2(a).

Term	Meaning
Device Security Credentials	In relation to a SMETS1 Device, Device Security Credentials shall include the Certificates identified by Notified Critical Supplier Certificate ID, Notified Non-Critical Supplier Certificate ID, Notified Critical Network Operator Certificate ID and Notified Non-Critical Network Operator Certificate ID.
Event Code	For a SMETS1 Response containing Security Log or Event Log entries (with their SMETS1 meanings), shall mean the SMETS1 Mandated Event Code or the SMETS1 Non-Mandated Event Code in an entry.
Event/Alert Code	Shall mean the Alert Code or the Event Code, as required by the context.
Execution Counter	Shall have the meaning specified in Clause 11.1(a).
IEEE	The Institute of Electrical and Electronics Engineers.
Message Code	For a SMETS1 Alert, shall mean the SMETS1 Mandated Event Message Code or the SMETS1 Non-Mandated Event Message Code. For a SMETS1 Response, shall mean the value of GBCSHexadecimalMessageCode (with its Message Mapping Catalogue meaning) required by Clause 9.
Most Recently Verified Manufacturer Image Hash	Shall have the meaning laid out at Clause 16.5 (as updated in accordance with Clause 17.50).
Notified Critical Network Operator Certificate ID	Shall be the Certificate ID most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Certificate ID having the values from the Certificate in the Service Request where Remote Party Role is 'networkOperator' and keyUsage is '`digitalSignature`' (all with their Organisation Certificate Policy meanings).
Notified Critical Network Operator ID	Shall be the Entity Identifier (with its Organisation Certificate Policy meaning) most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Entity Identifier having the value from the Certificate in the Service Request where Remote Party Role is 'networkOperator' and keyUsage is '`digitalSignature`' (all with their Organisation Certificate Policy meanings).

Term	Meaning
Notified Critical Supplier Certificate ID	Shall be the Certificate ID most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Certificate ID having the values from the Certificate in the Service Request where Remote Party Role is 'supplier' (with its Section L meaning) and `keyUsage` is '`digitalSignature`' (each with their Organisation Certificate Policy meanings).
Notified Critical Supplier ID	Shall be the Entity Identifier (with its Organisation Certificate Policy meaning) most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Entity Identifier having the value from the Certificate in the Service Request where Remote Party Role is 'supplier' and keyUsage is '`digitalSignature`' (all with their Organisation Certificate Policy meanings).
Notified Non-Critical Network Operator Certificate ID	Shall be the Certificate ID most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Certificate ID having the values from the Certificate in the Service Request where Remote Party Role is 'networkOperator' and keyUsage is '`keyAgreement`' (all with their Organisation Certificate Policy meanings).
Notified Non-Critical Supplier Certificate ID	Shall be the Certificate ID most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Certificate ID having the values from the Certificate in the Service Request in the KeyAgreementCertificate data item, where the RemotePartyRole data item has the value of Supplier (each with their DUIS meanings).
Notified Non-Critical Supplier ID	Shall be the Entity Identifier (with its Organisation Certificate Policy meaning) most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Entity Identifier having the value from the Certificate in the Service Request in the KeyAgreementCertificate data item where the RemotePartyRole data item has the value of Supplier (with their DUIS meanings).
Notified Non-Critical Network Operator ID	Shall be the Entity Identifier (with its Organisation Certificate Policy meaning) most recently recorded by the relevant S1SP in relation to a SMETS1 Device pursuant to Clause 18, with the Entity Identifier having the value from the Certificate in the Service Request where Remote Party Role is 'networkOperator' and keyUsage is '`keyAgreement`' (all with their Organisation Certificate Policy meanings).
Originator Counter	Shall have the meaning laid out at Clause 5.
OTA Header	Shall have the meaning laid out at Clause 16.3.

Term	Meaning
OTA Upgrade Image	Shall have the meaning laid out at Clause 16.4.
S1SP Time	In relation to an S1SP, shall be the time measured by a time source used by that S1SP pursuant to Clause 10.
SMETS1 Mandated Event	Shall have the meaning laid out at Clause 8.1.
SMETS1 Mandated Event Code	In a SMETS1 Alert or a Countersigned SMETS1 Alert, shall be the value placed in the GBCSHexAlertCode field (with its Message Mapping Catalogue meaning) as required by Clause 8.7(b).
SMETS1 Mandated Event Message Code	In a SMETS1 Alert or a Countersigned SMETS1 Alert created as a result of a SMETS1 Mandated Event, shall be the value placed in the GBCSHexadecimalMessageCode field (with its Message Mapping Catalogue meaning) as required by Clause 8.5.
SMETS1 Message Code	In a SMETS1 Response or a Countersigned SMETS1 Response, shall be the value placed in the GBCSHexadecimalMessageCode field (with its Message Mapping Catalogue meaning) as required by Clause 9.1. In a SMETS1 Alert or a Countersigned SMETS1 Alert, shall be either the SMETS1 Mandated Event Message Code or the SMETS1 Non-Mandated Event Message Code, as determined by Clauses 8.5 and 8.7(a).
SMETS1 Non-Mandated Event	Shall have the meaning laid out at Clause 8.3.
SMETS1 Non-Mandated Event Code	Shall have the meaning laid out at Clause 8.3(a).
SMETS1 Non-Mandated Event Description	Shall have the meaning laid out at Clause 8.3(b).
SMETS1 Non-Mandated Event Message Code	In a SMETS1 Alert or a Countersigned SMETS1 Alert created as a result of a SMETS1 Non-Mandated Event, shall be the hexBinary value of 1000 (where hexBinary has the meaning defined at http://www.w3.org/TR/xmlschema-2/#hexBinary) placed in the GBCSHexadecimalMessageCode field (with its Message Mapping Catalogue meaning).
Time-based Debt Recovery	Shall have the meaning set out in SMETS1.

Term	Meaning
Unknown Remote Party (URP)	In relation to a SMETS1 Device, shall mean a Party for which the relevant S1SP does not hold either a current Notified Critical Supplier ID or a current Notified Critical Network Operator ID for the SMETS1 Device in question.
Unsupported Value	Shall have the meaning set out in DUIS.
Upgrade Image	Shall have the meaning laid out at Clause 16.2.

2.1 Additionally, where defined terms from specific parts of the Code are used, the relevant part of the Code is stated. Where no part of the Code is stated, a defined term shall have its Section A meaning.

3 Device IDs

3.1 A Party notifying a SMETS1 Device's details to the DCC for recording in the Smart Metering Inventory shall notify the Device's Device ID according to the requirements of Table 1.

Type of SMETS1 Device	Requirement for Device ID
SMETS1 CHF	The Device ID shall be an identifier that the notifying Party has ensured is EUI-64 Compliant.
SMETS1 ESME	Where the Device's only network interface is one complying with ZigBee Alliance standards, the Device ID shall be the IEEE address associated with that network interface. Otherwise, the Device ID shall be an identifier that the notifying Party has ensured is EUI-64 Compliant.
SMETS1 GSME, SMETS1 GPF, SMETS1 PPMID, SMETS1 IHD or any other device operating on a home area network created by a SMETS1 CHF	The Device ID shall be the IEEE address associated with the Device's network interface which implements ZigBee Alliance standards.

Table 1

4 User IDs in Service Requests

4.1 In relation to 'Top Up Device' (SRV 2.2) and all Critical Service Requests where the Device Type of the target Device is not 'CHF', a User shall use its Notified Critical Supplier ID or its Notified Critical Network Operator ID (as the context requires) for the Device whose Device ID is in the BusinessTargetID field (with its DUIS meaning) in the Service Request and shall create a Digital Signature within which the Certificate ID identifies a Certificate with an Entity Identifier having the same value as its Notified Critical Supplier ID or its Notified Critical Network Operator ID (as the context requires). In relation to Critical Service Requests where the Device Type of the target Device is 'CHF' (specifically 'Activate Firmware' (SRV 11.3)), a User shall use its Notified Critical Supplier ID for the ESME that is Associated with the CHF whose Device ID is in the BusinessTargetID field (with its DUIS meaning) in the Service Request and shall create a Digital Signature within which the Certificate ID identifies a Certificate with an Entity Identifier having the same value as its Notified Critical Supplier ID. In relation to all other Service Requests, a User may use any User ID which the DCC has previously accepted in relation to the User acting in the User Role in which the User wishes to have the Service Request in question processed by the DCC.

4.2 On receipt of a 'Top Up Device' or Critical Service Request, the S1SP shall confirm that the target Device's Notified Critical Supplier ID or Notified Critical Network Operator ID (as the context requires), or where the target Device's Device Type is 'CHF', the Notified Critical Supplier ID of the Associated ESME, is that specified in the BusinessOriginatorID field (with its DUIS meaning) in the Service Request and is the Entity Identifier within the Certificate used to Check Cryptographic Protection on the Service Request and where it is not, the S1SP shall create and send a SMETS1 Response notifying failure and shall undertake no further processing.

5 Originator Counters

5.1 Except for ‘Update Security Credentials (CoS) (SRV 6.23)’ SMETS1 Service Requests, in relation to each SMETS1 Service Request that a User creates using a specific User ID and a specific Device ID, the User shall ensure that the Originator Counter is a 64-bit unsigned integer that is numerically greater than both zero and the value it has used in relation to any previous Service Request containing the same User ID and Device ID.

5.2 In relation to each ‘Update Security Credentials (CoS) (SRV 6.23)’ SMETS1 Service Request that a User creates, the User shall ensure that the Originator

Counter is a 64-bit unsigned integer that is numerically greater than the value it has used in relation to any previously created 'Update Security Credentials (CoS) (SRV 6.23)' SMETS1 Service Request.

5.3 In relation to each SMETS1 Alert created using a specific Device ID and a specific User ID, the S1SP shall ensure that the Originator Counter is a 64-bit unsigned integer that is numerically greater than the value it has used in relation to any previous SMETS1 Alert containing the same User ID and Device ID.

6 Related Identifiers & Counters

6.1 In relation to any SMETS1 Service Request targeted at a SMETS1 Device, the sending User shall, within the RequestID field (with its DUIS meaning), populate:

(a) BusinessOriginatorID (with its DUIS meaning) with a User ID complying with Clause 4;

(b) BusinessTargetID (with its DUIS meaning) with the Device's Device ID, where that Device ID complies with Clause 3; and

(c) OriginatorCounter (with its DUIS meaning) with an Originator Counter complying with Clause 5.1 or Clause 5.2 (as relevant).

6.2 In relation to any SMETS1 Response, any Countersigned SMETS1 Response, any S1SP Alert and any Countersigned S1SP Alert, the DCC and the S1SP shall:

(a) populate any RequestID field (with its DUIS meaning) with the value of the RequestID in the corresponding SMETS1 Service Request;

(b) within any ResponseID field (with its DUIS meaning) and within the fields themselves, populate:

(i) any BusinessOriginatorID field (with its DUIS and Message Mapping Catalogue meaning) with the value of the BusinessTargetID in the RequestID as identified in Clause 6.1(b);

(ii) any BusinessTargetID field (with its DUIS and Message Mapping Catalogue meaning) with the value of the BusinessOriginatorID in the

RequestID as identified in Clause 6.1(a); and

(iii) any OriginatorCounter field (with its DUIS and Message Mapping Catalogue meaning) with the value of the OriginatorCounter in the RequestID as identified in Clause 6.1(c).

6.3 In relation to any SMETS1 Alert, the S1SP shall populate:

(a) any BusinessOriginatorID field (with its DUIS and Message Mapping Catalogue meaning) with the Device's Device ID, where that Device ID complies with Clause 3;

(b) any BusinessTargetID field (with its DUIS and Message Mapping Catalogue meaning) in accordance with Clause 8.6 and 8.7; and

(c) any OriginatorCounter field (with its DUIS and Message Mapping Catalogue meaning) with an Originator Counter complying with Clause 5.3.

7 Supplementary Party Details

7.1 Where, in processing a SMETS1 Service Request, the DCC would have included a Supplementary Remote Party ID value and a Supplementary Remote Party Counter value (with their GBCS meanings) in a resulting Command if the target Device had been a SMETS2+ Device, the DCC shall include those values in the Countersigned Service Request sent to the relevant S1SP, and shall identify those details as being a Supplementary Remote Party ID value and a Supplementary Remote Party Counter value respectively (with their GBCS meanings).

7.2 Where an S1SP creates a SMETS1 Response where the corresponding Countersigned Service Request contained details identified as a Supplementary Remote Party ID value and a Supplementary Remote Party Counter value, the S1SP shall use those values to populate the SupplementaryRemotePartyID and SupplementaryRemotePartyCounter fields (with their Message Mapping Catalogue meaning). For clarity, the S1SP shall not incorporate a SupplementaryOriginatorCounter field (with its Message Mapping Catalogue meaning) in any SMETS1 Response.

8 Event logging and alerts

8.1 SMETS1 requires that a number of events can be detected by SMETS1 Devices and that an occurrence of such an event triggers:

(a) the sending of an alert over a WAN interface (with its SMETS1 meaning); or

(b) the recording of the event in either the Event Log or the Security Log (with their SMETS1 meanings); or

(c) both the sending of such an alert over a WAN interface and the recording of the event in either the Event Log or the Security Log (with their SMETS1 meanings).

8.2 Table 2 identifies the SMETS1 requirements for Devices to detect events and the associated alerting and logging requirements. Additionally, the Service Request Processing Document (SRPD) requires that when processing a SMETS1 'Update Firmware' (SRV11.1) Service Request, the S1SP undertakes verification of the FirmwareImage (with its DUIS meaning). This can lead to one of two events: (1) the verification succeeds or (2) the verification fails. Both events are also included in Table 2. Events (described in the column headed "AlertDescription / LogMeaning) in Table 2 are referred to as "SMETS1 Mandated Events" in this document.

Specification of the SMETS1 Mandated Event	GBCSHexadecimal MessageCode	GBCSHexAlertCode / LogCode	AlertDescription / LogMeaning	BusinessTargetID	SMETS1 Alert required?	Logging Required? (No / Event Log / Security Log)
SMETS1 5.3.5.1 (ii) / (iii)	1000	8F01	Active Power Import above Load Limit Threshold	Notified Critical Supplier ID	Yes	Event Log
SMETS1 5.3.10.1 (ii) (a) / (c)	1001	8F40	SMETS1 Average RMS Voltage above Average RMS Over Voltage Threshold	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 5.3.10.1 (iii) (a) / (c)	1001	8F41	SMETS1 Average RMS Voltage below Average RMS Under Voltage Threshold	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 4.3.6.2 (iv) SMETS1 5.3.6.2 (iv)	1001	810D	Combined Credit Below Low Credit Threshold (prepayment mode)	Notified Non-Critical Supplier ID	Yes	No
SMETS1 4.3.6.2 (v) SMETS1 5.3.6.2 (v)	1000	8F0F	Credit Below Disablement Threshold (prepayment mode)	Notified Critical Supplier ID	Yes	No
SMETS1 4.3.5.2 (v)	1000	8F1D	GSME Power Supply Loss	Notified Critical Supplier ID	Yes	No

