

Part 3 – External Costs

Price Control Submission RY2018/19



Version:

Redacted

Date:

July 2019

Classification:

DCC Public

Table of Contents

1	Introduction to Part 3: External Costs	4
1.1	Orientation and Purpose	4
1.2	How to use this document	5
1.3	A review of DCC's Change Management Process	5
2	Summary of External Costs	8
2.1	Total material External Cost broken down by change	10
3	R2.0	11
3.1	Overview of R2.0	11
3.2	CR253 and CR274 – Telefonica	15
3.3	CR253 and CR274 (CGICAN081) – DSP	16
3.4	CR1005 (CGICAN084) – DSP	18
3.5	CR1005 CSP (N) - Arqiva	19
3.6	CR301 (CGICAN090) – DSP	20
3.7	CR 1034 (Arqiva)	21
3.8	CR 1034 (TEFCAN065) - Telefonica	22
3.9	CR1034 (CGICAN095) – DSP	23
3.10	CR1046 (CGICAN094) – DSP	24
3.11	CR1046 (Arqiva)	26
4	Release 1.2	28
4.1	CR144 (ARQCAN039) – CSP (N) Arqiva	28
4.2	CR135 (ARQCAN039) – CSP (N) Arqiva	30
5	Operate at Scale Programme	32
5.1	CR1003 (CGICAN085) – DSP	32
5.2	CR1004 (CGICAN086) – DSP	34
5.3	CR1007 (CGICAN088) – DSP	36
5.4	PR069 – DSP	37
6	Message Buffering	39
6.2	CR313 (ARQCAN066) – CSP (N) Arqiva	40
7	Testing Services	42
7.1	CR279 (CGICAN097) – DSP	42
8	SMETS148	
8.1	Programme Overview	48
8.2	SMETS1 Service Providers (S1SPs)	56
8.3	Dual Control Organisation (DCO for IOC only)	70

8.4	SMETS1 Project Requests (PRs)	75
Appendix A –R2.0 Telefonica and Arqiva: Supplementary Reconciliation of CANs to		
CRs 88 Arqiva – Cost Summary		
.....		88 Telefónica – Finance
Summary		91

1 Introduction to Part 3: External Costs

1.1 Orientation and Purpose

This document is the third in a suite of five documents which comprise the RY2018/19 Price Control submission.

The purpose of Part 3 is to provide both narrative and the necessary justification for material External Costs incurred by our Fundamental Service Providers (FSPs). These comprise the Change Requests (CRs) and Project Requests (PRs) which allow our Service Providers to undertake delivery of additional components of the SMETS2 programme and integration of the SMETS1 solution which were not part of their baseline contract in 2013. This year is also seeing the introduction of new SMETS1 Service Providers and includes justification of their original contracts.

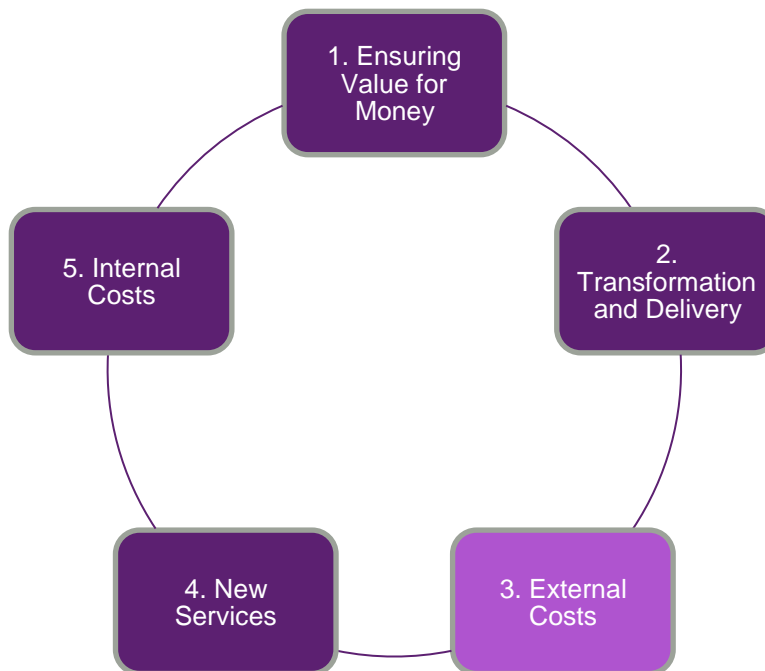


Figure 1: Price Control submission structure

In Part 3 we report on the following:

- A summary of all material¹ External Costs
- The context of R2.0, and the justification of related Change Requests for CSP (N), CSP (S&C) and DSP
- Release 1.2 Change Requests for CSP (N)
- Operate at Scale Change/Project Requests (DSP) (formerly Ready to Scale Programme)
- Testing Services Change Requests (DSP)
- SMETS 1 Project Requests (DSP)

¹ Material costs are defined as >£1m. The Financial Commentary explains the reasoning behind this decision.

