

This document is classified as **Clear** in accordance with the Panel Information Policy. Information can be shared with the public, and any members may publish the information, subject to copyright.



MP094

‘Supporting prepayment customers in no SM WAN scenarios’

Modification Report

Version 0.7

7 August 2023

Corporate member of
Plain English Campaign
Committed to clearer
communication

592



Managed by



About this document

This document is a draft Modification Report. It currently sets out the background, issue, and progression timetable for this modification, along with any relevant discussions, views and conclusions. This document will be updated as this modification progresses.

Contents

1. Summary.....	3
2. Issue.....	4
3. Assessment of the proposal	8
4. Appendix 1: Progression timetable	14
5. Appendix 2: Glossary	15

This document also has one annex:

- **Annex A** contains the non-confidential responses received to the Request for Information (RFI).
- **Annex B** contains the business requirements for the solution.

Contact

If you have any questions on this modification, please contact:

Ben Giblin

020 3934 8646

ben.giblin@gemserv.com

1. Summary

This proposal has been raised by Andy Knowles of Utilita.

The Proposer has raised concerns that the minimum functional requirements set out in the Smart Metering Equipment Technical Specifications (SMETS), known as SMETS2, do not result in a Device that is sufficiently robust to serve smart prepayment consumers effectively. Similarly, the Adoption and Enrolment of SMETS1 meters into the Data Communications Company (DCC) leads to the same loss of resilience in relation to SMETS1 meters.

The Proposer seeks a solution to be able to effectively manage SMETS2 and DCC enrolled SMETS1 prepayment consumers in no Smart Metering Wide Area Network (SM WAN), intermittent WAN or DCC outage scenarios equivalent to the commercially developed solution available from the Proposer's SMETS1 meter provider.

2. Issue

The Proposer predominantly supplies prepayment consumers and has raised concerns that in no WAN, intermittent WAN or DCC outage scenarios smart prepayment meters cannot be communicated with.

What are the current arrangements?

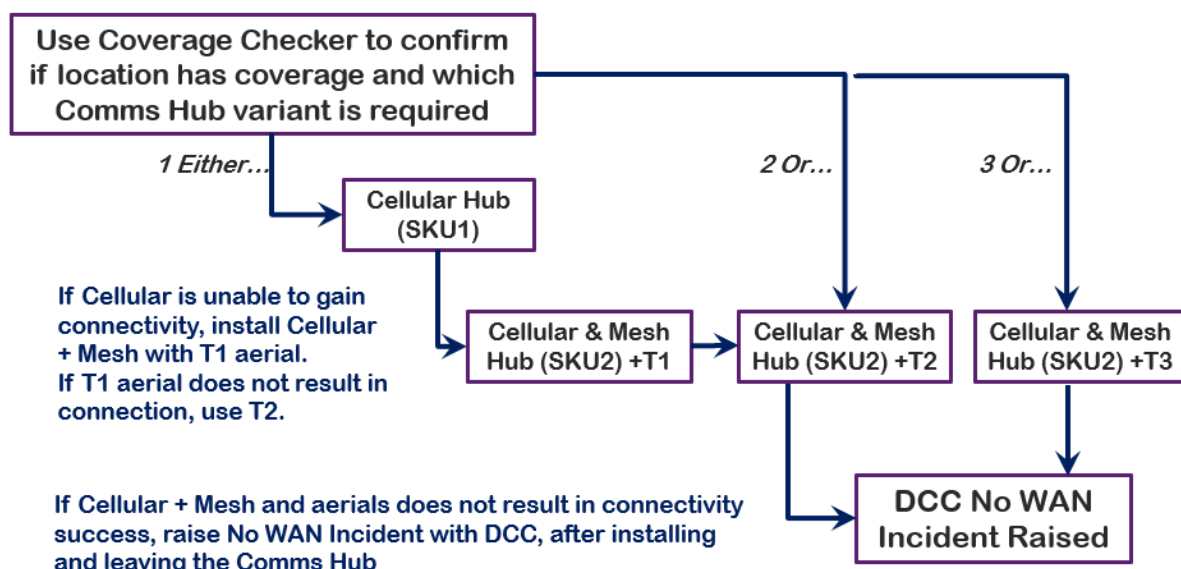
The SM WAN is the infrastructure which allows messages to be sent to meters. This service is provided by Communications Service Providers (CSP) contracted to Arqiva in the North region and to VM02 in the Central and South region.