Specification of the SMETS1 Mandated Event	GBCSHexadecimal MessageCode	GBCSHexAlertCode / LogCode	AlertDescription / LogMeaning	BusinessTargetID	SMETS1 Alert required?	Logging Required? (No / Event Log / Security Log)
SMETS1 4.3.5.1 (i)/(ii)	1000	8F1F	Low Battery Capacity	Notified Critical Supplier ID	Yes	Event Log
SMETS1 4.4.2.2 SMETS1 4.4.3.2 SMETS1 4.4.3.4 SMETS1 5.4.3.2 SMETS1 5.4.4.2 SMETS1 5.5.4.4	1000	8F32	Supply Armed	Notified Critical Supplier ID	Yes	No
SMETS1 5.3.5.1 (v)	1000	8F33	Supply Disabled then Armed - Load Limit triggered	Notified Critical Supplier ID	Yes	No
SMETS1 5.3.10.2 (i) / (ii)	1001	8020	RMS Voltage above Extreme Over Voltage Threshold (voltage rises above for longer than the configurable period)	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 5.3.10.5 (i) / (ii)	1001	8024	RMS Voltage above Voltage Swell Threshold (voltage rises above for longer than the configurable period)	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 5.3.10.3 (i) / (ii)	1001	8028	RMS Voltage below Extreme Under Voltage Threshold (voltage falls below for longer than the configurable period)	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 5.3.10.4 (i) / (ii)	1001	802C	RMS Voltage below Voltage Sag Threshold (voltage falls below for longer than the configurable period)	Notified Non-Critical Network Operator ID	Yes	Event Log
SMETS1 4.3.9.3 (viii) / (viii) SMETS1 5.3.9.3 (viii) / (viii)	1000	8F3E	Unauthorised Communication Access attempted	Notified Critical Supplier ID	Yes	Security Log
SMETS1 4.3.9.2 (viii) / (ix) SMETS1 5.3.9.2 (viii) / (ix)	1000	8F3F	Unauthorised Physical Access - Tamper Detect	Notified Critical Supplier ID	Yes	Security Log
SRPD 16.1	00CE	8F1C	Firmware Verification Failed (ESME)	Notified Critical Supplier ID	Yes	No
SRPD 16.1	00CE	8F72	Firmware Verification Successful (ESME)	Notified Critical Supplier ID	Yes	No
SRPD 16.1	00CF	8F1C	Firmware Verification Failed (GSME)	Notified Critical Supplier ID	Yes	No
SRPD 16.1	00CF	8F72	Firmware Verification Successful(GSME)	Notified Critical Supplier ID	Yes	No
SRPD 16.1	1002	8F1C	Firmware Verification Failed (CH)	Notified Critical Supplier ID	Yes	No
SRPD 16.1	1003	8F72	Firmware Verification Successful (CH)	Notified Critical Supplier ID	Yes	No
SMETS1 4.3.2 SMETS1 5.3.2	N/A	8F3D	Trusted Source Authentication Failure	N/A	No	Security Log
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F53	Failed Authentication or Authorisation not covered by other codes	N/A	No	Security Log
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F43	Change in the executing Firmware version	N/A	No	Security Log

Specification of the SMETS1 Mandated Event	GBCSHexadecimal MessageCode	GBCSHexAlertCode / LogCode	AlertDescription / LogMeaning	BusinessTargetID	SMETS1 Alert required?	Logging Required? (No / Event Log / Security Log)
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F44	Occurrence that has the potential to put Supply at risk and/or compromise the Integrity of the Device.	N/A	No	Security Log
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F60	Unusual numbers of malformed, out-of-order or unexpected Commands received	N/A	No	Security Log
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F45	Change of credit which is not reflective of normal Consumption	N/A	No	Security Log
SMETS1 4.3.9.1 SMETS1 5.3.9.1	N/A	8F46	Threat to Device security detected but not covered by other events.	N/A	No	Security Log
SMETS1 4.4.2.2 SMETS1 5.4.3.2	N/A	8F51	Duplicate UTRN entered	N/A	No	Security Log
SMETS1 4.4.2.2 SMETS1 5.4.3.2	N/A	8F63	UTRN not Authentic	N/A	No	Security Log
SMETS1 4.4.2 SMETS1 5.4.3	N/A	8161	User Interface Command Input and Successfully Actioned	N/A	No	Event Log
SMETS1 4.4.2 SMETS1 5.4.3	N/A	8162	User Interface Command Input but not Successfully Actioned	N/A	No	Event Log
SMETS1 4.4.3 SMETS1 5.4.4	N/A	8154	Immediate HAN Interface Command Received and Successfully Actioned	N/A	No	Event Log
SMETS1 4.4.3 SMETS1 5.4.4	N/A	8155	Immediate HAN Interface Command Received but not Successfully Actioned	N/A	No	Event Log

Table 2

8.3 SMETS1 Devices may additionally be capable of detecting events not required by SMETS1. Such additional events are referred to in this document as "SMETS1 Non-Mandated Events". Each such SMETS1 Non-Mandated Event may result in a log entry or an alert or both being created by the Device. For each such SMETS1 Non-Mandated Event, the DCC shall:

(a) produce a textual description of that event, such a description being referred to as a "SMETS1 Non-Mandated Event Description"; and

(b) associate a 16-bit integer where the most significant bit has the value zero and the integer is not associated with any other SMETS1 Non-Mandated Event Description. The hexBinary representation (with the meaning defined at http://www.w3.org/TR/xmlschema-2/#hexBinary) of this 16-bit integer shall be referred to as the "SMETS1 Non-Mandated Event Code".

8.4 The DCC shall maintain and publish to all Users the list of SMETS1 Non-Mandated Event Descriptions and, for each such description:

(a) the Device Type or Device Types which can detect such events;

(b) the associated SMETS1 Non-Mandated Event Code;

(c) whether, for each detected occurrence of the corresponding SMETS1 Non-Mandated Event, the DCC would produce a corresponding SMETS1 Alert and, if so, which User ID would be placed in the BusinessTargetID fields (with their Message Mapping Catalogue meanings);

(d) whether, for each detected occurrence of the corresponding SMETS1 Non-Mandated Event, a corresponding entry would appear in a SMETS1 Response containing the Device's Security Log (with its SMETS1 meaning); and

(e) whether, for each detected occurrence of the corresponding SMETS1 Non-Mandated Event, a corresponding entry would appear in a SMETS1 Response containing the Device's Event Log (with its SMETS1 meaning).

8.5 Each S1SP shall create a SMETS1 Alert whenever:

(a) it receives information that a SMETS1 Mandated Event or SMETS1 Non-Mandated Event has occurred; and

(b) a SMETS1 Alert is required for that Event (as identified in relation to SMETS1 Mandated Events in Table 2 above, or in relation to a SMETS1 Non-Mandated Event in accordance with the information published pursuant to Clause 8.4),

unless it does not have a record of the User ID that it is to associate (pursuant to Table 2 or Clause 8.4(c)) with that Event/Alert Code, in which case it shall not create a SMETS1 Alert.

8.6 Where an S1SP creates a SMETS1 Alert based on information from a Device that a SMETS1 Mandated Event has occurred, the S1SP shall populate the GBCSHexadecimalMessageCode, GBCSHexAlertCode, and AlertDescription fields, and any BusinessTargetID fields (each with their Message Mapping Catalogue meanings) according to the values specified in Table 2 for the SMETS1 Mandated Event in question.

8.7 Where an S1SP creates a SMETS1 Alert based on information from a Device that a SMETS1 Non-Mandated Event has occurred, the S1SP shall populate:

(a) the GBCSHexadecimalMessageCode field (with its Message Mapping Catalogue meaning) with the SMETS1 Non-Mandated Event Message

Code;

(b) the GBCSHexAlertCode field (with its Message Mapping Catalogue meaning) with the corresponding SMETS1 Non-Mandated Event Code;

(c) the AlertDescription field (with its Message Mapping Catalogue meaning) with the corresponding SMETS1 Non-Mandated Event Description; and

(d) any BusinessTargetID fields (with their Message Mapping Catalogue meanings) with the corresponding BusinessTargetID published pursuant to Clause 8.4(c).

8.8 Where an S1SP creates a SMETS1 Response which includes a log entry's details based on information from a Device that a SMETS1 Mandated Event has occurred, the S1SP shall populate the corresponding LogCode and LogDescription fields (with their Message Mapping Catalogue meanings) according to the values specified in Table 2 for the SMETS1 Mandated Event in question. Where an S1SP creates a SMETS1 Response which includes a log entry's details based on information from a Device that a SMETS1 Non-Mandated Event has occurred, the S1SP shall populate the corresponding LogCode and LogDescription fields (with their Message Mapping Catalogue meanings) according to the values specified in the document published by the DCC pursuant to Clause 8.3. An S1SP shall only include an entry in a SMETS1 Response containing details from a Security Log or an Event Log (with their SMETS1 meanings) where that entry relates to either a SMETS1 Mandated Event or a SMETS1 Non-Mandated Event.

8.9 An S1SP shall not include OtherInformation or OtherInformationLogMeaning fields (with their Message Mapping Catalogue meaning) in any SMETS1 Response.

9 SMETS1 Message Codes

9.1 Where an S1SP creates a SMETS1 Response, the S1SP shall

(a) identify the row in Table 3 where, in the corresponding Service Request:

(i) the Service Reference Variant has the value in the row; and

(ii) the Device Type recorded in the Smart Metering Inventory for the Device ID in the BusinessTargetID part of the RequestID (with their DUIS meanings) has the value in the row; and

(iii) Condition1 and Condition 2 (see Table 3) are true including, where relevant, in terms of the content of the corresponding Service Request;

(b) populate the GBCSHexadecimalMessageCode field (with its Message Mapping Catalogue meaning) according to the row identified at Clause 9.1(a); and

(c) include a Timestamp (with its Message Mapping Catalogue meaning) in the Header element (with its DUIS meaning) in the SMETS1 Response where the row identified at Clause 9.1(a) requires it.

Service Reference Variant	**Type of target Device as recorded in the SMI**	**Condition 1**	**Condition 2**	**GBCSHexadecimalMessageCode**	**Timestamp required in SMETS1 Response Header?**
1.1.1	ESME	True	True	0019	Yes
1.1.1	GSME	True	True	006B	Yes
1.2.1	ESME	True	True	00A2	Yes
1.2.1	GSME	True	True	00A3	Yes
1.5	ESME	If an AdjustMeterBalance element (with its DUIS meaning) is present	True	001C	No
1.5	GSME	If an AdjustMeterBalance element (with its DUIS meaning) is present	If a PrepaymentMode element (with its DUIS meaning) is present	0086	No
1.5	GSME	If an AdjustMeterBalance element (with its DUIS meaning) is present	If a CreditMode element (with its DUIS meaning) is present	00C0	No
1.5	ESME	If a ResetMeterBalance element (with its DUIS meaning) is present	True	00B3	No
1.5	GSME	If a ResetMeterBalance element (with its DUIS meaning) is present	If a PrepaymentMode element (with its DUIS meaning) is present	00B4	No

Service Reference Variant	Type of target Device as recorded in the SMI	Condition 1	Condition 2	GBCSHexadecimalMessageCode	Timestamp required in SMETS1 Response Header?
1.5	GSME	If a ResetMeterBalance element (with its DUIS meaning) is present	If a CreditMode element (with its DUIS meaning) is present	00C2	No
1.6	ESME	True	If a Prepayment element (with its DUIS meaning) is present	001B	Yes
1.6	ESME	True	If a Credit element (with its DUIS meaning) is present	001A	Yes
1.6	GSME	True	If a Prepayment element (with its DUIS meaning) is present	006D	Yes
1.6	GSME	True	If a Credit element (with its DUIS meaning) is present	006C	Yes
2.1	GSME	True	True	006F	Yes
2.1	ESME	True	True	00DE	Yes
2.2	ESME	True	True	0007	Yes
2.2	GSME	True	True	0097	Yes
2.3	ESME	True	True	001E	No
2.3	GSME	True	True	006E	No
2.5	ESME	True	True	0020	No
2.5	GSME	True	True	0070	No
3.2	ESME	True	True	0022	No
3.2	GPF	True	True	0072	No
3.3	GSME or GPF	True	True	0015	No
3.3	ESME	True	True	0024	No
4.1.1	ESME	True	True	0027	Yes
4.1.1	GSME or GPF	True	True	0074	Yes
4.1.2	ESME	True	True	0029	Yes
4.1.2	GSME or GPF	True	True	00B6	Yes
4.1.3	ESME	True	True	002A	Yes
4.1.4	GSME or GPF	True	True	00B8	Yes
4.2	ESME	True	True	0026	Yes
4.3	ESME	True	True	002D	Yes

Service Reference Variant	Type of target Device as recorded in the SMI	Condition 1	Condition 2	GBCSHexadecimalMessageCode	Timestamp required in SMETS1 Response Header?
4.3	GSME or GPF	True	True	0075	Yes
4.4.2	ESME	True	True	002F	No
4.4.2	GSME or GPF	True	True	00C3	No
4.4.3	ESME	True	True	0030	No
4.4.3	GSME or GPF	True	True	0076	No
4.4.4	ESME	True	True	002E	No
4.4.4	GSME or GPF	True	True	00C4	No
4.4.5	GSME or GPF	True	True	00C5	No
4.4.5	ESME	True	True	00C9	No
4.6.1	ESME	True	True	0033	No
4.6.1	GSME or GPF	True	True	0077	No
4.8.1	ESME	True	True	0037	No
4.8.1	GSME or GPF	True	True	0078	No
4.8.2	ESME	True	True	0038	No
4.8.3	ESME	True	True	0036	No
4.10	ESME	True	True	0039	Yes
4.10	GSME	True	True	0079	No
4.11.1	ESME	True	True	003A	No
4.11.1	GSME or GPF	True	True	009F	No
4.13	ESME	True	True	003B	No
4.13	GSME or GPF	True	True	00B5	No
4.15	ESME	True	True	0042	No
4.16	ESME	True	True	0028	Yes
4.18	ESME	True	True	0069	No
4.18	GSME or GPF	True	True	008D	No
6.2.1	ESME	True	True	003C	No
6.2.3	ESME	True	True	00D9	No
6.2.3	GSME or GPF	True	True	00DA	No
6.2.4	ESME	True	True	00F9	No
6.2.4	CHF	True	True	00FA	No
6.2.4	GSME or GPF	True	True	00FB	No
6.2.5	ESME	True	True	0040	No

Service Reference Variant	Type of target Device as recorded in the SMI	Condition 1	Condition 2	GBCSHexadecimalMessageCode	Timestamp required in SMETS1 Response Header?
6.2.8	GSME	True	True	007B	No
6.2.9	ESME	True	True	00BE	No
6.2.9	GSME or GPF	True	True	00BF	No
6.4.1	ESME	True	True	0043	Yes
6.4.2	ESME	True	True	0044	No
6.5	ESME	If RMSVoltageCountersNotReset (with its DUIS meaning) is not present	True	0045	No
6.5	ESME	If RMSVoltageCountersNotReset (with its DUIS meaning) is present	True	00D1	No
6.6	GSME	True	True	007C	No
6.7	GSME	True	True	007D	No
6.8	ESME	True	True	00D7	No
6.8	GSME	True	True	00D8	No
6.11	ESME	True	True	0062	No
6.11	GSME	True	True	007F	No
6.12	ESME	True	True	0047	No
6.13	GSME	If LogToRead (with its DUIS meaning) has the value 'Event'	True	0014	No
6.13	ESME	If LogToRead (with its DUIS meaning) has the value 'Event'	True	0048	No
6.13	ESME	If LogToRead (with its DUIS meaning) has the value 'Security'	True	0049	No
6.13	GSME	If LogToRead (with its DUIS meaning) has the value 'Security'	True	00A1	No
6.13	CHF	If LogToRead (with its DUIS meaning) has the value 'Event'	True	0093	No

Service Reference Variant	Type of target Device as recorded in the SMI	Condition 1	Condition 2	GBCSHexadecimalMessageCode	Timestamp required in SMETS1 Response Header?
6.13	CHF	If LogToRead (with its DUIS meaning) has the value 'Security'	True	0094	No
6.13	GPF	If LogToRead (with its DUIS meaning) has the value 'Event'	True	0014	No
6.13	GPF	If LogToRead (with its DUIS meaning) has the value 'Security'	True	00A1	No
6.13	GPF	If LogToRead (with its DUIS meaning) has the value 'GSMEEvent'	True	0014	No
6.13	GPF	If LogToRead (with its DUIS meaning) has the value 'GSMESecurity'	True	00A1	No
6.15.1	ESME or GPF	If RemotePartyRole (with its DUIS meaning) has the value 'NetworkOperator'	True	0103	Yes
6.15.1	ESME, GPF or GSME	If RemotePartyRole (with its DUIS meaning) has the value 'Supplier'	True	0102	Yes
6.21	ESME or GPF	If RemotePartyRole (with its DUIS meaning) has the value 'NetworkOperator'	True	0103	Yes
6.21	ESME, GPF or GSME	If RemotePartyRole (with its DUIS meaning) has the value 'Supplier'	True	0102	Yes
6.23	ESME, GPF or GSME	True	True	0107	Yes
6.24.1	ESME, GPF or GSME	True	True	0008	No
6.25	ESME	True	True	0068	No
6.27	ESME	True	True	00D3	No

Service Reference Variant	Type of target Device as recorded in the SMI	Condition 1	Condition 2	GBCSHexadecimalMessageCode	Timestamp required in SMETS1 Response Header?
7.1	ESME	True	True	004F	No
7.2	ESME	True	True	0050	No
7.2	GSME	True	True	0081	No
7.3	ESME	True	True	0051	No
7.3	GSME	True	True	0085	No
7.4	ESME	True	True	0052	No
7.4	GSME or GPF	True	True	0082	No
8.1.1	ESME	True	True	0062	No
8.1.1	GSME	True	True	007F	No
8.7.1	ESME	True	True	000D	No
8.7.1	GSME	True	True	00AF	No
8.7.2	ESME, GSME or GPF	True	True	000E	No
8.7.2	PPMID	If OtherDeviceID (with its DUIS meaning) contains a DeviceID which the SMI records as an ESME	True	00AB	No
8.7.2	PPMID	If OtherDeviceID (with its DUIS meaning) contains a DeviceID which the SMI records as an GSME	True	00AF	No
8.8.1	ESME or GSME	True	True	000F	No
8.8.2	PPMID	True	True	000F	No
8.8.2	ESME, GSME or GPF	True	True	0010	No
8.9	CHF	True	True	010F	No
8.11	CHF	If RequestType (with its DUIS meaning) is 'Add'.	True	0001	No
8.11	CHF	If RequestType (with its DUIS meaning) is 'Remove'	True	0002	No
11.2	ESME or CHF	True	True	0059	No
11.2	GSME	True	True	0084	No
11.3	ESME, GSME or CHF	True	True	0012	Yes

Table 3

10 Timestamp

10.1 Where an S1SP populates any Timestamp field (with its Message Mapping Catalogue meaning) in a SMETS1 Alert or a SMETS1 Response, the S1SP shall populate the field with a UTC value. The S1SP shall, if a corresponding timestamp is provided by the corresponding SMETS1 Device, base the value on the timestamp provided by the Device and shall, if a corresponding timestamp is not provided by the corresponding SMETS1 Device, base the value on the S1SP Time at the time the field is populated. Each S1SP shall ensure that its S1SP Time is accurate to within ten seconds of UTC.