1.1.1 The structure of this document

This document lays out all material external costs incurred in the RY2018/19. The CRs are grouped by the activity or programme that the CR is linked to. These are:

- R2.0
- Release 1.2
- Operate at Scale Programme
- Message buffering
- Testing Services
- SMETS1

The SMETS1 Programme has a set of new FSP contracts. These are justified in their own right. The DSP was an existing FSP and therefore all SMETS1 related work was in the form of PRs.

Within each section, variances are justified in the following structure:

1. A finance table that reconciles the costs of the CR to the RIGS²
2. Drivers to the CR
3. Scope of the change
4. Consideration of options and chosen scope*
5. Due Diligence
6. Adherence to change process

***Consideration of options and chosen scope:** At this stage in DCC's collaboration with its FSPs, both DCC and the FSPs are clear on what needs to be done, as different options have been considered previously and both parties have agreed the best way to approach existing issues. Therefore, this subsection is not applicable to most CRs. When applicable, it will be elaborated on.

1.2 How to use this document

The structure of costs is complicated by the multiple layers of financing which have taken place over the last several years. The structure of Part 3 historically includes a cost table at the start of each material cost variance which links the narrative to the RIGs. Given the complexity of the cost structures, these tables have been removed and placed into a RIGs Supplementary Schedules. The tables are sorted by FSP in tabs named 'presentation tables'. We recommend that the reader print out this Appendix or place it on a second screen to read side by side with the content in this document. This approach yields a clearer narrative, while still allowing the reader easy cross-reference to the detailed finances.

1.3 A review of DCC's Change Management Process

DCC manages large volumes of complex contractual and solution-based changes. The DCC therefore has a Change Management process to ensure effective and efficient management of change. This process is owned, operated and managed by the DCC Portfolio Office. The process covers changes to the latest DCC design baseline, contractual and SEC-obligation changes and changes to any systems or products that are either in development or that have already been delivered.

The figure below provides a high-level summary of the DCC Change Management process:

² The RIGS do not include a breakdown of the operational costs by CR and are subsequently not detailed in this section.

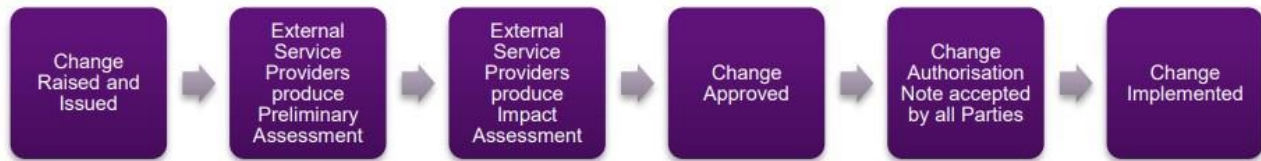


Figure 2: The DCC Change Management Process

Change Raised and Issued: When DCC recognises, or is advised of, a change requirement to one of the External Service Provider contracts, a change is raised and DCC issues a change to the FSPs.

Produce Preliminary Assessment: In response to the change issued by DCC, the External Service Provider produces a Preliminary Assessment (PA). This is the basis for the due diligence process between the two parties, in which they assess in detail the required scope and the value for money. Note that a PA is not always required and for some changes this stage is bypassed.

Produce Impact Assessment: When negotiations have progressed, the External Service Provider issues an Impact Assessment. The Impact Assessment, by example of DSP, includes:

- General – details of the proposed Contract Change (including the reason for the Contract Change and any specifications or requirements specified by the DCC)
- Impacts on the Smart Metering Programme
- Additional Services (if the Change Request relates to Additional Services)
- Impact on Services and Agreement
- Charges Adjustment
- Implementation of the Change
- Compliance with Mandatory Requirements, Optional Requirements.
- Any other information deemed relevant to the Change Request.

Change Approved: The Impact Assessment can go through multiple iterations until both parties agree all details of the change. When both parties agree on all details of the Impact Assessment, the Final Impact Assessment is issued, and the change is approved.

Change Authorisation Note: This leads to the issue of the Change Authorisation Note (CAN) which is the legal document that leads to a contract change between DCC and the External Service Provider. A Change Request may have multiple Change Authorisation Notes as different levels of funding are released for different stages and statements of work.

Change Implemented: When the CAN has been signed, the change can be implemented.