When the consumer has a working WAN then SMETS1 and SMETS2 meters enrolled on the DCC network should function normally. However, not all customers who have a SMETS1 or SMETS2 meter will be able to have a working WAN. This is because the Bmax targets which the DCC has met only required the achievement of 99.50% coverage in CSP North and 99.25 coverage in CSP Central and South.

The DCC achieved the Bmax target of 99.50% WAN coverage in CSP North in October 2020. The DCC state they achieved the Bmax target of 99.25% WAN coverage in CSP Central and South in January 2021. Since the Bmax targets were achieved there has been no obligation in the Smart Energy Code (SEC) on the DCC to report on current WAN coverage levels. As such, there is no way to verify if these coverage target levels are still being achieved.

Supplier obligations for installing Smart Meters

When planning an installation, the Supplier should check the DCC WAN Coverage Checker to determine if WAN is available in that postcode and which Communications Hub variant is required. The DCC provides the below advice when installing smart meters (see Figure 1).



**Processes from Appendix I CH Installation and Maintenance Support Materials*

Figure 1: DCC guidance installing a Smart Metering System (SMS), based on Smart Energy Code (SEC) Appendix I

No WAN scenarios

For SMETS1 and SMETS2 meters enrolled on the DCC network, the obligations set out in SEC Sections F7.18-F7.22 ‘Smart Metering System Requirements’ place timescales and resolution targets on the DCC for resolution of SM WAN coverage incidents during initial installs. The obligations are that the DCC must, within 90 days:

“provide a response to the installing Supplier Party that either (i) confirms that the SM WAN is now available in the relevant area such that Communications Hubs installed at premises in that area can be expected to be able to connect to the SM WAN; or (ii) provides reasons why the SM WAN is not so available”.

It is noted that the DCC is obliged to provide WAN to 99.5% of the country and so some areas will permanently have no WAN.

Unique Transaction Reference Numbers (UTRNs)

Unique Transaction Reference Numbers (UTRNs) are used to directly key Commands into the meter. In no WAN situations, the time taken to resolve issues relating to customer accounts is greatly reduced when UTRN functionality is available. For example, when consumers do not have to wait for WAN to be re-established to be able to enter the information into their meter.

The Proposer’s SMETS1 meter provider has a product with functionality in a no WAN situation that includes a set of messages which can instruct the meter functionality. These can be entered into the meter on site via 20, 40 and 60-digit UTRNs. This provides a resilient solution in most no WAN or intermittent WAN scenarios. However, as SMETS1 adoption and enrolment proceeds this functionality will no longer be available on these meters except for credit top-ups. Messages via UTRN (other than top-ups) are also unavailable for SMETS2 meters.

What is the issue?

No WAN leaves consumers with a prepayment meter without full service. There are three distinct situations when consumers may be without a WAN.

- No WAN – there has never been WAN coverage in the area.
- Intermittent WAN – There has been WAN coverage in the area but there can be times where the WAN does not work. This can be an issue for a short period of time or extended periods depending on the cause.
- DCC Outage – there can be times when the DCC System is unavailable, unplanned outage and planned outage but in either case the Supplier cannot communicate with Devices during this time.

Some of the functions that are lost include:

- Deduct credit

- Set credit
- Change price
- Revert to default settings and remove data
- Open the Home Area Network (HAN)
- Change of mode
- Add debt
- Deduct debt
- Set debt
- Set friendly credit times/non-disconnect periods

What is the impact this is having?