11 Execution Counters

11.1 The DCC and each S1SP shall:

(a) maintain, for each SMETS1 Device of a Device Type in Table 4, a series of integers (the value of each of which shall be between 0 and (2^{64} -1) inclusive) as required by Table 4 dependent upon the type of the Device, as recorded in the Smart Metering Inventory (each such number being known as an "Execution Counter"); and

(b) before processing the first Service Request targeted at a specific SMETS1 Device, set all Execution Counters related to that SMETS1 Device to 0 except for the Execution Counters related to 'Update Device Security Credentials (KRP) (SRV 6.15.1)' which shall be set to (2^{64} -1).

Type of SMETS1 Device	Required Execution Counters
SMETS1 CHF	One for the 'Activate Firmware (SRV 11.3)' Service Request

Type of SMETS1 Device	Required Execution Counters
SMETS1 ESME	One for each type of Critical Service Request which can be targeted at the Device (where type is defined by the Service Reference Variant value), excluding the 'Update Device Security Credentials (KRP) (SRV 6.15.1). Two for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request: • One for use where RemotePartyRole is Supplier (with their DUIS meanings); and • One for use where RemotePartyRole is NetworkOperator (with their DUIS meanings). Two for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request: • One for use where RemotePartyRole is Supplier (with their DUIS meanings); and • One for use where RemotePartyRole is NetworkOperator (with their DUIS meanings). One for the 'Top Up Device (SRV 2.2)' Service Request
SMETS1 GSME	One for each Critical Service Request which can be targeted at the Device One for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request: which, for clarity, shall only be for use where RemotePartyRole is Supplier (with their DUIS meanings); and One for the 'Top Up Device (SRV 2.2)' Service Request
SMETS1 GPF	Two for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request: • One for use where RemotePartyRole is Supplier (with their DUIS meanings); and • One for use where RemotePartyRole is NetworkOperator (with their DUIS meanings). Two for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request: • One for use where RemotePartyRole is Supplier (with their DUIS meanings); and • One for use where RemotePartyRole is NetworkOperator (with their DUIS meanings).
Other SMETS1 Device Types	None required

Table 4

11.2 The DCC and each S1SP shall:

(a) maintain, for each User which has a User Role of Import Supplier or Gas Supplier, a series of 1,000 integers (the value of each of which shall be between 0 and (2^{64} -1) inclusive) (each such number being known as a CoS Execution Counter); and

(b) before processing the first Service Request from such a User, set the CoS Execution Counter related to that User to 0.

12 Replay

12.1 Where the DCC or an S1SP is required to ensure that a Service Request is not a Replay, it shall, in the following order:

(a) Where the Service Request is not an 'Update Security Credentials (CoS) (SRV 6.23)' or a ‘Request Handover of DCC Controlled Device (SRV 6.21)’ Service Request, confirm that the User ID in the BusinessOriginatorID field (with its DUIS meaning) in the Service Request is the Notified Critical Supplier ID or the Notified Critical Network Operator ID (as the context requires) for, or where the Device Type of the target Device is 'CHF' the Notified Critical Supplier ID for the ESME Associated with, the Device whose Device ID is in the BusinessTargetID field (with its DUIS meaning) in the Service Request. Where that test fails, the Service Request shall be a Replay, processing of subsequent checks under this Clause shall not be undertaken and, if the test is being undertaken by an S1SP, the S1SP shall send an S1SP Alert accordingly.

(b) Where the Service Request is a ‘Update Security Credentials (CoS) (SRV 6.23)’ Service Request, confirm that the OriginatorCounter in the Service Request (with its DUIS meaning) is:

(i) greater than at least one of the CoS Execution Counter values that it holds for the sending User; and

(ii) is not equal to any of the CoS Execution Counter values that it holds for the sending User.

Where either of those tests fail, the Service Request shall be a Replay, and, if the tests are being undertaken by an S1SP, the S1SP shall send an S1SP Alert accordingly. Where both the tests succeed, the lowest of the CoS Execution Counter values for this User shall be replaced with the value of the OriginatorCounter in the Service Request (with its DUIS meaning).

(c) Where the Service Request is either a 'Update Device Security Credentials (KRP) (SRV 6.15.1)' or a 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, confirm that the OriginatorCounter in the Service Request (with its DUIS meaning) is strictly numerically greater than the Execution Counter held for the Device ID is in the BusinessTargetID field (with its DUIS meaning) and the same RemotePartyRole as in the Service Request (with its DUIS meaning). Where that test fails, the Service Request shall be a Replay and, if the test is being undertaken by an S1SP, the S1SP shall send an S1SP Alert accordingly. Where the test succeeds the relevant Execution Counter value shall be replaced with the value of the OriginatorCounter in the Service Request (with its DUIS meaning).

(d) Where the Service Request is neither a 'Update Device Security Credentials (KRP) (SRV 6.15.1)' nor a 'Request Handover of DCC Controlled Device (SRV 6.21)' nor a 'Update Security Credentials (CoS) (SRV 6.23)' Service Request, confirm that the OriginatorCounter in the Service Request (with its DUIS meaning) is strictly numerically greater than the Execution Counter held for the Device ID is in the BusinessTargetID field (with its DUIS meaning) for this type of Service Request. Where that test fails, the Service Request shall be a Replay and, if the test is being undertaken by an S1SP, the S1SP shall send an S1SP Alert accordingly. Where the test succeeds the relevant Execution Counter value shall be replaced with the value of the OriginatorCounter (with its DUIS meaning) in the Service Request.

13 Configuration pre-requisites for operating a SMETS1 Device through the DCC

13.1 Some SMETS1 Devices may support features which are additional to those required by SMETS1 and which cannot be configured through the DCC. Table 5 lays out a number of such features. Where a Device supports, or is capable of supporting, one or more of the features in Table 5, the Responsible Supplier shall (unless to do so would result in a material delay to the Migration of the relevant SMETS1 Installation), ensure that before the relevant SMETS1 Installation is Migrated, any such features are configured according to the requirements of Table 5.

Feature	Type of Device	Required configuration

Privacy PIN which has to be entered to access SMETS information on the Device's user interface.	SMETS1 ESME, SMETS1 GSME	The Device shall be configured such that a PIN does not have to be entered to gain access to SMETS information on the Device's user interface, and such that the Energy Consumer cannot subsequently set such a PIN.
'Blacklisting' of access to the HAN	SMETS1 CHF	The Device shall be configured so that only 'whitelisted' Devices recorded on the SMI as being associated with the SMETS1 CHF can have access to the HAN, and that access is not controlled via any 'blacklisting' mechanism.
Configuration of actions to be taken on the occurrence of SMETS1 Mandated Events.	SMETS1 ESME, SMETS1 GSME	The Device shall be configured so that a Security Log or Event Log entry is created on occurrence of the SMETS1 Mandated Event where required by Table 2 and information is capable of being provided by the Device to the relevant S1SP to allow the S1SP to create any corresponding SMETS1 Alert, where required by Table 2.
Additional functionality not meant for Energy Consumer use, such as that available for installing engineers.	Any SMETS1 Device	The Device shall be configured so that Energy Consumers cannot access such facilities so for example, including the setting of any associated PINs or passwords so that they do not have default values.
Supplier name and / or contact details that may be visible to the Energy Consumer	Any SMETS1 Device	The Device shall be configured so that such values are either blank or not capable of being displayed to the Energy Consumer.
MPAN (ESME) or MPRN (GSME) whose value can be accessed via the Device's user interface or via the home area network.	SMETS1 ESME, SMETS1 GSME	The Device shall be configured so that such values are either blank or correctly identify the Metering Point for which the Smart Meter in question is measuring supply of energy in to the Premises.
Display of Currency Units	SMETS1 ESME SMETS1 GSME SMETS1 IHD SMETS1 PPMID	The Device shall be configured so that Currency Units (with its SMETS1 meaning) are displayed as GBP.
Remote energy supply control functionality	SMETS1 ESME SMETS1 GSME	The Device shall be configured so that Enable Supply, Disable Supply and Arm Load Switch (with their SMETS1 meanings) functions operate on receipt of the relevant instruction.

Table 5

13.2

14 Remote Party Role

14.1 Where a Remote Party Role Code is required in a Certificate or a Certificate Signing Request, the DCC shall use the Remote Party Role of 's1SPxmlSigning' (with its meaning in the Organisation Certificate Policy) when the Certificate or Certificate Signing Request relates to the DCC acting in the role of an S1SP.

15 SMETS1 Data Items

15.1 When a User creates a SMETS1 Service Request containing a field in Table 6, the User shall populate that field according to the meanings in Table 6.

DUIS / Message Mapping Catalogue field	Meaning of values
SuspendDebtDisabled	For an ESME: • **true**: shall mean that, if the Supply is Disabled (with its SMETS1 Meaning) pursuant to SMETS1 5.3.6.2, then the ESME shall suspend Time-based Debt Recovery. • **false**: shall mean that, if the Supply is Disabled (with its SMETS1 Meaning) pursuant to SMETS1 5.3.6.2, then the ESME shall continue with Time-based Debt Recovery For a GSME: • **true**: shall mean that, if the Supply is Disabled (with its SMETS1 Meaning) pursuant to SMETS1 4.3.6.2, then the GSME shall suspend Time-based Debt recovery. • **false**: shall mean that, if the Supply is Disabled (with its SMETS1 Meaning) pursuant to SMETS1 4.3.6.2, then the GSME shall continue with Time-based Debt Recovery
SuspendDebtEmergency	• **true**: shall mean that, if Emergency Credit (with its SMETS1 Meaning) is in use, then the Device shall suspend Time-based Debt Recovery. • **false**: shall mean that, if Emergency Credit (with its SMETS1 Meaning) is in use, then the Device shall continue with Time-based Debt Recovery
SupplyDepletionState	• **Locked**: shall have the SMETS1 meaning of Disabled • **Unchanged**: shall have the SMETS1 meaning of Unchanged
SupplyTamperState	• **Locked**: shall have the SMETS1 meaning of Disabled • **Unchanged**: shall have the SMETS1 meaning of Unchanged

Table 6

15.2 When an S1SP creates a SMETS1 Service Response containing a field in Table 6, the S1SP shall populate that field according to the meanings in Table 6.

15.3 When an S1SP creates a SMETS1 Service Response containing a field in Table 7, the S1SP shall populate that field according to the meanings in Table 7.

Message Mapping Catalogue field	Meaning
AccumlatedDebtRegister within ReadInstantaneousPrepayValuesRsp	Shall populate the field according to the SMETS1 meaning of Accumulated Debt Register, with the value being an integer value in thousandths of pence. For clarity, this is different that the SMETS2+ meaning of the same term.
AccumlatedDebtRegister within PrepaymentOperationalData	Shall populate the field according to the SMETS1 required Billing Data Log recording of the Accumulated Debt Register value, with the value being an integer value in thousandths of pence. For clarity, this is different that the SMETS2+ meaning of the same term.
Value within ConsumptionRegister	Shall populate the field according to the SMETS1 meaning of Total Consumption Register, with the value being a decimal number in metres cubed
GasActiveImportRegisterConsumption	Shall populate the field according to the SMETS1 required Daily Read Log copy of the Total Consumption Register, with the value being a decimal number in metres cubed
PrimaryValue within Gas	Shall populate the field according to the SMETS1 required Profile Data Log copy of the Total Consumption Register, with the value being a decimal number in metres cubed
Value within ActiveImportRegister	Shall populate the field according to the SMETS1 meaning of Total Active Import Register with the value being an integer number of watt hours (Wh).
ElecActiveImportRegisterConsumption	Shall populate the field according to the SMETS1 required Daily Read Log copy of the Total Active Import Register with the value being an integer number of watt hours (Wh).
PrimaryValue within Electricity	Shall populate the field according to the SMETS1 required Profile Data Log copy of the Total Active Import Register with the value being an integer number of watt hours (Wh).
Value within ReactiveImportRegister	Shall populate the field according to the SMETS1 Total Reactive Import Register with the value being an integer number of volt-amperes reactive hours (varh).
ReactiveEnergyImportedValue	Shall populate the field according to the SMETS1 required Profile Data Log copy of the Total Reactive Import Register with the value being an integer number of volt-amperes reactive hours (varh).
Value within ActiveExportRegister	Shall populate the field according to the SMETS1 meaning of Total Active Export Register with the value being an integer number of watt hours (Wh).
ActiveEnergyExportedValue	Shall populate the field according to the SMETS1 required Profile Data Log copy of the Total Active Export Register with the value being an integer number of watt hours (Wh).

Message Mapping Catalogue field	Meaning
Value within ReactiveExportRegister	Shall populate the field according to the SMETS1 meaning of Total Reactive Export Register with the value being an integer number of volt-amperes reactive hours (varh).
ReactiveEnergyExportedValue	Shall populate the field according to the SMETS1 required Profile Data Log copy of the Total Reactive Export Register with the value being an integer number of volt-amperes reactive hours (varh).
SupplyState	**Enabled** shall mean: • For a SMETS1 GSME, a Valve State of opened (with SMETS1 meanings); and • For a SMETS1 ESME, a Load Switch State of closed (with SMETS1 meanings) **Disabled** shall mean: • For a SMETS1 GSME, a Valve State of closed (with SMETS1 meanings); and • For a SMETS1 ESME, a Load Switch State of opened (with SMETS1 meanings) **Armed** shall mean: • For a SMETS1 GSME, a Valve State of armed (with SMETS1 meanings); and • For a SMETS1 ESME, a Load Switch State of armed (with SMETS1 meanings)

Table 7

16 OTA Header, Upgrade Image, OTA Upgrade Image and Authorising Remote Party Signature.

16.1 In relation to a Manufacturer Image which is to be sent to a Device, the Authorising Remote Party Signature shall be the Digital Signature generated across the Manufacturer Image using the private key associated with the Certificate identified by the Device's Notified Critical Supplier Certificate ID. Therefore the Authorising Remote Party Signature within an Upgrade Image can be checked (i.e. a Check Cryptographic Protection step may be carried out) using the Manufacturer Image and the Public Key in the Certificate identified by the Device's Notified Critical Supplier Certificate ID.