A Project Request follows a different process. It does not have a PA and the contractual vehicle used are Statements of Work, however fundamentally it begins with DCC initiating a new scope of work, the supplier submitting a bid for DCC to review.



Figure 3: Project Request process

Project Request: A standard template drafted by DCC which includes the background of and reason for the request (the drivers of work), the risks associated with not carrying out the work, as well as a list of requirements.

Statement of Work (SOW): A SOW is very similar to a typical proposal or response to a competitive RFP. It contains the FSP’s understanding of the requirements, a proposed resource profile, approach to completing the work as well as the price.

Statement of Work Authorization (SOWA): A standard format which is signed by both parties and acts as a contractual agreement.

The timescales for submission of Change Management products for each stage of the process above are underpinned by the terms outlined within the External Service Provider contracts. The change process has continued to support the implementation of critical change, both technical and contractual. Many urgent and high priority changes have been progressed from Impact Assessment to Implementation in accordance with the required timeframes.

The above key terms are referred to by acronyms throughout this section:

Table 1: Contractual terms

Change Requests		Project Requests	
Acronym	Term	Acronym	Term
CAN	Change Authorisation Note	PR	Project Request
CR	Change Request	SOW	Statement of Work
IA	Impact Assessment	SOWA	Statement of Work Authorisation
PA	Preliminary Assessment		

DC deploys several different vehicles for covering cost, as the discussions for due diligence can stretch for several months in some cases. One mentioned in this document is a type of commercial cover in the form of Letters of Instruction (LOIs).

2 Summary of External Costs

The tables below provide a summary of all CRs and PRs that are included in this year's submission, separated into the groups of activity identified above. Note they are listed in the order within the document and in a way that builds on information contained in previous CRs.

Table 2: Summary of all External Cost variances by activity

Material CRs	Description	Service Providers Affected	DCC Activity / Programme
R2.0			
CR253	CR253 came from the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to System Integration Testing (SIT) and Device Integration Testing (DIT) R2.0.	CSP (N) CSP (S&C)	R2.0
CR274	CR274 was raised due to the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to UIT testing of R2.0.	CSP (N) CSP (S&C) DSP	R2.0
CR1005	CR1005 is required to ensure sufficient coverage of SIT and DIT requirements following the addition of further functional changes for R2.0 and delays in the availability of real devices for testing.	DSP	R2.0
CR1034	CR1034 was raised due to the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to the continuation of SIT and DIT for R2.0 in October and November 2018.	CSP (N) CSP (S&C) DSP	R2.0
CR1046	CR1046 covers the inclusion of additional scope for DIT for R2.0. This additional testing is required to ensure that the DIT phase covers all test requirements sufficiently.	CSP (N) DSP	R2.0
Release 1.2			
CR144	CR144 was raised for FSP's to assess the impact of implementing a capability for the DCC to track reconditioned communications hubs through the existing Remedy Returns Record module design, principally in order to comply with the DCC Charging Methodology obligations defined by SEC Sections K7.5(o) and K7.5(p).	CSP (N)	Release 1.2
CR135	CR135 was raised as a result of updates to SD4.4.3 and SD4.7.1 Interface Specifications, which govern the interface between the CSP(N) and the DSP systems, since the previous ARQCAN021/CR032a was agreed. For this CR the following versions of the specs had to be adopted to align with the Release 1.2 baseline which had been approved by Arqiva/CGI and by the DCC Design Assurance Board: <ul style="list-style-type: none"> • SD4.4.3 v3.7 CSP Management Interface • SD4.7.1 v2.5 DSMS Interface 	CSP (N)	Release 1.2