Impacts from No Wan or Intermittent WAN scenarios

Reacting to emergency incidents and increased site visits

Remote Commands enable the Supplier to manage extreme weather or other significant events by changing non-disconnect periods. As an illustration, during an extreme weather event on 3-4 March 2018 (colloquially known as the 'Beast from the East'), Utilita sent 963,118 additional messages to meters to help to ensure that consumers stayed on supply. The extreme weather conditions meant that WAN connectivity was poorer than usual. Therefore, over 9% (86,000+ messages) would have been entered as a UTRN or else risk the customer being disconnected during freezing conditions.

The free top-ups described in the 'Beast from the East' example above would have required a site visit to over 10,000 consumers. Site visits usually require the consumer to be at their property, resulting in a potential loss of work or leisure time and an overall worse customer experience.

Servicing consumers in no-WAN scenarios

Suppliers are not able to offer a full range of services when the consumer does not have a WAN connection. These services include discretionary credit for consumers in payment difficulty and other similar activities which prevent self-disconnection.

Changing top-up prices

Suppliers need to ensure that top-up prices are in line with the prepayment price cap, which is updated by Ofgem every six months in April and October. Without the ability to change prices in a no WAN situation, the customer may be paying more for their energy than they should be. This results in an additional cost for the Supplier in reconciling how much money should have been paid and refunding the difference.

Adding debt to a meter

Such as when a customer requires a new Device, like a new In-Home Display (IHD). If the debt is not added promptly, a customer may face a one-off bill or commence paying for their Device at a time when they face higher energy bills (e.g. during winter).

Joining new Devices to the HAN

In the absence of being able to open the HAN, a new IHD or Prepayment Meter Interface Device (PPMID), consumers will not be able to use their IHD/PPMID until the WAN is restored, which may disadvantage less physically able consumers who use the PPMID to top-up.

Refunding consumers

If there is a change of tenancy a Supplier is unable to reset any debt and credit balances for the new customer. Without this, consumers will face delays reclaiming their money, which could be critical for consumers in financial difficulties.

Impact from the DCC's obligations

The Proposer believes that the 90-day obligation in SEC Section F (F7.18) for the DCC to resolve the lack of SM WAN in the given area is too long. This could leave a customer without full prepayment functionality for 90 days. Where the SM WAN issue relates to a prepayment customer, the Proposer believes the obligation should be shortened from 90 days to 30 days.

The Proposer also believes that there is neither clarity as to how the DCC is going to deliver against this obligation, nor what the scenario is where the DCC cannot resolve the SM WAN within 90 days. If the DCC is unable to remotely resolve the SM WAN coverage in an area, the next step may require an engineer to be sent to the site by the Supplier to resolve the problem. However, given that the market has a prepayment price cap in operation limiting Suppliers' income, sending an engineer to site is not economically viable.

As part of an earlier modification, [SECMP0032 'Prioritising Prepayment Consumers in No WAN Situations'](#), suggested that the 90-day obligation on the DCC as a potential solution. The Preliminary Assessment showed costs of up to £1 billion for this to be implemented.

Impacts on consumers

The Proposer believes that no WAN scenarios greatly diminish Suppliers' ability to service prepayment consumers, placing prepayment consumers at a disadvantage compared to credit consumers. Furthermore, the consumers impacted by this lack of functionality are more likely to be vulnerable.

The loss of functionality during no WAN incidents will also significantly reduce the mechanisms available to call centre operatives to manage customer accounts. Given that intermittent SM WAN results in more customer contact with the Proposer and other Suppliers, this will result in longer calls, more complaints, and less customer engagement. Furthermore, the Proposer and other Suppliers will incur the additional cost of relying on engineer visits in situations that are currently resolved through a UTRN.