16.2 Upgrade Image shall be the concatenation:

Manufacturer Image || 0x0040 || Authorising Remote Party Signature

16.3 For clarity, each Manufacturer Image that is capable of being distributed using an Update Firmware Service Request must have an associated Central Products List entry containing a number of values. The OTA Header associated with that same Manufacturer Image shall be an octet string constructed using the values from that associated Central Products List entry in the way specified in Table 8, except that the OTA Header requires, in line with the ZigBee OTA specification, elements to be 'little endian'. Where Devices of this Device Model support the ZigBee OTA Specification, the values used shall also align to the corresponding values used by such Devices in OTA firmware related processing.

ZigBee OTA Message Element	Contents	Length (octets)	Note
OTA upgrade file identifier	0x0BEEF11E	4	
OTA Header version	0x0100	2	
OTA Header length	0x003C	2	
OTA Header Field control	0x0004	2	
Manufacturer code	Value of manufacturer_identifier in the associated Central Products List entry (with its Central Products List meaning)	2	Identifies the Manufacturer producing the Manufacturer Image
Image type	Value of model_identifier in the associated Central Products List entry (with its Central Products List meaning)	2	As per the ZigBee OTA specification, this is to differentiate products from the same Manufacturer
File version	Value of firmware_version in the associated Central Products List entry (with its Central Products List meaning)	4	As per the ZigBee OTA specification, this is to differentiate release and build numbers for the product in question
ZigBee Stack version	0x0002	2	
OTA Header string	Manufacturer specific	32	May be used but is not required to be used in Device processing of the Manufacturer Image
Total Image size (including header)	The length in octets of OTA Upgrade Image	4	Contents to be interpreted as an unsigned integer
Minimum hardware version	Value of hardware_version.version || hardware_version.revision in the associated Central Products List entry (with their Central Products List meanings)	2	
Maximum hardware version	Value of hardware_version.version || hardware_version.revision in the associated Central Products List entry (with their Central Products List meanings)	2	

Table 8

16.4 OTA Upgrade Image shall be the concatenation:

OTA Header || Upgrade Image

16.5 For each SMETS1 CHF, each SMETS1 ESME and each SMETS1 GSME with which the S1SP has (in each case) established communication, the S1SP shall maintain a Most Recently Verified Manufacturer Image Hash which shall be a 256-bit integer value and which shall be set to the value zero prior to the time at which the S1SP first communicates with the Device in question.

17 Processing SMETS1 Service Requests

17.1 The obligation on DCC to carry out Equivalent Steps when processing SMETS1 Service Requests shall be interpreted in light of the different requirements and device functionality set out in this document generally and in particular in these Clauses 17 and 18. In each case, the text describing the modified processing to be undertaken by DCC (including, where appropriate the relevant S1SP) relates to the type of Service Request(s) identified by Service Reference Variant in the underlined heading immediately above the text.

17.2 The different requirements and device functionality specified in Clause 17 shall apply to all SMETS1 Devices of the relevant Device Types.

17.3 The different requirements and device functionality specified in Clause 18 shall apply only to SMETS1 Devices which are of specified Device Models. Such Device Models and the different requirements or functionality that applies to them shall be specified in the 'Device Model Variations to Equivalent Steps Matrix' (the 'DMVES Matrix'). The DCC shall publish to all Parties the DMVES Matrix and keep it up to date.

General

17.4 Where processing Service Requests that are requesting the reading of logs, and where, according to the Smart Metering Inventory, the target Device is a GSME, then the S1SP shall populate SMETS1 Responses using only data provided from the SMETS1 GSME and Unsupported Values in fields required by this Clause 17.

17.5 Where processing Service Requests for the reading of gas related information, and, according to the Smart Metering Inventory, the target Device is a GPF, then the S1SP shall populate SMETS1 Responses using any data available for the SMETS1 GSMS of which the SMETS1 GPF forms a part.

17.6 The DCC shall not be required to provide Enrolment or Communication Services in relation to any SMETS1 GSME that is added to the CHF Device Log of an Enrolled SMETS1 Smart Metering System.

Update Tariff (SRV 1.1.1) and Update Price (SRV 1.2.1)

17.7 SMETS1 Smart Meters are not required to support Currency Units as a Configuration Data Item (with their SMETS2 meanings). Therefore, the S1SP shall discard any value in the CurrencyUnits fields (with its DUIS meaning) when setting values on the Smart Meter as a result of such a Service Request. For clarity, this discarding of values shall not result in an error in the SMETS1 Response.

17.8 For SMETS1 GSME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing a value for the Total Consumption Register (with its SMETS1 meaning).

17.9 For SMETS1 ESME, processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing values for the Total Active Import Register (with its SMETS1 meaning) or the Tariff TOU Block Register Matrix (with its SMETS2 meanings).

Adjust Meter Balance (SRV 1.5)

17.10 Where the Device is not capable of supporting Reset Meter Balance (with its SMETS2 meaning), the S1SP shall create a SMETS1 Response indicating failure.

Update Payment Mode (SRV 1.6)

17.11 Processing shall include the SMETS1 required capture of information in to the Billing Data Log (with its SMETS1 meaning), and so may therefore not include capturing values for the Total Consumption Register, Total Active Import Register or the Tariff TOU Block Register Matrix (with their SMETS1 / SMETS2 meanings).

17.12 Processing shall reflect the meanings of SuspendDebtDisabled and SuspendDebtEmergency in Clause 15.1.

Update Prepay Configuration (SRV 2.1)

17.13 As per DUIS, processing shall not include the setting of values equivalent to the MaxMeterBalance and MaxCreditThreshold (with their DUIS meanings) where the Device does not support such setting.

Top Up Device (SRV 2.2)

17.14 Processing shall be as specified for an Add Credit WAN Interface Command (with their SMETS1 meanings).

Update Debt (SRV 2.3)

17.15 Where any one or more of TimeDebtRegister1, TimeDebtRegister2 and PaymentDebtRegister values (with their DUIS meanings) is not zero, debt adjustment related processing shall be as specified for an Adjust Debt WAN Interface Command (with their SMETS1 meanings). Other processing shall be as for a SMETS2+ Device.

Activate Emergency Credit (SRV 2.5)

17.16 Processing shall be as specified for an Activate Emergency Credit WAN Interface Command (with their SMETS1 meanings). As for a SMETS2+ Device, if, after the Device has executed the associated instructions, emergency credit is activated on the Device then the S1SP shall return a SMETS1 Response indicating the Command executed successfully. This shall be so regardless of whether emergency credit was activated on the Device prior to the instruction's execution or not.

Restrict Access For Change Of Tenancy (SRV 3.2)

17.17 Where, according to the Smart Metering Inventory, the target Device is an ESME, processing shall be as specified for a SMETS1 ESMS Restrict Data WAN Interface Command (with their SMETS1 meanings).

17.18 Where, according to the Smart Metering Inventory, the target Device is a GPF, processing shall be as specified for a SMETS1 GSMS Restrict Data WAN Interface Command (with their SMETS1 meanings).

Clear Event Log (SRV 3.3)

17.19 Processing shall be as specified for a Clear Event Log WAN Interface Command (with their SMETS1 meanings) and, therefore, a corresponding Security Log entry (with its SMETS1 meaning) may not be created.

Read Instantaneous Import TOU With Blocks Matrices (4.1.3)

17.20 Where the Device is not capable of providing Tariff TOU Block Register Matrix values (with its SMETS2meaning), the S1SP shall set the corresponding values in the SMETS1 Response to the relevant Unsupported Values.

Retrieve Change Of Mode / Tariff Triggered Billing Data Log (4.4.2) and Retrieve Billing Calendar Triggered Billing Data Log (SRV 4.4.3)

17.21 Where the Device is not capable of recording the Total Consumption Register or Total Active Import Register values (with their SMETS1 meanings) in such log entries, the S1SP shall set the corresponding values in the SMETS1 Response to the relevant Unsupported Values.

17.22 SMETS1 ESME are not required to record Tariff TOU Block Register Matrix values (with their SMETS2 meaning) but are required to record the Tariff Block Counter Matrix values in the Billing Data Log (with their SMETS1 meanings). Therefore, the S1SP shall, where the target Device is recorded as being an ESME in the Smart Metering Inventory, populate the TariffTOUBlock[1..4]RegisterMatrixValue values (with their Message Mapping Catalogue meaning) with the Tariff Block Counter Matrix values from the Billing Data Log (with their SMETS1 meanings).

17.23 For clarity, SMETS1 does not require the recording of additional prepayment values to the timetable set out in the Billing Calendar.

Retrieve Import Daily Read Log (SRV 4.6.1)

17.24 SMETS1 ESME are not required to record Tariff TOU Block Register Matrix values (with their SMETS2 meaning) but are required to record the Tariff Block Counter Matrix values in the Daily Read Log (with their SMETS1 meanings). Therefore, the S1SP shall, where the target Device is recorded as being an ESME in the Smart Metering Inventory, populate the TariffTOUBlock[1..4]RegisterMatrixValues values (with their Message Mapping Catalogue meaning) with the Tariff Block Counter Matrix values from the Daily Read Log (with their SMETS1 meanings).

17.25 For clarity, SMETS1 Smart Meters need only support 14 entries in this log.

Read Tariff Primary Element (SRV 4.11.1)

17.26 In populating a SMETS1 Response, the S1SP shall:

(a) set CurrencyUnitsLabel to GBP and CurrencyUnitsName to Millipence (with their Message Mapping Catalogue meanings), since these values do not have to be supported by SMETS1 Devices;

(b) set the value of PrimaryActiveTariffPrice and PrimaryActiveTariffPriceScale (with their Message Mapping Catalogue meanings) to the relevant Unsupported Value, so indicating that these values do not have to be supported by SMETS1 Devices;

(c) Read Tariff Type (with its SMETS1 meaning) from the target SMETS1 Smart Meter to establish whether it is 'Time-of-use' or 'Time-of-use with Block' (with their SMETS1 meanings);

(d) where the target Device is, according to the Smart Metering Inventory, a SMETS1 ESME:

(i) if Tariff Type is 'Time-of-use', then set the values in TariffTOUPriceMatrix to those read from the Device and the values in TariffBlockPriceMatrix (with their Message Mapping Catalogue meanings) to the relevant Unsupported Values, to denote which values are in use and so which Tariff Type; or

(ii) if Tariff Type is 'Time-of-use with Block', then set the values in TariffBlockPriceMatrix to those read from the Device and the values in TariffTOUPriceMatrix (with their Message Mapping Catalogue meanings) to the relevant Unsupported Values, to denote which values are in use and so which Tariff Type; and

(e) where the target Device is, according to the Smart Metering Inventory, a SMETS1 GSME:

(i) if Tariff Type is 'Time-of-use', then set the values in TOUTariff to those read from the Device and omit the BlockTariff element (with their

Message Mapping Catalogue meanings), to denote which values are in use and so which Tariff Type; or

(ii) if Tariff Type is 'Time-of-use with Block', then set the values in BlockTariff to those read from the Device and omit the TOUTariff element (with their Message Mapping Catalogue meanings), to denote which values are in use and so which Tariff Type.

Read Prepayment Configuration SRV 4.13

17.27 Where the SMETS1 Device does not support the setting of values equivalent to the MaxMeterBalance or MaxCreditThreshold values (with their Message Mapping Catalogue meanings), then the S1SP shall, in populating a SMETS1 Response, set the values to the relevant Unsupported Value.

Read Load Limit Data (SRV 4.15)

17.28 A SMETS1 ESME cannot support a Load Limit Period (with its SMETS2 meaning) since the equivalent period is fixed at 30 seconds in SMETS1. Therefore, when populating a SMETS1 Response the S1SP shall set the LoadLimitPeriod (with its Message Mapping Catalogue meaning) to the relevant Unsupported Value.

17.29 A SMETS1 ESME cannot support a Load Limit Restoration Period (with its SMETS2 meaning) since there is no equivalent SMETS1 functionality. Therefore, when populating a SMETS1 Response, the S1SP shall set the LoadLimitRestorationPeriod (with its Message Mapping Catalogue meaning) to the relevant Unsupported Value.

Read Network Data (SRV 4.10)

17.30 A SMETS1 ESME is only required to support setting of Average RMS Voltage Measurement Period (with its SMETS1 meaning) in minutes, whereas the SMETS2 equivalent can be set in seconds. Therefore, where the SMETS1 ESME does not support setting to a resolution of seconds, the value in the MeasurementPeriod within AvgRMSVoltageProfileDataLog (with their Message Mapping Catalogue meanings) may be a multiple of 60 rather than the number of seconds requested in a prior 'Update Device Configuration (Voltage) (SRV 6.5)' Service Request.

Read Device Configuration (Identity Exc MPxN) (SRV 6.2.4)

17.31 In populating the SMETS1 Response, the S1SP shall:

(a) not include MeterVariant or ModelType fields (with their Message Mapping Catalogue meanings), since those do not have to be supported by SMETS1 Devices; and

(b) only include ManufacturerIdentifier (with its Message Mapping Catalogue meaning) where the target SMETS1 Device has a Device Identifier (with its SMETS1 meaning) and, in this case, set the value of ManufacturerIdentifier (with its Message Mapping Catalogue meaning) to be the value returned by the target Device for its Device Identifier (with its SMETS1 meaning).

Read Device Configuration (Gas) (SRV 6.2.8)

17.32 Where the SMETS1 Device does not support the setting of values equivalent to the StabilisationPeriod or MeasurementPeriod values (with their Message Mapping Catalogue meanings), then the S1SP shall, in populating a SMETS1 Response, set the values to the relevant Unsupported Value.

Update Device Configuration (Load Limiting General Settings) (SRV 6.4.1)

17.33 As noted in Clauses 17.28 and 17.29, a SMETS1 ESME cannot support either a Load Limit Period (with its SMETS2 meaning) or a Load Limit Restoration Period (with its SMETS2 meaning). Therefore, the S1SP shall discard any values in the LoadLimitPeriod or LoadLimitRestorationPeriod fields (with their DUIS meanings) when setting values on the SMETS1 ESME as a result of such a Service Request. For clarity, this discarding of values shall not result in an error in the SMETS1 Response.

Update Device Configuration (Voltage) (SRV 6.5)

17.34 A SMETS1 ESME is only required to support setting of Average RMS Voltage Measurement Period (with its SMETS1 meaning) in minutes, whereas the SMETS2 equivalent can be set in seconds. Therefore, where the target SMETS1 ESME does not support setting to a resolution of seconds, the S1SP shall divide the value in the AverageRMSVoltageMeasurementPeriod (with its DUIS meaning) by 60, round up to the nearest integer and set the value of the Average RMS Voltage Measurement Period (with its SMETS1 meaning) to the integer number of minutes so calculated.

Update Device Configuration (SRV 6.7)

17.35 Where a SMETS1 GSME supports the setting of values equivalent to the StabilisationPeriod or MeasurementPeriod values (with their Message Mapping Catalogue meanings), then the S1SP shall instruct the Device to set such values. Where the Device does not support setting of such values, the S1SP cannot send such instructions to the Device and therefore shall not do so and the S1SP shall create a SMETS1 Response indicating failure.

Read Event Or Security Log (SRV 6.13)

17.36 For clarity, in populating the SMETS1 Response, the S1SP shall comply with the requirements of Clause 8.

Update Security Credentials (KRP) (SRV 6.15.1)

17.37 The S1SP shall undertake the processing required by Clause 19. For clarity, since the Service Request is not to effect a change of control, any value in the RemotePartyFloorSequenceNumber field shall be discarded.

Update Security Credentials (CoS) (SRV 6.23)

17.38 Where the DCC has successfully authenticated the Service Request, the DCC shall then set all the Execution Counters required by Table 9 for the target Device (and for a SMETS1 ESME, the Associated SMETS1 CHF), according to the Device Type recorded for that target Device in the Smart Metering Inventory, to the value specified for that Execution Counter in Table 9.

17.39 The S1SP shall undertake the processing required by Clause 19. Where that processing is successful, the S1SP shall then set each Execution Counter required by Table 9 for the target Device (and for a SMETS1 ESME, the Associated SMETS1 CHF), according to the Device Type recorded for that target Device in the Smart Metering Inventory, to the value specified for that Execution Counter in Table 9.

Type of SMETS1 Device	**Execution Counters**
SMETS1 ESME	Those for each Critical Service Request which can be targeted at the Device, excluding the 'Update Device Security Credentials (KRP) (SRV 6.15.1) shall be set to the value in the SupplierFloorSequenceNumber field;

	That for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings) shall be set to the value in the SupplierFloorSequenceNumber field; That for the 'Top Up Device (SRV 2.2)' Service Request shall be set to the value in the SupplierFloorSequenceNumber field; In relation to the SMETS1 CHF which is Associated with the SMETS1 ESME, that for the 'Activate Firmware (SRV 11.3)' Service Request shall be set to the value in the SupplierFloorSequenceNumber field; and That for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings), shall be set to (2^{64} -1).
SMETS1 GSME	Those for each Critical Service Request which can be targeted at the Device shall be set to the value in the SupplierFloorSequenceNumber field; That for the 'Top Up Device (SRV 2.2)' Service Request shall be set to the value in the SupplierFloorSequenceNumber field; and That for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings), shall be set to (2^{64} -1).
SMETS1 GPF	That for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings) shall be set to the value in the SupplierFloorSequenceNumber field; and That for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings), shall be set to (2^{64} -1).

Table 9

Retrieve Device Security Credentials (KRP) (SRV 6.24.1)

17.40 If (with their DUIS meanings):

(a) RemotePartyRole is Supplier and there is no recorded Notified Critical Supplier ID for the target Device; or

(b) RemotePartyRole is NetworkOperator and there is no recorded Notified Critical Network Operator ID for the target Device; or

(c) RemotePartyRole is neither NetworkOperator nor Supplier

then the S1SP shall populate the SMETS1 Response with a single instance of RemotePartyDetails where the RemotePartyRole is as per the Service Request, StatusCode is trustAnchorNotFound and all other fields are omitted. Only otherwise shall the S1SP undertake the processing required in Clause 17.41 or 17.42 as required by RemotePartyRole.

17.41 Where RemotePartyRole is Supplier (with their DUIS meanings), the S1SP shall populate the SMETS1 Response as follows:

(a) populate a first instance of RemotePartyDetails where CertificateUsage is DigitalSigning, ExistingCertificateHash is that from the Certificate identified by Notified Critical Supplier Certificate ID, ExistingRemotePartyId is the Notified Critical Supplier ID, StatusCode is success and RemotePartyFloorSeqNumber has the value of the Execution Counter for 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings); and

(b) populate a second instance of RemotePartyDetails where CertificateUsage is KeyAgreement, ExistingCertificateHash is that from the Certificate identified by Notified Non-Critical Supplier Certificate ID, ExistingRemotePartyId is the Notified Non-Critical Supplier ID, StatusCode is success and RemotePartyFloorSeqNumber has the value of the Execution Counter for 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings).

17.42 Where RemotePartyRole is NetworkOperator (with their DUIS meanings), the S1SP shall populate the SMETS1 Response as follows:

(a) populate a first instance of RemotePartyDetails where CertificateUsage is DigitalSigning, ExistingCertificateHash is that from the Certificate identified by Notified Critical Network Operator Certificate ID, ExistingRemotePartyId is the Notified Critical Network Operator ID, StatusCode is success and RemotePartyFloorSeqNumber has the value of the Execution Counter for 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is NetworkOperator (with their DUIS meanings); and

(b) populate a second instance of RemotePartyDetails where CertificateUsage is KeyAgreement, ExistingCertificateHash is that from the Certificate identified by Notified Non-Critical Network Operator Certificate ID, ExistingRemotePartyId is the Notified Non-Critical Network Operator ID,

StatusCode is success and RemotePartyFloorSeqNumber has the value of the Execution Counter for 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is NetworkOperator (with their DUIS meanings).

Request Handover Of DCC Controlled Device (SRV 6.21)

17.43 The S1SP shall undertake the processing required by Clause **19**. Where that processing is successful, the S1SP shall then set Execution Counter values it holds in relation to the target Device according to the requirements of Table 10 and the Device Type recorded for the target Device in the Smart Metering Inventory. Where the S1SP creates a SMETS1 Response indicating success, it shall include in that SMETS1 Response an ExecutionOutcome (with its Message Mapping Catalogue meaning) element populated according to the requirements of Table 11.1. Where the DCC receives the resulting SMETS1 Response indicating success, the DCC shall set Execution Counter values it holds in relation to the target Device according to the requirements of Table 10 and the Device Type recorded for the target Device in the Smart Metering Inventory.

Type of SMETS1 Device and RemotePartyRole	**Required Execution Counter settings**
SMETS1 ESME or SMETS1 GSME or SMETS1 GPF where RemotePartyRole is Supplier (with their DUIS meanings)	That for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings), shall be set to zero; and That for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, for use where RemotePartyRole is Supplier (with their DUIS meanings), shall be set to (2^{64} -1).
SMETS1 ESME or SMETS1 GPF where RemotePartyRole is NetworkOperator (with their DUIS meanings)	That for the 'Update Device Security Credentials (KRP) (SRV 6.15.1)' Service Request, for use where RemotePartyRole is NetworkOperator (with their DUIS meanings), shall be set to zero; and That for the 'Request Handover of DCC Controlled Device (SRV 6.21)' Service Request, for use where RemotePartyRole is NetworkOperator (with their DUIS meanings), shall be set to (2^{64} -1).

Table 10

Data Item (with its Message Mapping Catalogue meaning)	**Required value in a SMETS1 Response**

AuthorisingRemotePartyOriginatorCounter	As per Message Mapping Catalogue.
CredentialsReplacementMode	Shall be populated with: • 'SupplierBySupplier' when the RemotePartyRole (with its DUIS meaning) in the Service Request is 'Supplier' • 'NetworkOperatorbyNetworkOperator' when the RemotePartyRole (with its DUIS meaning) in the Service Request is 'NetworkOperator'
RemotePartySeqNumberChange	Shall be populated according to the requirements of Table 12.2
ReplacementOutcome	For each replacement (with its DUIS meaning) in the Service Request, shall be populated according to the requirements of Table 13.3

Table 11.1

Data Item (with its Message Mapping Catalogue meaning)	**Required value in a SMETS1 Response**
RemotePartyRole	The RemotePartyRole (with its DUIS meaning) in the Service Request
RemotePartyFloorSeqNumber	The RemotePartyFloorSeqNumber (with its DUIS meaning) in the Service Request

Table 12.2

Data Item (with its Message Mapping Catalogue meaning)	**Required value in a SMETS1 Response**
StatusCode	'success'
CertificateType	• 'DigitalSigning' for a 'DigitalSigningCertificate' (with its DUIS meaning) in the Service Request • 'KeyAgreement' for a 'KeyAgreementCertificate' (with its DUIS meaning) in the Service Request
RemotePartyRole	The RemotePartyRole (with its DUIS meaning) in the Service Request

ExistingRemotePartyID	• The subject unique identifier equating to Entity Identifier (64 bit value) of a valid SMKI Certificate with the Remote Party Role of 'accessControlBroker' and keyUsage of 'digitalSignature' for a 'DigitalSigningCertificate' (with its DUIS meaning) in the Service Request • The subject unique identifier equating to Entity Identifier (64 bit value) of a valid SMKI Certificate with the Remote Party Role of 'accessControlBroker' and keyUsage of 'keyAgreement' for a 'KeyAgreementCertificate' (with its DUIS meaning) in the Service Request
NewRemotePartyID	• The subject unique identifier equating to Entity Identifier (64 bit value) of the 'DigitalSigningCertificate' (with its DUIS meaning) in the Service Request • The subject unique identifier equating to Entity Identifier (64 bit value) of a 'KeyAgreementCertificate' (with its DUIS meaning) in the Service Request
ExistingCertificateHash	• The subject key identifier, a SHA-1 Hash of the public key contained ina valid SMKI Certificate with the Remote Party Role of 'accessControlBroker' and keyUsage of 'digitalSignature' for a 'DigitalSigningCertificate' (with its DUIS meaning) in the Service Request • The subject key identifier, a SHA-1 Hash of the public key contained in a valid SMKI Certificate with the Remote Party Role of 'accessControlBroker' and keyUsage of 'keyAgreement' for a 'KeyAgreementCertificate' (with its DUIS meaning) in the Service Request
NewCertificateHash	• The subject key identifier, a SHA-1 Hash of the public key contained in a 'DigitalSigningCertificate' (with its DUIS meaning) in the Service Request • The subject key identifier, a SHA-1 Hash of the public key contained in a 'KeyAgreementCertificate' (with its DUIS meaning) in the Service Request

Table 13.3

Enable Supply (SRV 7.1)

17.44 For clarity, this command in SMETS1 is unconditional unlike in SMETS2. Therefore, the Service Request may result in supply being enabled on a SMETS1 Smart Meter when it would not be enabled on a SMETS2 Smart Meter which is in the same state.

Arm Supply (SRV 7.3)

17.45 On receipt of this Service Request, the S1SP shall create and send a SMETS1 Arm Valve (for SMETS1 GSME) or a SMETS1 Arm Load Switch (for SMETS1 ESME) command. For clarity, these commands in SMETS1 are unconditional unlike the equivalent command in SMETS2. Therefore, the Service Request may result in supply being armed on a SMETS1 Smart Meter when it would not be armed on a SMETS2 Smart Meter which is in the same state.

Join Service (Critical) (SRV 8.7.1) and Join Service (Non-Critical) (SRV 8.7.2)

17.46 If, according to the information held by the S1SP, the Devices identified by OtherDeviceID and by BusinessTargetID (with their DUIS meanings) are not both on the same SMETS1 CHF's 'SMETS1 CHF Device Log', the S1SP shall create a SMETS1 Response indicating failure; otherwise the S1SP shall create a SMETS1 Response indicating success.

Unjoin Service (Critical) (SRV 8.8.1) and Unjoin Service (Non-Critical) (SRV 8.8.2)

17.47 The S1SP shall create a SMETS1 Response indicating success.

Read Device Log (SRV 8.9)

17.48 In populating the SMETS1 Response, the S1SP shall:

(a) include a CHFDeviceLogEntry (with its Message Mapping Catalogue meaning) for the SMETS1 GPF which is within the same SMETS1 CH as the SMETS1 CHF to which this Service Request is targeted;

(b) include a CHFDeviceLogEntry (with its Message Mapping Catalogue meaning) for the SMETS1 ESME which is within the same SMETS1 ESMS as the SMETS1 CHF to which this Service Request is targeted; and

(c) include, except for the SMETS1 ESME, a CHFDeviceLogEntry (with its Message Mapping Catalogue meaning) for each SMETS1 Device which

communicates via the home area network using ZigBee Alliance standards managed by the SMETS1 CHF to which this Service Request is targeted.

17.49 This set of Devices for which CHFDeviceLogEntry (with its Message Mapping Catalogue meaning) would be created shall be referred to as the SMETS1 CHF's 'SMETS1 CHF Device Log'.

17.50 In populating a CHFDeviceLogEntry (with its Message Mapping Catalogue meaning) in a SMETS1 Response for a particular Device, the S1SP shall:

(a) set the value of DeviceID (with its Message Mapping Catalogue meaning) to the Device's Device ID, where that Device ID complies with Clause 3;

(b) set the value of SubGHzLinkQuality (with its Message Mapping Catalogue meaning) to zero, meaning that the Device is not communicating on Sub GHz frequencies;

(c) where the Device is not able to support the LastCommunicationsDateTime (with its Message Mapping Catalogue meaning) parameter, set the value of that parameter to the relevant Unsupported Value, to indicate that it does not support that parameter; and

(d) where the Device is able to support the LastCommunicationsDateTime (with its Message Mapping Catalogue meaning) parameter, set the value of that parameter to a value equivalent to that returned by the Device.

<u>Update HAN Device Log (SRV 8.11)</u>

17.51 Where RequestType is Add (with their DUIS meanings), the S1SP shall undertake processing in the following sequence stopping at the point at which it creates a SMETS1 Response:

(a) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) is, according to the Smart Metering Inventory a SMETS1 GPF:

(i) if, according to the Smart Metering Inventory, the SMETS1 GPF is Associated with the target SMETS1 CHF, the S1SP shall create a

SMETS1 Response indicating success; or

(ii) if, according to the Smart Metering Inventory, the SMETS1 GPF is not Associated with the target SMETS1 CHF, the S1SP shall create a SMETS1 Response indicating failure;

(b) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) is, according to the Smart Metering Inventory a SMETS1 ESME which the S1SP knows does not require connection to a ZigBee Specification based home area network to communicate with the SMETS1 CHF:

(i) if, according to the S1SP's information, the SMETS1 ESME forms part of the same SMETS1 ESMS as the SMETS1 CHF, the S1SP shall create a SMETS1 Response indicating success; or

(ii) if, according to the S1SP's information, the SMETS1 ESME does not form part of the same SMETS1 ESMS as the SMETS1 CHF, the S1SP shall create a SMETS1 Response indicating failure;

(c) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) does not meet the criteria at (a) or that at (b):

(i) if, according to the information available to S1SP, the Device is already on the SMETS1 CHF's 'SMETS1 CHF Device Log', the S1SP shall create a SMETS1 Response indicating success; or

(ii) if, according to the information held by the S1SP, the Device is already on another SMETS1 CHF's 'SMETS1 CHF Device Log', the S1SP shall create a SMETS1 Response indicating failure and indicating which other SMETS1 CHF the Device is Associated with; or

(iii) if the criteria at neither (i) nor (ii) are met, the S1SP shall:

(A) instruct the CHF to allow the Device identified by DeviceID (with its DUIS meaning) to join the home area network controlled by the SMETS1 CHF, using the InstallCode and JoinTimePeriod (with their DUIS meaning). For clarity, SMETS1 CHF may not support a configurable home area network joining period. Only where this is so, the S1SP shall discard any JoinTimePeriod value

(with their DUIS meaning); and

(B) ascertain (allowing for any relevant latency in the joining process, including where relevant the JoinTimePeriod (with its DUIS meaning)) whether the Device identified by Device ID (with its DUIS meaning) has joined the home area network and so is able to communicate over it. If the Device is able to communicate over the home area network, the S1SP shall create a SMETS1 Response indicating success. If the Device is not able to communicate over the home area network, the S1SP shall create a SMETS1 Response indicating failure.

17.52 Where RequestType is Remove (with their DUIS meanings), the S1SP shall undertake processing in the following sequence stopping at the point at which it creates a SMETS1 Response:

(a) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) is, according to the Smart Metering Inventory a SMETS1 GPF, then the S1SP shall create a SMETS1 Response indicating failure; or

(b) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) is, according to the Smart Metering Inventory a SMETS1 ESME which the S1SP knows does not require connection to a ZigBee Specification based home area network to communicate with the SMETS1 CHF, then the S1SP shall create a SMETS1 Response indicating failure;

(c) where DeviceID in the UpdateHANDeviceLog element (with their DUIS meanings) does not meet the criteria at (a) or that at (b):

(i) if, according to the information available to S1SP, the Device is not already on the SMETS1 CHF's 'SMETS1 CHF Device Log', then the S1SP shall create a SMETS1 Response indicating success; or

(ii) if, according to the information available to S1SP, the Device is on the SMETS1 CHF's 'SMETS1 CHF Device Log', then the S1SP shall:

(A) instruct the SMETS1 CHF to stop the Device identified by DeviceID (with its DUIS meaning) from having access to the home area network controlled by the SMETS1 CHF, and instruct the SMETS1 CHF to confirm whether it has stopped such access; and

(B) where the S1SP receives a response from the SMETS1 CHF detailing successful removal of access within a period allowing for latency in the process, the S1SP shall create a SMETS1 Response indicating success. Otherwise, the S1SP shall create a SMETS1 Response indicating failure.

Update Firmware (SRV 11.1)

17.53 On receipt of a firmware distribution request from the DCC, the S1SP shall, for each Device identified in that request confirm that the Device:

(a) is one for which the S1SP is operationally responsible; and

(b) is, according to the Smart Metering Inventory, of the same Device Model as is specified by the corresponding five values in the OTA Header.

17.54 The S1SP shall notify the DCC of the list of Device IDs which fail the check at 17.53, and the DCC shall send a DCC Alert to the User that sent the original 'Update Firmware' Service Request.