3. Assessment of the proposal

Observations on the issue

Scale of the issue

The DCC state that as of October 2020, the Bmax target of 99.50% had been achieved in CSP North. In addition, the DCC note that they achieved the Bmax target of 99.25% WAN coverage in CSP Central and South in January 2021. As of December 2022, BEIS reported there are 31,318,000 Smart Meters in Great Britain which are operating in smart mode or traditional mode. The statistics also show that 13% of all Smart Meters are in pre-payment mode. This means there are approximately 4,071,340 Smart Meters operating in prepayment mode.¹

SECAS received figures showing the number of pre-payment meters across Great Britain in each postcode. SECAS overlayed this data against the WAN Coverage Checker for CSP's North, Central and South to determine how many electricity prepayment meter customers are in areas which did not have a WAN connection when the figures were calculated in April 2023. The figures showed that there are 103,000 electricity pre-payment smart and traditional meters in areas which do not have a WAN connection.

Where no WAN is available then a Smart Meter should not be installed and instead a heritage meter should be used. If no heritage meter is available a smart credit meter can still be installed, whilst this will not offer smart functionality (nor prepayment functionality) it will provide a supply to the consumer. However, these meters require a meter read for accurate billing and settlement. Consumers in an intermittent WAN area or where a DCC outage occurs can top up using a UTRN during a period of no WAN and then full service will be resumed once the WAN is operational or the DCC outage has been resolved.

The Proposer has stated that their experience with SMETS1 Devices suggests that around 9% of consumers will experience very poor or no WAN connectivity. The Proposer acknowledges that this is based on its SMETS1 experience and that SMETS2 SM WAN is an entirely separate and independent infrastructure.

The Proposer reported that UTRN Commands (other than top ups) account for approximately 1% of the messages sent by the Proposer per year. They believe that the reduced functionality resulting from the loss of these messages sent via UTRN degrades the consumer's experience. It will also give rise to higher Supplier costs in responding to consumer issues that would have previously been resolved using UTRNs.

During the Development Stage a Large Supplier advised that it typically saw around 0.75% HAN/WAN connectivity issues in SMETS1. In these cases, it would carry out a site visit and exchange the meters to non-smart meter to secure supply to the consumers.

It added that with SMETS2 credit installs it saw 3% suffer HAN/WAN issues. However, it noted this is due to a known issue that has since been fixed in new Communications Hub firmware versions. Therefore, it would expect enduring issues to reduce back to at least as good as the 0.75% it experiences in SMETS1.

Noting its experiences with SMETS1 and SMETS2 pilot installs, a Large Supplier Party advised that they do not support this proposal. They agreed that they do experience issues with HAN/WAN

¹ [Q4 2022 Smart Meters Statistics Report \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/q4-2022-smart-meters-statistics-report)

connectivity, with both prepayment and credit consumers. However, these were in 0.75% of SMETS1 installations and 3% of SMETS2 installations.

The DCC noted that more SMETS2 installs have taken place since the previous modifications were raised. This increase may provide more background information on what the problems now look like. The DCC's initial thoughts are that there isn't anything that suggests the situation has changed or worsened. The TABASC and the DCC believed the scale of the issue was small.

WAN coverage

Two Parties advised that they found a lack of WAN with 2% to 3% of attempted installations. One added that for successful installations, subsequent WAN issues are not a significant issue. However, this contrasted with a Small Supplier's view that 12% of its Electricity Smart Meter and 36% of its Gas Smart Meter installations experienced a lack of WAN.

A Large Supplier advised it experiences a loss of communications to its prepayment meters at a rate of around 8%. However, these are not always due to no WAN and can be caused by HAN failures. It added that it does not currently schedule a prepayment meter installation where the DCC's coverage checker says there is no WAN in the given area.

The DCC noted that it resolves 97.59% of WAN issues.

Reporting of WAN resolution timescales

The DCC advised that 86% of PPMID WAN issues are resolved within the Service Level Agreement (SLA), noting that these are Category 3 incidents which have a 72 Hour SLA. However, the other five respondents could not provide such statistics for WAN resolution timescales.

One Large Supplier advised that it only raises incidents with WAN where there is an issue after a successful installation, which is in only around 0.07% of cases. The DCC response is normally within 48 hours. It added that when it raises a WAN incident, in 90% of recent cases a site visit is required.

A Supplier advised that where it raises HAN/WAN issues, the DCC normally respond within 48 hours and in around two out of three cases, the CSPs can resolve the issue remotely. In the other cases, it would schedule a site visit to re-boot the Communications Hub. If this failed, it would replace the Communications Hub.

The Supplier added that the 90-day DCC obligation is only supposed to be required in relatively extreme cases, which it is yet to experience despite installing around 600,000 SMETS meters.

Consumer impact

When reviewing the RFI responses, one Change Sub-Committee (CSC) member recognised the comments suggesting a small issue in terms of the overall Smart Metering Implementation Programme (SMIP), but stressed the importance of progressing this proposal as there is a risk of losing consumer confidence if it is not considered. The member noted the impact this issue has on consumers, such as not being able to top-up prepayment meters with no WAN. They added that their organisation does not supply prepayment consumers, but it still experiences WAN issues.

The Consumer Representative agreed and believed that more could be done to assess the scale of the issue.

Another member agreed there is a clearly defined issue but reiterated the need to explore cost effective ways within the Working Group to resolve issues raised against the WAN.

The responses to the RFI can be found in Annex A.

Previous related modifications

The Proposer has raised four Modification Proposals in the past to support the resolution of this issue, none of which have been able to find an achievable solution. Links to the original proposal forms are provided below, along with their associated submission date and reason for closure.

Name and Title	Date raised	Summary of Proposed Solution	Reason for withdrawal
SECMP0031 'Adding UTRN Functionality to SMETS'	February 2017	To expand the capabilities of SMETS2 UTRNs to allow them to be used for the functions listed above, thus allowing full service of consumers in no WAN scenarios	Investigation by the Security Sub-Committee (SSC) established that UTRNs for the critical commands required would need to be around 120 characters long. This would be extremely difficult for consumers to enter.
SECMP0032 'Prioritising Prepayment Consumers in No WAN Situations'	February 2017	To introduce a requirement on the DCC to prioritise pre-payment consumers with no SM WAN. This would be done by reducing the Section F DCC obligation from 90 days to 30 days	The DCC Preliminary Assessment returned a value of £1bn for this to be implemented.
SECMP0037 'Pairing Local PPMIDs'	June 2017	To make pairing of PPMIDs in no WAN scenarios easier	The SSC stated that this solution would break the security trust model and did not support it.
SECMP0038 'Sending Commands via PPMIDs'	June 2017	To allow for a means other than the SM WAN to deliver Service Requests. This too would allow Suppliers to fully service their consumers where SM WAN coverage is poor or non-existent	The SSC stated that this solution would break the security trust model and did not support it.

The Proposer has also raised [SECMP0028 'Prioritising System Messages'](#) which is an active modification. The modification aims to introduce a priority ranking to each System Message. During period of high message volumes across the DCC System, if a queue were to form, this would result in the DCC processing higher priority messages first.

Views of Panel Sub-Committees

SMKI PMA views

The Smart Metering Key Infrastructure (SMKI) Policy Management Authority (PMA) noted that this proposal could have implications on the SMKI, depending on how Commands will be signed, encrypted and decrypted.

TABASC views

The Technical Architecture and Business Architecture Sub-Committee (TABASC) suggested that the issue be considered as affecting all meters and not just those in prepayment mode, noting that the problems are more acute for prepayment consumers.