17.55 Where the S1SP does immediately distribute Manufacturer Images to Devices of the Device Model identified by the OTA Header, the S1SP shall, for each Device which passes the check at 17.53:

(a) if the Notified Critical Supplier Certificate ID is the same as that of a previous Device being processed where a Check Cryptographic Protection of the Authorising Remote Party Signature for that previous Device had succeeded, then:

(i) the S1SP shall distribute the Manufacturer Image to the Device and instruct the Device to confirm when it has successfully received that image; and

(ii) where the S1SP receives a response from the Device detailing successful reception within a period allowing for latency in the process, the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Successful' for this Device's Device Type (according to the Smart Metering Inventory); otherwise, the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory);

(b) if the Notified Critical Supplier Certificate ID is either (1) different than that of a previous Device being processed where a Check Cryptographic Protection of the Authorising Remote Party Signature for that previous Device had succeeded or (2) the same as that of a previous Device being processed where the check of Authorising Remote Party Signature for that previous Device had failed, then the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory); and

(c) if no previous Device being processed has successfully passed the Check Cryptographic Protection of the Authorising Remote Party Signature, the S1SP shall undertake the check of Authorising Remote Party Signature for this Device using the Public Key in the Certificate identified by Notified Critical Supplier Certificate ID. If that check fails then the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory); otherwise:

(i) the S1SP shall distribute the Manufacturer Image to the Device and instruct the Device to confirm when it has successfully received that image; and

(ii) where the S1SP receives a response from the Device detailing successful reception within a period allowing for latency in the process, the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Successful' for this Device's Device Type (according to the Smart Metering Inventory); otherwise, the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory).

17.56 Where the S1SP does not immediately distribute Manufacturer Images to Devices of the Device Model identified by the OTA Header, the S1SP shall retain the Manufacturer Image and, for each Device which passes the check at 17.53:

(a) if the Notified Critical Supplier Certificate ID is the same as that of a previous Device being processed where the check of Authorising Remote Party Signature for that previous Device had succeeded, the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Successful' for this Device's Device Type (according to the Smart Metering Inventory);

(b) if the Notified Critical Supplier Certificate ID is either (1) different to that of a previous Device being processed where the check of Authorising Remote Party Signature for that previous Device had succeeded or (2) the same as that of a previous Device being processed where the check of

Authorising Remote Party Signature for that previous Device had failed, then the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory); and

(c) if no previous Device being processed has successfully passed the check of Authorising Remote Party Signature, the S1SP shall undertake the check of Authorising Remote Party Signature for this Device. If that check fails then the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Failed' for this Device's Device Type (according to the Smart Metering Inventory); otherwise the S1SP shall create a SMETS1 Alert for this Device to alert 'Firmware Verification Successful' for this Device's Device Type (according to the Smart Metering Inventory).

17.57 Whenever the S1SP creates a SMETS1 Alert for 'Firmware Verification Successful', the S1SP shall set the value of the Device's Most Recently Verified Manufacturer Image Hash to be the Hash of the associated Manufacturer Image.

Read Firmware Version (SRV 11.2)

17.58 Based on the information available to it, the S1SP shall populate the FirmwareVersion field (with its Message Mapping Catalogue meaning) with the value from the Central Products List's firmware_version field (with its Central Products List meaning), excluding any colons from the firmware_version field's value, that reflects the operating firmware version for the Device's Device Model.

Activate Firmware (SRV 11.3)

17.59 If the FirmwareHash value (with its DUIS meaning) is not the same as the target Device's Most Recently Verified Manufacturer Image Hash, the S1SP shall create a SMETS1 Response indicating failure.

17.60 If the FirmwareHash value (with its DUIS meaning) is the same as the target Device's Most Recently Verified Manufacturer Image Hash:

(a) the S1SP shall instruct the Device to activate the Manufacturer Image (if necessary for the Device Model, by distributing the Manufacturer Image to it) and instruct the Device to confirm when it has successfully activated that Manufacturer Image; and

(b) where the S1SP receives a response from the Device detailing successful activation within a period allowing for latency in the process, the S1SP shall create a SMETS1 Response indicating success; otherwise, the S1SP shall create a SMETS1 Response indicating failure.

Synchronise Clock (SRV 6.11) and Commission Device (SRV 8.1.1)

17.61 Where the target Device is capable of maintaining time independently of any other Device in the Smart Metering System, the S1SP shall determine the Device's time and, if the Device's time is within the period defined by CurrentDateTime and CurrentDateTime plus TolerancePeriod (with their DUIS meanings), the S1SP shall return a SMETS1 Response indicating 'reliable'. If the Device's time can be determined but is outside of that period, the S1SP shall return a SMETS1 Response indicating 'unreliable'. If the S1SP determines that the Device does not have a valid time, the S1SP shall return a SMETS1 Response indicating 'invalid'.

17.62 Where the target Device is not capable of maintaining time independently of another Device in the Smart Metering System, the S1SP shall determine the time of the Device that serves as the time source for the target Device and, if the time source Device's time is within the period defined by CurrentDateTime and CurrentDateTime plus TolerancePeriod (with their DUIS meanings), the S1SP shall return a SMETS1 Response indicating 'reliable'. If the time source Device's time can be determined but is outside of that period, the S1SP shall return a SMETS1 Response indicating 'unreliable'. If the S1SP determines that the Device does not have a valid time, the S1SP shall return a SMETS1 Response indicating 'invalid'.

18 Processing SMETS1 Service Requests – Device specific behaviour

18.1 Update Import Tariff (Primary Element) (SRV 1.1.1)

(a) Where the target SMETS1 ESME does not support a Standing Charge (with its SMETS1 meaning) with an accuracy of greater than hundred thousandths of Currency Units (with its SMETS1 meaning) per day, the S1SP shall, where the Service Request specifies a StandingChargeScale (with its DUIS meaning) of -6 or less, create a SMETS1 Response indicating failure.

(b) Where the target SMETS1 ESME does not support prices in a Tariff TOU Price Matrix or Tariff Block Price Matrix (with its SMETS1 meaning) with an accuracy of greater than hundred thousandths of Currency Units (with its SMETS1 meaning) per kWh, the S1SP shall, where the Service

Request specifies a PriceScale (with its DUIS meaning) of -6 or less, create a SMETS1 Response indicating failure.

(c) Where the target SMETS1 ESME does not support a Standing Charge (with its SMETS1 meaning) with an accuracy of greater than ten thousandths of Currency Units (with its SMETS1 meaning) per day and the StandingChargeScale (with its DUIS meaning) specified is -5, the S1SP shall round the Standing Charge value (with its SMETS1 meaning) down to whole numbers of ten thousandths of Currency Units (with its SMETS1 meaning) per day.

(d) Where the target SMETS1 ESME does not support a PriceScale (with its DUIS meaning) at a resolution greater than ten thousandths of Currency Units (with its SMETS1 meaning) per kWh and the PriceScale (with its DUIS meaning) specified is -5, the S1SP shall round down the value of all prices in the Service Request to whole numbers of ten thousandths of Currency Units (with its SMETS1 meaning) per kWh.

(e) Where the SMETS1 ESME or SMETS1 GSME does not support StandingCharge (with its DUIS meaning) that is larger than 32767 and the StandingCharge (with its DUIS meaning) is greater than this value, the S1SP shall repeatedly divide the value by 10 and increase the associated scale by 1 until the resulting value can be stored on the Device. The stored value shall be rounded down to the nearest integer if the value to store is no longer an integer after rescaling.

(f) Where the SMETS1 ESME or SMETS1 GSME does not support prices in the TariffTOUPriceMatrix or TariffBlockPriceMatrix (with their DUIS meanings) that are larger than 32767 and any of the values in TariffTOUPriceMatrix or TariffBlockPriceMatrix (with their DUIS meanings) is greater than this value, the S1SP shall repeatedly divide all the values by 10 and increase the associated scale by 1 until the all the resulting values can be stored on the device. The stored values shall be rounded down to the nearest integer if the values to store are no longer integers after rescaling.

(g) Where the target SMETS1 ESME does not support simultaneous setting of Tariff Type (with its SMETS1 meaning) of ‘Time-of-use’ and ‘Time-of-use with Block’ and where HybridTariff (with its DUIS meaning) is specified, the S1SP shall create a SMETS1 Response indicating failure.

(h) Where the target SMETS1 GSME does not support more than two seasons in the Tariff Switching Table (with its SMETS1 meaning) and GasSeasons (with its DUIS meaning) specifies three seasons, the S1SP shall create a SMETS1 Response indicating failure.

(i) Where the target SMETS1 GSME does not support the equivalent of wildcards in the SeasonStartDate fields or the Date field in a GasSpecialDay fields (with their DUIS meanings), the S1SP shall, where the Service Request specifies such wildcards, create a SMETS1 Response indicating failure.

(j) Where the Service Request specifies a StandingCharge (with its DUIS meaning) greater than 32767 millipence and the target SMETS1 GSME does not support such a value, the S1SP shall create a SMETS1 Response indicating failure.

18.2 **(k) Where the target SMETS1 ESME has been configured to operate an external Auxiliary Load Control Switch (with its SMETS2 meaning) executing this Service Request will have the result that the external Auxiliary Load Control Switch (with its SMETS2 meaning) operation will cease.Update Price (Primary Element) (SRV 1.2.1)**

(a) The provision of Clauses 18.1to 18.1g apply to this Service Request.

18.3 **Update Meter Balance (SRV 1.5)**

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support Adjust Meter Balance when Payment Mode is Credit Mode and the Device is in Credit Mode (with their SMETS meanings), the S1SP shall return a SMETS1 Response indicating failure.

(b) Where the target SMETS1 ESME or SMETS1 GSME has no function to ResetMeterBalance (with its DUIS meaning) in Credit Mode and the Payment Mode (with its SMETS1 meaning) is Credit and the Service Request specifies a ResetMeterBalance (with its DUIS meaning) the S1SP shall create a SMETS1 Response indicating failure.

18.4 **Update Payment Mode (SRV 1.6)**

(a) When the S1SP changes Payment Mode (with its SMETS1 meaning) to Credit Mode, the SMETS1 ESME or SMETS1 GSME resets Meter Balance, Emergency Credit Balance, Emergency Credit Limit, Emergency Credit Threshold, Debt Recovery Rates [1 … 2] and Debt Recovery Per Payment (with their SMETS1 meanings).

(b) When the S1SP changes Payment Mode (with its SMETS1 meaning) to Prepayment, the SMETS1 ESME or GSME automatically activates Emergency Credit (with its SMETS1 meaning) if the Emergency Credit Limit (with its SMETS1 meaning) is greater than zero.

(c) When the S1SP changes Payment Mode (with its SMETS1 meaning) to Prepayment and no Emergency Credit Limit (with its SMETS1 meaning) has been set by way of a successful 'Update Prepayment Configuration (SRV 2.1)' more recently than the most recent Payment Mode (with its SMETS1 meaning) to change, an Emergency Credit Limit (with its SMETS1 meaning) of £5 shall apply on the Device.

(d) On a change of Payment Mode (with its SMETS1 meaning) the target SMETS1 ESME or SMETS1 GSME resets the Non-Disablement Calendar (with its SMETS1 meaning) to a factory default which is no Non-Disablement periods.

(e) Where the target SMETS1 ESME or SMETS1 GSME does not support positive values for the Disablement Threshold (with its SMETS1 meaning) and the DisablementThreshold value in the Service Request is positive (with their DUIS meanings), the S1SP shall create a SMETS1 Response indicating failure. For clarity, the S1SP shall undertake no further processing of the Service Request.

(f) Where the target SMETS1 ESME does not support the setting of the Disablement Threshold (with its SMETS1 meaning), the S1SP shall discard the value in DisablementThreshold when processing the Service Request. For clarity, the S1SP shall create a SMETS1 Response indicating success where all other processing succeeds and the SMETS1 ESME will continue to have the default Disablement Threshold (with its SMETS1 meaning) of zero.

(g) Where the target SMETS1 GSME does not support the setting of Suspend Debt Emergency (with its SMETS1 meaning) to be active and the value of SuspendDebtEmergency (with its DUIS meaning) is 'true' in the Service Request, the S1SP shall create a SMETS1 Response indicating failure. For clarity, the S1SP shall undertake no further processing of the Service Request.

(h) The S1SP shall read the Payment Mode (with its SMETS1 meaning) of the Device identified by the BusinessTargetID (with its DUIS meaning) and, where that is consistent with the PaymentMode (with its DUIS meaning), the S1SP shall create a SMETS1 Response indicating 'success', shall not send any instruction to the Device and shall ignore SuspendDebtEmergency, SuspendDebtDisabled and DisablementThreshold (with their DUIS meaning).

18.5 Update Prepayment Configuration (SRV 2.1)

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support the update of Debt Recovery Rate Cap (with its SMETS1 meaning) when in Prepayment Mode (with its SMETS1 meaning) the S1SP shall ignore DebtRecoveryRateCap (with its DUIS meaning) if the Device is already in Prepayment Mode (with its SMETS1 meaning) and return a SMETS1 Response indicating success.

(b) Where the target SMETS1 ESME or SMETS1 GSME does not support the update of Debt Recovery Rate Cap (with its SMETS1 meaning) when in Credit Mode (with its SMETS1 meaning) the S1SP shall ignore DebtRecoveryRateCap (with its DUIS meaning) if the Device is in Credit Mode (with its SMETS1 meaning) and return a SMETS1 Response indicating success.

(c) Where the target SMETS1 ESME or SMETS1 GSME does not support the update of Low Credit Threshold (with its SMETS1 meaning) when in Prepayment Mode (with its SMETS1 meaning) the S1SP shall ignore LowCreditThreshold (with its DUIS meaning) if the Device is already in Prepayment Mode (with its SMETS1 meaning) and return a SMETS1 Response indicating success.

(d) Where the target SMETS1 ESME does not support StartDate and EndDate (with their DUIS meanings) for seasons and a StartDate (with its DUIS meaning) is specified that is in the future or an EndDate (with its DUIS meaning) is specified which is other than '3000-12-31T00:00:00Z', the S1SP shall create a SMETS1 Response indicating failure.

(e) Where the target SMETS1 ESME does not support Special Days in a Non-Disablement Calendar (with their SMETS2 meanings) that do not specify all-day non-disablement and the Service Request specifies a SpecialDay (with its DUIS meaning) relating to a ElectricityNonDisablementSchedule (with its DUIS meaning) that has anything other than one SwitchTime (with its DUIS meaning) at midnight with a NonDisablementScript (with its DUIS meaning) set to START, the S1SP shall create a SMETS1 Response indicating failure.

(f) Where the target SMETS1 ESME only supports one Day Profile in a Non-Disablement Calendar (with its SMETS2 meaning) which has more than one period in it and the Service Request specifies an ElectricityNonDisablementSchedule (with its DUIS meaning) and DayOfWeekApplicability

(with its DUIS meaning) that mandates more than one Day Profile that is set to not disable all day or has more than one period in it, the S1SP shall create a SMETS1 Response indicating failure.

(g) Where the target SMETS1 ESME does not have the capacity to store the ElectricityNonDisablementCalendar (with its DUIS meaning) requested, the S1SP shall create a SMETS1 Response indicating failure.

(h) For a target SMETS1 ESME or SMETS1 GSME, if the Service Request does not specify at least one NonDisablementScript with its DUIS meaning) that should apply on each day between the earliest StartDate and latest EndDate (with their DUIS meanings), the S1SP shall create a SMETS1 Response indicating failure.

(i) For a target SMETS1 GSME, if the Service Request does not specify at least one TimeStartAction (with its DUIS meaning) that should apply on each day after the earliest SeasonStartDate (with its DUIS meaning) as defined by the Service Request, the S1SP shall create a SMETS1 Response indicating failure.

(j) Where the target SMETS1 ESME does not support the equivalent of wildcards in the date in the ElecSpecialDayPrepayment fields (with its DUIS meaning) and the Service Request contains such wildcards, the S1SP shall create a SMETS1 Response indicating failure.

(k) Where the target SMETS1 GSME does not support the equivalent of wildcards in the SeasonStartDate fields or the date in the GasSpecialDayNonDisablement fields (with their DUIS meanings) and the Service Request contains such wildcards, the S1SP shall create a SMETS1 Response indicating failure.

18.6 Top Up Device (SRV 2.2)

This section intentionally left blank

18.7 Update Debt (SRV 2.3)

(a) Where the target SMETS1 ESME or SMETS1 GSME only supports update of the recovery period for Debt Recovery Rates 1 and 2 (with their

SMETS1 meanings) when in Credit Mode (with its SMETS1 meaning) the S1SP shall ignore DebtRecoveryRatePeriod (with its DUIS meaning) if the Device is already in Prepayment Mode (with its SMETS1 meaning) and return a SMETS1 Response indicating success.

(b) Where the target SMETS1 ESME or SMETS1 GSME does not support the update of Debt Recovery Per Payment (with its SMETS1 meaning) when in Prepayment Mode (with its SMETS1 meaning) the S1SP shall ignore DebtRecoveryPerPayment (with its DUIS meaning) if the Device is already in Prepayment Mode (with its SMETS1 meaning) and return a SMETS1 Response indicating success.

(c) Where the target SMETS1 ESME or SMETS1 GSME only supports daily Debt Recovery Rates 1 and 2 (with their SMETS1 meanings) the S1SP shall ignore DebtRecoveryRatePeriod (with its DUIS meaning) if it has a value other than DAILY (with its DUIS meaning) and return a SMETS1 Response indicating success.

(d) Where the target SMETS1 ESME does not support Debt Recovery Rate 1 or 2 (with their SMETS1 meaning) with an accuracy of greater than hundred thousandths of Currency Units per day, the S1SP shall, where the Service Request specifies a DebtRecoveryRatePriceScale (with its DUIS meaning) of -6 or less, return a SMETS1 Response indicating failure.

(e) Where the target SMETS1 ESME does not support a Debt Recovery Rate 1 or 2 (with their SMETS1 meanings) at a resolution greater than ten thousandths of Currency Units per DebtRecoveryRatePeriod (with its DUIS meaning) and the DebtRecoveryRatePriceScale (with its DUIS meaning) specified is -5, the S1SP shall round the Debt Recovery Rate value (with its SMETS1 meaning) down to a whole number of ten thousandths of Currency Units (with its SMETS1 meaning) per DebtRecoveryRatePeriod (with its DUIS meaning).

(f) Where the target SMETS1 ESME or SMETS1 GSME only supports Debt Recovery per Payment (with its SMETS1 meaning) in whole numbers of percent, the S1SP shall divide the value in the DebtRecoveryPerPayment (with its DUIS meaning) by 100, round down to the nearest integer and set the value of the Debt Recovery per Payment (with its SMETS1 meaning) to the percentage so calculated.

(g) Where the target SMETS1 ESME or SMETS1 GSME does not support a DebtRecoveryRate (with its DUIS meaning) that is larger than 32767, the S1SP shall repeatedly divide the value of any such DebtRecoveryRate (with its DUIS meaning) by 10 and increase the associated scale by 1 until the resulting value can be stored on the device. The stored value shall be rounded down to the nearest integer if the value to store is no

longer an integer after rescaling.

(h) Where the target SMETS1 ESME does not support a Time Debt Register 1 or 2 or Payment Debt Register (with their SMETS1 meanings) at a resolution greater than ten thousandths of Currency Units and given that the TimeDebtRegister1 or TimeDebtRegister2 or PaymentDebtRegister (with their DUIS meanings) are always specified at a resolution of hundreds of thousandths of Currency Units, the S1SP shall round the Time Debt Register 1 or 2 or Payment Debt Register value (with their SMETS1 meanings) down to a whole number of ten thousandths of Currency Units (with its SMETS1 meaning).

18.8 Activate Emergency Credit (SRV 2.5)

This section intentionally left blank

18.9 Restrict Access for Change Of Tenancy(SRV 3.2)

(a) Whenever the S1SP processes this Service Request and the meter Payment Mode (with its SMETS1 meaning) is Prepayment Mode, the SMETS1 ESME will set the Meter Balance and Emergency Credit Balance (with their SMETS1 meanings) operational data values to zero. The ESME will not invoke the current Emergency Credit Limit (with its SMETS1 meaning) and will go off supply unless the Non-Disablement Calendar (with its SMETS1 meaning) is configured to have a non-disablement period in force at the CoT time.

(b) Whenever the S1SP actions this Service Request and the meter Payment Mode (with its SMETS1 meaning) is Prepayment Mode, the SMETS1 GSME will set the Meter Balance and Emergency Credit Balance (with their SMETS1 meanings) operational data values to zero. The GSME will then invoke the current Emergency Credit Limit (with its SMETS1 meaning) to remain on supply.

18.10 Clear Event Log (SRV 3.3)

This section intentionally left blank

18.11 **Read Instantaneous Import Registers (SRV 4.1.1)**

This section intentionally left blank

18.12 **Read Instantaneous Import TOU Matrices (SRV 4.1.2)**

This section intentionally left blank

18.13 **Read Instantaneous Import TOU With Blocks Matrices (SRV 4.1.3)**

(a) Where the SMETS1 ESME does not report values for the Tariff Block Counter Matrix (with their SMETS1 meaning), the values returned in CounterMatrixTOUValues (with their Message Mapping Catalogue meaning) in the SMETS1 Response shall all be zero.

18.14 **Read Instantaneous Import Block Counters (SRV 4.1.4)**

(a) Where the SMETS1 GSME reports tariff Block Counters (with their SMETS1 meaning) in kWh, the values returned ImportBlockCounters (with its Message Mapping Catalogue meaning) shall, contrary to Message Mapping Catalogue Section 5.20.2.2.2, be in units of kWh rather than meters cubed.

(b) Where the SMETS1 GSME does not report tariff Block Counters (with their SMETS1 meaning), the values returned in ImportBlockCounters (with its Message Mapping Catalogue meaning) in the SMETS1 Response shall all be zero.

18.15 **Read Instantaneous Export Registers (SRV 4.2)**

This section intentionally left blank

18.16 **Read Instantaneous Prepay Values (SRV 4.3)**

(a) Where the SMETS1 ESME or SMETS1 GSME has a value equivalent to DebtRecoveryRatePriceScale (with it DUIS meaning) greater than -5

and the SMETS1 Device returns the values equivalent to the TimeDebtRegister1and TimeDebtRegister2 (with their Message Mapping Catalogue meanings) to that scale , the values returned by the S1SP in the TimeDebtRegister1and TimeDebtRegister2 (with their Message Mapping Catalogue meanings) will be rounded down so that they are accurate only to the scale specified in the DebtRecoveryRatePriceScale value.

(b) Where the SMETS1 GSME only supports reading of the value equivalent to PaymentDebtRegister (with its Message Mapping Catalogue meaning) to the nearest whole number of GBP , the value returned by the S1SP in the PaymentDebtRegister (with its Message Mapping Catalogue meaning) shall be the milli pence equivalent of the nearest whole number of GBP.

18.17 **Retrieve Change Of Mode / Tariff Triggered Billing Data Log (SRV 4.4.2),**

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support the recording of the values in the Tariff Block Counter Matrix when actioning a Set Payment Mode or Set Tariff command (with their SMETS meanings), the S1SP shall omit the TariffBlockCounterMatrix element in the SMETS1 Response (with its Message Mapping Catalogue meaning)**.**

(b) Where the SMETS1 GSME reports tariff Block Counters (with their SMETS1 meaning) in kWh, the values returned in BlockRegisterMatrixValue or TariffBlockCounterMatrix (with their Message Mapping Catalogue meanings) shall, contrary to Message Mapping Catalogue Sections , 5.23.2.2.4, 6.2.2.4 or 5.27.2.2 be in units of kWh rather than meters cubed.

(c) Where the SMETS1 ESME does not report values in these logs for the Tariff Block Counter Matrix (with its SMETS1 meaning), the S1SP shall create a SMETS1 Response with zero occurrences of TariffTOUBlock1RegisterMatrixValue TariffTOUBlock2RegisterMatrixValue TariffTOUBlock3RegisterMatrixValue and TariffTOUBlock4RegisterMatrixValue,

18.18 **Retrieve Billing Calendar Triggered Billing Data Log (SRV 4.4.3),**

(a) The provisions of Clauses 18.17 (b) to (c) apply to this Service Request

18.19 **Retrieve Billing Data Log (Payment Based Debt Payments) (SRV 4.4.4),**

This section intentionally left blank

18.20 **Retrieve Billing Data Log (Prepayment Credits) (SRV 4.4.5),**

This section intentionally left blank

18.21 **Retrieve Import Daily Read Log (SRV 4.6.1),**

(a) The provisions of Clauses 18.17 (b) to 18.17 (c) apply to this Service Request

18.22 **Retrieve Active Import Profile Data (SRV 4.8.1),**

This section intentionally left blank

18.23 **Read Reactive Import Profile Data (SRV 4.8.2),**

This section intentionally left blank

18.24 **Read Export Profile Data (SRV 4.8.3),**

This section intentionally left blank

18.25 **Read Network Data (SRV 4.10)**

(a) Where the target SMETS1 ESME does not support the Average RMS Over Voltage Counter or Average RMS Under Voltage Counter operational data items (with their SMETS meanings), the S1SP shall omit the AvgRMSOverVoltageCounter and AvgRMSUnderVoltageCounter elements in the SMETS1 Response (with its Message Mapping Catalogue meaning).

(b) Where the target SMETS1 GSME does not support the Network Data Log operational data item (with its SMETS meaning), the S1SP shall create a SMETS1 Response indicating failure.

(c) Where the target SMETS1 GSME requires an Instruction to begin logging in to the Network Data Log operational data item (with its SMETS meaning), the S1SP shall create a SMETS1 Response indicating failure, since the DCC do not support such Instructions.

(d) Where the target SMETS1 ESME does not support the Average RMS Voltage Profile Data Log (with its SMETS1 meaning) to have a period that is the same as the AverageRMSVoltageMeasurementPeriod (with its DUIS meaning) set for calculation of Average RMS Voltage (with its SMETS1 meaning) and the AverageRMSVoltageMeasurementPeriod has not been set to be the same as the Average RMS Voltage Profile Data Log period, the values returned in the Average RMS Voltage Profile Data Log shall be averages for the AverageRMSVoltageMeasurementPeriod calculated at the time of each log entry.

18.26 **Read Tariff (Primary Element) (SRV 4.11.1)**

(a) Where the target SMETS1 ESME does not support a StandingChargeScale (with its DUIS meaning) at a resolution greater than ten thousandths of Currency Units (with its SMETS1 meaning) per day the value in StandingChargeScale (with its Message Mapping Catalogue meaning) shall be -4 and the StandingCharge (with its Message Mapping Catalogue meaning) shall represent a value in a whole number of ten thousandths of Currency Units (with its SMETS1 meaning) per day.

(b) Where the target SMETS1 ESME does not support a PriceScale (with its DUIS meaning) at a resolution greater than ten thousandths of Currency Units (with its SMETS1 meaning) per kWh the value in PriceScale (with its Message Mapping Catalogue meaning) shall be -4 and the prices within the TariffTOUPriceMatrix and TariffBlockPriceMatrix (with their Message Mapping Catalogue meaning) shall represent values in a whole number of ten thousandths of Currency Units (with its SMETS1 meaning) per kWh.

(c) Where the SMETS1 ESME or SMETS1 GSME does not support StandingCharge (with its DUIS meaning) that is larger than 32767 the value in StandingChargeScale (with its Message Mapping Catalogue meaning) and the StandingCharge (with its Message Mapping Catalogue meaning) may be different to those previously requested, as defined in Clause 18.1(e).

(d) Where the SMETS1 ESME or SMETS1 GSME does not support prices in the TariffTOUPriceMatrix or TariffBlockPriceMatrix (with their DUIS meanings) that are larger than 32767 the value in PriceScale (with its Message Mapping Catalogue meaning) and the prices in TariffTOUPriceMatrix and TariffBlockPriceMatrix (with their DUIS meanings) may be different to those previously requested, as defined in Clause 18.1(f) 18.1(f)

18.27 **Read Prepayment Configuration (SRV 4.13)**

(a) Where the target SMETS1 GSME does not support the Non-Disablement Calendar to be readable over the WAN Interface (with their SMETS meanings), the S1SP shall omit the NonDisablementCalendar element in the SMETS1 Response (with its Message Mapping Catalogue meaning).

(b) Where the value in DebtRecoveryRatePeriod (with its DUIS meaning) has previously been ignored pursuant to Clauses 18.7(c) and 18.7(e), the value of DebtRecoveryRatePeriod (with its Message Mapping catalogue meaning) in a SMETS1 response relating to an SMETS1 ESME shall correspondingly be unchanged.

(c) Where the value in DebtRecoveryRatePeriod (with its DUIS meaning) has previously been ignored pursuant to Clauses 18.7(c) and 18.7(e), the value of DebtRecoveryPeriod (with its Message Mapping catalogue meaning) in a SMETS1 response relating to a GSME shall correspondingly be unchanged.

(d) Where the target SMETS1 ESME does not support a Debt Recovery Rate 1 or 2 (with their SMETS1 meanings) at a resolution greater than ten thousandths of Currency Units per DebtRecoveryRatePeriod (with its DUIS meaning), the value in DebtRecoveryRatePriceScale (with its Message Mapping Catalogue meaning) shall be -4 and the DebtRecoveryRate (with its Message Mapping Catalogue meaning) shall be returned in a whole number of ten thousandths of Currency Units (with its SMETS1 meaning) per DebtRecoveryRatePeriod (with its DUIS meaning).

(e) Where the target SMETS1 ESME or SMETS1 GSME only supports Debt Recovery per Payment (with its SMETS1 meaning) in whole numbers of percent, the value in the DebtRecoveryPerPayment (with its Message Mapping Catalogue meaning) shall be a multiple of 100, where 100 represents one percent.

(f) Where the SMETS1 ESME or SMETS1 GSME does not support a DebtRecoveryRate (with its DUIS meaning) that is larger than 32767, the value in DebtRecoveryRatePriceScale (with its Message Mapping Catalogue meaning) and the DebtRecoveryRate (with its Message Mapping Catalogue meaning) may be different to those previously requested, as defined in Clause18.7(g).

(g) For the target SMETS1 ESME there may be additional ElectricityNonDisablementSchedule (with its Message Mapping Catalogue meaning) items that were not included in any prior 'Update Prepayment Configuration (SRV 2.1)' Service Request. Such additional items will have a switch time of midnight. These entries do not change the functional effect of the ElectricityNonDisablementCalendar (with its DUIS meaning).

(h) Where the target SMETS1 ESME stores a SuspendDebtDisabled and SuspendDebtEmergency (with their DUIS meanings) value for each debt type, the S1SP shall, in the SMETS1 response, populate SuspendDebtDisabled and SuspendDebtEmergency (with their Message Mapping Catalogue meanings) with the Device's Suspend Debt Disabled and Suspend Debt Emergency (with their SMETS1 meanings) values for Time Debt Register 1 (with its SMETS1 meaning). Additionally, if these values are not the same as the Suspend Debt Disabled and Suspend Debt Emergency (with their SMETS1 meanings) values for Time Debt Register 2 and Payment Debt Register (with their SMETS1 meanings), the S1SP shall send a S1SP Alert warning that the Suspend Debt settings are inconsistent.

(i) Where the SMETS1 ESME or SMETS1 GSME does not activate changes to prepayment configuration items until it switches to Prepayment Mode (with its SMETS1 meaning), the values returned by the Device for such items will not reflect any changes that are made whilst in Credit Mode (with its SMETS1 meaning). Therefore, the S1SP shall populate the SMETS1 Response in line with the Device provided information. For clarity, this applies to all data items that can be set in an 'Update Prepayment Configuration' Service Request except for ElectricityNonDisablementCalendar and GasNonDisablementCalendar (with their DUIS meanings).

18.28 **Read Load Limit Data (SRV 4.15)**

(a) Where the target SMETS1 ESME does not support Load Limit Power Threshold (with its SMETS1 meaning) at a resolution greater than 10s of Watts, the value in LoadLimitPowerThreshold (with its Message Mapping Catalogue meaning) shall have a value equating to a multiple of ten Watts.