Change Sub-Committee views

The CSC agreed there is an issue, and that smart prepayment does not always work in some scenarios. However, it noted the need to understand the scale of the issue, as the Proposer, being predominantly a prepayment Supplier, is likely to be more impacted than other Parties. It recognised the need to investigate if there was a cost-effective solution to the issue and suggested early engagement with the TABASC should a technical solution be needed.

The CSC reviewed the Department for Business, Energy and Industrial Strategy's (BEIS's) initial policy intent on smart prepayment. It noted that the original technical specifications for the SMIP never assumed there would ever be full WAN coverage. Therefore, it believed it should be clarified what Suppliers should be doing now in these no WAN scenarios. The CSC also noted that the previous modifications raised on this topic assumed a technical solution is needed and queried if there could be non-technical solutions to the issue.

The 'install and leave' scenario was noted as having significance to the issue set out in the Draft Proposal. This is where a site is listed as having WAN coverage, but the installation fails as the engineer cannot gain a connection with the WAN. Therefore, the engineer is unable to commission the HAN. A CSC Member advised that in this scenario, the DCC does not have to resolve the lack of coverage, even if it advised that the site should have full WAN coverage but it does not.

Other factors to note

Respondents to the RFI pointed to other factors causing loss of communications with meters, other than no/intermittent WAN scenarios:

- Loss of connectivity due to an Over-The-Air (OTA) firmware update; and
- Failures on the HAN e.g. a Communications Hub firmware defect causing meters to drop off the HAN CSP region.

One respondent noted that some WAN issues lie with the Supplier and not the DCC.

Other comments

An Other SEC Party respondent advised that, as an installer, it would be useful to receive information on its assets and WAN resolution directly. This would improve speed of response, provide a better service to end consumers and connect more Devices to the DCC Smart infrastructure.

A Large Supplier believed the RFI was repeating the work already held at customer forums, adding that the DCC already reports upon its performance measures and WAN connectivity. It noted that discussions around the issue highlighted in this Draft Proposal have already been held at length, with the DCC and Parties. These focused on how to mitigate and manage no-WAN scenarios. Overall, the respondent felt the Draft Proposal to be unclear in the issue it was trying resolve.

A Large Supplier acknowledged that the Proposer is disproportionately impacted due to the impact WAN has on prepayment consumers, and any solution needs to be cost effective. It stressed that, if a solution is found, that it addresses actual WAN connectivity rather than create workarounds. It went onto to explain its practices and processes for managing lack of communications with prepayment meters, which can be found in the collated responses document (Annex A).

Views of the PPMF

The RFI responses were presented to the Prepayment Meter Forum (PPMF) where no additional comments were raised.

Solution development

Prepayment commands

A Supplier advised that industry would need to develop a 'local command' delivery mechanism to support the full list of Commands listed as being required by the Proposer. Where WAN could not be established, this would allow the installer to leave the Communications Hub installed on site and commission the HAN. Then, once the WAN is established, a second site visit wouldn't be required to commission the HAN. However, there is currently no capability in place to support this. The Supplier also acknowledged that consumers having to enter a 20-digit UTRN to the PPMID isn't an ideal process to have to follow on a regular basis.

Is a single solution possible?

A SMKI PMA member questioned if one solution to the problem could cover the requirements for both SMETS1 and SMETS2. It advised the likely need for two different solutions due to the differing technical architecture and prepayment processes (for example, UTRN generation). The Proposer stipulated that a solution that delivers better WAN is not acceptable, the solution must address where there is no WAN available.

Support for Change

Working Group

Questions were raised as to why Smart Metering Systems are being installed in areas where there is no WAN. It was explained that this is due to legacy meters being replaced. It was noted that the DCC is obliged to provide WAN to 99.5% of the country and so some areas will permanently have no WAN.

One Working Group member asked why Automated Meter Reading (AMR) meters could not be installed. Another member pointed out that this would be in breach of the Supply Licence and would not count towards SMETS2 rollout obligations.

Working Group members agreed with the business requirements as they provide sufficient framework to develop the solution. The Proposer highlighted that they would be happy if the solution benefits all types of Consumers, not only those using prepayment.

DCC Elective Services

The Proposer has engaged with the DCC's Elective Services team to explore potential solutions. During the Working Group, a member of the DCC confirmed that two discussions had taken place with the Proposer to potentially resolve the issues identified. The DCC Elective Services reported that they found there was a lack of appetite from other SEC Parties regarding prepayment issues. Comments were received that due to the way Elective Communication Services function (through critical commands), it may be ineffective as the WAN would not be available to deliver the commands.

Views of the Security Sub-Committee

The Smart Energy Code Administrator and Secretariat (SECAS) presented the Modification to the SSC to discuss the use of UTRNs to action Commands as well as previous modifications raised to support pre-payment consumers in no SM WAN scenarios. The aim of these discussions was to help steer the direction of the solution.

The SSC advised that any Command that changes a price or is supply-affecting would be considered as high-risk and need the application of the security controls in the end-to-end security architecture. They noted that there may be more viable solutions for non-critical commands.

Regarding SECMP0038, the SSC advised that the use of a wi-fi solution would entail replicating the end-to-end security architecture in a 'no WAN' solution, therefore the SSC is unable to change its earlier advice on the proposed solution, and could not support the proposed solution on security grounds.

The SSC Chair advised that a risk assessment for SECMP0037 was commissioned from an external company and it was found that implementing the proposed solution to remove the 60 minute timeout from the Communications Hub on start-up would increase the residual risk above the risk appetite of 'medium'. Therefore, the SSC could not support the removal of the 60-minute timeout to enable pairing the PPMID with a HAN, without requiring a reliable WAN connection or engineer intervention.

4. Appendix 1: Progression timetable

Timetable	
Action	Date
Draft Proposal raised	12 Nov 2019
Presented to CSC for initial comment	26 Nov 2019
Update given to the CSC	28 Jan 2020
Request for Information	3 Apr 2020 – 5 May 2020
Presented to CSC for final comment and recommendations	26 May 2020
Panel converts Draft Proposal to Modification Proposal	19 Jun 2020
Business requirements developed with Proposer and DCC	22 Jun 2020 – 6 Jul 2020
WAN workshop held with the DCC, Working Group and appropriate Sub-Committees	Jul 2020
Update Panel	14 Aug 2020
Request for Information	March 2021
Business Requirements Workshop	16 May 2022
Preliminary Assessment requested	7 August 2023
<i>Preliminary Assessment returned</i>	<i>4 September 2023</i>
<i>Modification discussed with Working Group</i>	<i>4 October 2023</i>
<i>Refinement Consultation</i>	<i>11 October – 1 November 2023</i>
<i>Modification discussed with Working Group</i>	<i>6 December 2023</i>
<i>Impact Assessment Request</i>	<i>20 December 2023</i>

5. Appendix 2: Glossary

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

Glossary	
Acronym	Full term
AMR	Advanced Metering Infrastructure
BEIS	Department of Business, Energy and Industrial Strategy
CSC	Change Sub-Committee
CSP	Communications Services Provider
DCC	Data Communications Company
HAN	Home Area Network
IHD	In-Home Display
OTA	Over The Air
PPMF	Prepayment Meter Forum
PPMID	Prepayment Meter Interface Device
RFI	Request for Information
SEC	Smart Energy Code
SECAS	Smart Energy Code Administrator and Secretariat
SLA	Service Level Agreement
SMETS	Smart Metering Equipment Technical Specifications
SMIP	Smart Metering Implementation Programme
SMKI PMA	Smart Metering Key Infrastructure Policy Management Authority
SMS	Smart Metering System
SSC	Security Sub-Committee
SM WAN	Smart Meter Wide Area Network
TABASC	Technical Architecture and Business Architecture Sub-Committee
UTRN	Unique Transaction Reference Number
WAN	Wide Area Network