18.29 **Read Active Power Import (SRV 4.16)**

This section intentionally left blank

18.30 **Read Meter Balance (SRV 4.18)**

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support the Meter Balance to be accessible over the WAN Interface when Payment Mode is Credit Mode and the Device is in Credit Mode (with their SMETS meanings), the S1SP shall return a SMETS1 Response indicating failure.

18.31 **Read Device Configuration (Voltage) (SRV 6.2.1)**

(a) Where the target SMETS1 ESME does not support RMSExtremeUnderVoltageThreshold, RMSExtremeOverVoltageThreshold, AverageRMSOverVoltageThreshold, AverageRMSUnderVoltageThreshold, RMSVoltageSagThreshold and RMSVoltageSwellThreshold (with their SMETS1 meaning) at a resolution greater than one Volt, RMSExtremeUnderVoltageThreshold, RMSExtremeOverVoltageThreshold, AverageRMSOverVoltageThreshold, AverageRMSUnderVoltageThreshold, RMSVoltageSagThreshold and RMSVoltageSwellThreshold (with their Message Mapping Catalogue meaning) shall have values equating to whole number of volts.

18.32 **Read Device Configuration (Billing Calendar) (SRV 6.2.3)**

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support a time other than midnight UTC in its Billing Calendar (with its SMETS1 meaning), the time values in BillingTime and BillingPeriodStart (with their Message Mapping Catalogue meanings) shall be midnight UTC.

(b) Where the target SMETS1 ESME or SMETS1 GSME does not support a time resolution greater than minutes in its Billing Calendar (with its SMETS1 meaning), the seconds values in BillingTime and BillingPeriodStart (with their Message Mapping Catalogue meanings) shall be zero.

18.33 **Read Device Configuration (Identity Exc MPxN) (SRV 6.2.4)**

(a) Where the target SMETS1 GSME does not support the Supply Tamper State or Supply Depletion State configuration data item (with their SMETS meanings), the S1SP shall omit the SupplyTamperState and SupplyDepletionState elements from the SMETS1 Response (with its Message Mapping Catalogue meaning).

18.34 **Read Device Configuration (Instantaneous Power Thresholds) (SRV 6.2.5)**

(a) Where the target SMETS1 ESME does not support Low Medium Power Threshold and Medium High Power Threshold (with their SMETS1 meanings) at a resolution greater than tens of Watts, the value in LowMediumPowerThreshold and MediumHighPowerThreshold (with their Message Mapping Catalogue meanings) shall have values equating to a whole number of 10s of Watts.

18.35 **Read Device Configuration (Gas) (SRV 6.2.8)**

(a) Where the target SMETS1 GSME does not support the Uncontrolled Gas Flow Rate or the Conversion Factor configuration data items (with their SMETS meanings), the S1SP shall omit the UncontrolledGasFlowRate element or the ConversionFactor element (as the context requires) from the SMETS1 Response (with its Message Mapping Catalogue meaning).

18.36 **Read Device Configuration (Payment Mode) (SRV 6.2.9)**

(a) Where the target SMETS1 GSME does not support the setting of Suspend Debt Emergency (with its SMETS1 meaning) to be active, the S1SP shall set the value of SuspendDebtEmergency (with its Message Mapping Catalogue meaning) to be ‘false’ in the SMETS1 Response.

(b) Where the target SMETS1 GSME does not support the reading of Suspend Debt Disabled (with its SMETS1 meaning), the S1SP shall omit the SuspendDebtDisabled (with its Message Mapping Catalogue meaning) from the SMETS1 Response.

18.37 **Update Device Configuration (Load Limiting General Settings) (SRV 6.4.1)**

(a) Where the target SMETS1 ESME does not support Load Limit Power Threshold (with its SMETS1 meaning) at a resolution greater than tens of Watts, the S1SP shall divide the LoadLimitPowerThreshold (with its DUIS meaning) by 10, round down to the nearest whole number of tens of Watts and set the resulting value on the Device.

(b) Where the target SMETS1 ESME does not support Load Limit Power Threshold (with its SMETS1 meaning) at a resolution greater than Kilowatts, the S1SP shall divide the LoadLimitPowerThreshold (with its DUIS meaning) by 1000, round down to the nearest whole number of Kilowatts and set the resulting value on the Device.

18.38 **Update Device Configuration (Load Limiting Counter Reset) (SRV 6.4.2)**

(a) Where the SMETS1 ESME does not support the Reset Load Limit Counter command (with its SMETS1 meaning), the S1SP shall return a SMETS1 Response indicating failure.

18.39 **Update Device Configuration (Voltage) (SRV 6.5)**

(a) Where the target SMETS1 ESME does not support RMSExtremeUnderVoltageThreshold, RMSExtremeOverVoltageThreshold, AverageRMSOverVoltageThreshold, AverageRMSUnderVoltageThreshold, RMSVoltageSagThreshold and RMSVoltageSwellThreshold (with their SMETS1 meaning) at a resolution greater than one Volt, the S1SP shall divide the values in each of the RMSExtremeUnderVoltageThreshold, RMSExtremeOverVoltageThreshold, AverageRMSOverVoltageThreshold, AverageRMSUnderVoltageThreshold, RMSVoltageSagThreshold and RMSVoltageSwellThreshold (with their Message Mapping Catalogue meaning) by 10, round down to the nearest whole number of volts and set the resulting value on the Device.

(b) Where the target SMETS1 ESME only supports 60, 300, 600, 900, 1800 and 3600 for AverageRMSVoltageMeasurementPeriod (with its DUIS

meaning), the S1SP shall set the value of Average RMS Voltage Measurement Period (with its SMETS1 meaning) to the next greater available measurement period if for AverageRMSVoltageMeasurementPeriod (with its DUIS meaning) is not equal to a supported value or, if the specified period is larger than 3600, set it to 3600.

18.40 **Update Device Configuration (Gas Conversion) (SRV 6.6)**

(a) Where the target SMETS1 GSME does not support the Conversion Factor configuration data item (with its SMETS meaning), the S1SP shall not set the Conversion Factor. For clarity, the S1SP shall create a SMETS1 Response indicating success where all other processing succeeds.

18.41 **Update Device Configuration (Gas Flow) (SRV 6.7)**

(a) Where the target SMETS1 GSME supports setting of the Uncontrolled Gas Flow Rate configuration data item (with its SMETS meaning) only to the range of values in Table 14, the S1SP shall set the Uncontrolled Gas Flow Rate (with its SMETS1 meaning) to the value that corresponds to the UncontrolledGasFlowRate (with its DUIS meaning) in Table 14.

UncontrolledGasFlowRate (with its DUIS meaning) (m3/hr)	Uncontrolled Gas Flow Rate (with its SMETS1 meaning) set on Device (m3/hr)
1	1.08
2	2.16
3 or greater	4.32

Table 14

(b) Where the target SMETS1 GSME does not support the Supply Tamper State, Uncontrolled Gas Flow Rate or Supply Depletion State configuration data items (with its SMETS meaning), the S1SP shall create a SMETS1 Response indicating failure.

(c) Where the target SMETS1 GSME does not support setting of the Uncontrolled Gas Flow Rate, StabilisationPeriod and MeasurementPeriod (with its SMETS1 meaning) to the resolution allowed in DUIS (meters cubed), the S1SP shall discard the values in UncontrolledGasFlowRate, StabilisationPeriod and MeasurementPeriod (with their DUIS meanings) when processing the Service Request. For clarity, the S1SP shall create a SMETS1 Response indicating success where all other processing succeeds.

18.42 **Update Device Configuration (Billing Calendar) (SRV 6.8)**

(a) Where the target SMETS1 ESME or SMETS1 GSME does not support a time other than midnight UTC in its Billing Calendar (with its SMETS1 meaning), the S1SP shall ignore the time elements of the BillingTime or BillingPeriodStart (with their DUIS meanings) and shall set the time in the Billing Calendar (with its SMETS1 meaning) to midnight UTC.

(b) Where the target SMETS1 ESME or SMETS1 GSME does not support a time resolution greater than minutes in its Billing Calendar (with its SMETS1 meaning), the S1SP shall ignore the seconds part of the time in the BillingTime or BillingPeriodStart (with their DUIS meanings) and shall set the seconds part of the time in the Billing Calendar (with its SMETS1 meaning) to zero.

(c) Where the target SMETS1 GSME does not support the Billing Calendar (with its SMETS1 meaning), the S1SP shall create a SMETS1 Response indicating failure.

(d) Where the target SMETS1 GSME only supports a Billing Calendar timetable of either (1) midnight daily, (2) weekly at midnight on Monday or (3) monthly at midnight on the first of the month (with its SMETS1 meaning) and the Service Request specifies a GasBillingCalendar (with its DUIS meaning) with a timetable that is other than one of those options, the S1SP shall create a SMETS1 Response indicating failure.

18.43 **Synchronise Clock (SRV 6.11)**

This section intentionally left blank

18.44 **Update Device Configuration (Instantaneous Power Threshold) (SRV 6.12)**

(a) Where the target SMETS1 ESME does not support Low Medium Power Threshold and Medium High Power Threshold (with their SMETS1 meanings) at a resolution greater than tens of Watts, the S1SP shall divide the LowMediumPowerThreshold and MediumHighPowerThreshold (with their DUIS meanings) by 10, round down to the nearest whole number of tens of Watts and set the resulting value on the Device.

18.45 **Read Event Or Security Log (SRV 6.13)**

This section intentionally left blank

18.46 **Update Security Credentials (KRP) (SRV 6.15.1)**

This section intentionally left blank

18.47 **Request Handover of DCC Controlled Device (SRV 6.21)**

This section intentionally left blank

18.48 **Update Security Credentials (CoS) (SRV 6.23)**

This section intentionally left blank

18.49 **Retrieve Device Security Credentials (KRP) (SRV 6.24.1)**

This section intentionally left blank

18.50 **Set Electricity Supply Tamper State (SRV 6.25)**

This section intentionally left blank

18.51 **Update Device Configuration (RMS Voltage Counter Reset) (SRV 6.27)**

(a) Where the target SMETS1 ESME does not support the Average RMS Over Voltage Counter or Average RMS Under Voltage Counter operational data items (with their SMETS meanings), the S1SP shall create a SMETS1 Response indicating failure.

18.52 **Enable Supply (SRV 7.1)**

(a) Where the target SMETS1 ESME does not support the Enable Supply WAN Interface command (with its SMETS meaning), the S1SP shall create a SMETS1 Response indicating failure.

18.53 **Disable Supply (SRV 7.2)**

(a) ~~This section intentionally left blank~~Where the target SMETS1 ESME is in Prepayment Mode (with its SMETS1 meaning) and the Device has successfully executed the Instructions associated with the Service Request, the Device will automatically Arm Supply (with its DUIS meaning).

18.54 **Arm Supply (SRV 7.3)**

This section intentionally left blank

18.55 **Read Supply Status (SRV 7.4)**

(a) Where the target SMETS1 GSME does not support the Remaining Battery Capacity to be capable of reading over the WAN Interface (with their SMETS meanings), the S1SP shall omit the RemainingBatteryCapacity element in the SMETS1 Response (with its Message Mapping Catalogue meaning).

18.56 **Commission Device (SRV 8.1.1)**

This section intentionally left blank

18.57 **Join Service (Critical) (SRV 8. 7.1)**

This section intentionally left blank

18.58 **Join Service (Non-Critical) (SRV 8. 7.2)**

This section intentionally left blank

18.59 **Unjoin Service (Critical) (SRV 8. 8.1)**

This section intentionally left blank

18.60 **Unjoin Service (Non-Critical) (SRV 8. 8.2)**

This section intentionally left blank

18.61 **Read Device Log (SRV 8.9)**

This section intentionally left blank

18.62 **Update HAN Device Log (SRV 8.11)**

(a) Where the SMETS1 CHF only supports a JoinTimePeriod (with its DUIS meaning) of up to 255 and the JoinTimePeriod (with its DUIS meaning) specified is greater than 255, the S1SP shall treat the JoinTimePeriod (with its DUIS meaning) as if it were 255.

(b) Where the SMETS1 CHF requires a Cyclic Redundancy Check (CRC) (with the meaning given by the ZigBee Alliance) to be present in the Install Code (with the meaning given by the ZigBee Alliance), the S1SP shall calculate the CRC from the InstallCode (with its DUIS meaning) and append to the InstallCode sending the resulting value to the Device.

(c) Where the RequestType (with its DUIS meaning) is Remove, and the target Device is a SMETS1 ESME, S1SP shall create a SMETS1 Response

indicating failure and shall take no further action.

18.63 **Read Firmware Version (SRV 11.2)**

This section intentionally left blank

18.64 **Activate Firmware (SRV 11.3)**

(a) Where more than 90 calendar days have elapsed since receipt by the DCC of the associated Update Firmware Service Request, the S1SP shall create a SMETS1 Response indicating failure and shall take no further action.

19 S1SP recording of notified details

19.1 Whenever an S1SP has successfully authenticated a Service Request containing SupplierReplacementCertificates, or one containing ReplacementCertificates where the RemotePartyRole field has a value of Supplier (with their DUIS meaning), the S1SP shall, using the Certificates in SupplierReplacementCertificates or ReplacementCertificates (as the context requires), update the details it holds in relation to the target Device for each of:

(a) Notified Critical Supplier Certificate ID;

(b) Notified Non-Critical Supplier Certificate ID;

(c) Notified Critical Supplier ID; and

(d) Notified Non-Critical Supplier ID.

19.2 Whenever an S1SP has successfully authenticated a Service Request containing ReplacementCertificates where the RemotePartyRole field has a value of NetworkOperator (with their DUIS meaning), the S1SP shall, using the Certificates in ReplacementCertificates, update the details it holds in relation to the target Device for each of:

(a) Notified Critical Network Operator Certificate ID;

(b) Notified Non-Critical Network Operator Certificate ID;

(c) Notified Critical Network Operator ID; and

(d) Notified Non-Critical Network Operator ID.

20 Key rotation

20.1 As soon as reasonably practicable (and in any event within 7 days) following the Commissioning of a SMETS1 Communications Hub Function or a SMETS1 Smart Meter or a SMETS1 Gas Proxy Function or a SMETS1 PPMID and at intervals no greater than 15 months thereafter, the S1SP shall, via the DCO, in relation to each such Device and where supported by that Device, re-generate and replace any Authentication Keys and any Encryption Keys (with their DLMS COSEM meanings) held by that Device.

21 Time

21.1 Where a Device is capable of maintaining time independently of any other Device within its SMETS1 Installation and where the S1SP is required to communicate with such a Device in order to process a SMETS1 Service Request and where the Device's time is within the DCC's set tolerance of S1SP Time, the S1SP shall synchronise the time on the Device with S1SP Time, and the DCO shall allow such synchronisation.

22 Anomaly Detection

22.1 Where an Anomaly Detection Threshold of the type referred to in (b)(ii) of the definition of Anomaly Detection Threshold has been set, the relevant DCO shall apply the relevant Threshold Anomaly Detection check immediately prior to returning any Instruction to the relevant SMETS1 Service Provider.

22.2 Where the Threshold Anomaly Detection check fails, the DCO shall not authorise any associated Instruction for the SMETS1 Device and shall respond to the relevant SMETS1 Service Provider accordingly. For the avoidance of doubt, the provisions of the Threshold Anomaly Detection Procedures that

relate to the further processing of quarantined communications shall not apply to any consequentially deleted SMETS1 Service Requests and nor shall the DCC be required to notify the User of the deletion.

22.3 The DCC shall ensure that no Critical Instruction is sent to a SMETS1 Device unless the relevant DCO has confirmed that either:

(a) there is a Countersigned Service Request to which the Instruction appropriately corresponds; or

(b) the Instruction has been generated by the SMETS1 Service Provider in accordance with the provisions of Clause 20 or Clause 21 which apply to the Device Model of the relevant target Device.

22.4 In circumstances where a DCO is unable to confirm that an Instruction meets the requirements of Clause 22.3, the DCC shall:

(a) delete the Instruction from its systems;

(b) delete any related SMETS1 Service Request; and

(c) raise an Incident.

ANNEX A - DEVICE MODEL VARIATIONS TO EQUIVALENT STEPS MATRIX (DMVES MATRIX)

SEC Appendix AM – Annex A – Device Model Variations to Equivalent Steps Matrix