Material CRs	Description	Service Providers Affected	DCC Activity / Programme
Operate at Scale (originally Ready to Scale)			
CR1003	As part of DCC's assessment of readiness to Operate at Scale, the DCC commissioned a review (the Ready to Scale review) of the DSP Services. Working with the DSP, a number of recommendations have been agreed to implement changes and improvements to the DSP Services. CR1003 covers changes related to the network infrastructure resilience and failover. Whilst the current network infrastructure is designed as a highly available service, the changes proposed will further increase the availability of the service by reducing the likelihood of failure and the time taken to recover from a fault.	DSP	Operate at Scale Programme
CR1004	The scope of supply under this change is a subset of items identified in the Ready to Scale (R2S) discovery program (later known as Operate at Scale). The following applications have been identified as requiring additional N+1 resilience.	DSP	Operate at Scale Programme
CR1007	CR1007 introduces additional physical servers into DSP's recovery data centre to enable N+1 server resilience in a Disaster Recovery scenario. The exact scope and impacted servers are detailed within the embedded IA	DSP	Operate at Scale Programme
PR069	PR069 covers a request to DSP to provide a team to undertake Agile development of the SSI, SSMI and Remedy platforms. This should include the provision of a capability to develop User Interface strategy and design based on a "design thinking" approach that includes customer engagement and research. The aim of the Agile delivery approach is to release new functionality and User Interface changes every week, with a three-week development cycle	DSP	Ready to Scale Programme
Message Buffering			
CR313	CR313 is a DCC led change based on feedback from DCC's customers. It incorporates the addition of a Message Buffering facility to the CSP(N) Arqiva solution. It alleviates reliance on the short-term retry strategy when parallel Service Requests (SRs) are sent to the SMWAN GW Interface via the DSP.	CSP (N)	Message Buffering
Testing Services			
CR279	CR279 relates to the continued provision of Testing Services to support User Entry Process Testing (UEPT) and End to End Testing by Service Users and also Production Support Testing. These are existing services necessary to support Industry Testing and to ensure defect fixes en-route to production are tested. CR279 is effective from 31st March 2018 and covers a period of 12 calendar months.	DSP	Testing Services
SMETS1			
PR1017	PR1017 was raised by DCC on 06/08/2018 on the Change Management System and issued to DSP shortly thereafter. Originally the Statement of Work for PR1017 was submitted individually. Subsequently it was agreed that it was more efficient to group PR1017, PR1001, PR1004. PR1020 together. PR1020 was then removed from this group and priced separately as the work related to DSP as Systems Integrator. PR1017 was the overarching PR for the re-plan with PR1001, PR1004 sitting underneath it.	DSP	SMETS1
PR065	PR065 covers the next phase of work which is centred on System Integration Test (SIT) related activity for Initial Operating Capability (IOC). It also covers build of the SMETS1 infrastructure components for the environments that were not covered under PR052.	DSP	SMETS1

PR1001	PR1001 covers the implementation and SIT of the DSP SMETS1 migration solution. The implementation was due to be completed in November 2018 and introduced to a later phase of SIT with test execution commencing in February 2019.	DSP	SMETS1
PR1004	This PR covers the DSP activities to prepare for and deliver the User Test Services (UTS) phase and the Transition to Operations (TTO) phase for the delivery of the IOC release for the DCC SMETS1 Service. DCC sought to be clear that there was no overlap between PR1001 and PR1004. PR1001 covers Implementation and System Integration Test activities for Migration. The scope and costs of PR1001 are independent of PR1004.	DSP	SMETS1
PR1020	The objective of this PR is to extend the current scope and timeline of PR058 beyond that in place as at 25 June 2018. Through the course of delivery of PR058 the full extent of the support DCC SMETS1 IOC programme needed from the System Integrator to deliver the revised go live requirement became clear. In addition, as of November 2018 a revised timeline (LC13 Plan) for the delivery of the IOC cohort was published for consultation	DSP	SMETS1
PR1047	The objective of PR1047 is to ensure successful preparation for, and subsequent execution, of MOC integration testing and, thereafter, the implementation of the MOC solution into live operation	DSP	SMETS1

2.1 Total material External Cost broken down by change

The table below summarises the material external costs justified in this document.

Table 3: Cost summary of material External Costs

Material CRs	Arqiva (CSP N)	Telefonica (CSP S&C)	CGI (DSP)	Total by CR
CR253	[REDACTED]	[REDACTED]		[REDACTED]
CR274	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CR1005	[REDACTED]		[REDACTED]	[REDACTED]
CR301			[REDACTED]	[REDACTED]
CR1034	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CR1046	[REDACTED]		[REDACTED]	[REDACTED]
CR144	[REDACTED]			[REDACTED]
CR135	[REDACTED]			[REDACTED]
CR1003			[REDACTED]	[REDACTED]
CR1004			[REDACTED]	[REDACTED]
CR1007			[REDACTED]	[REDACTED]
CR313	[REDACTED]			[REDACTED]
PR069			[REDACTED]	[REDACTED]
CR279	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
PR1017 (SMETS1)			[REDACTED]	[REDACTED]
PR065 (SMETS1)			[REDACTED]	[REDACTED]
PR1001 (SMETS1)			[REDACTED]	[REDACTED]
PR1004 (SMETS1)			[REDACTED]	[REDACTED]
PR1020 (SMETS1)			[REDACTED]	[REDACTED]

PR1047 (SMETS1)			[REDACTED]	[REDACTED]
Total material justification by FSP	£33.63m	£28.42m	£44.48m	
Total material justification	£106.53m			

3 R2.0

R2.0 (R2.0) will provide DCC eligible customers with a dual band communications hub (DBCH) which will provide increased home area network (HAN) coverage and hence enable more successful installations of SMETS2 smart meters for premises with poor signals. DCC concluded its consultation on the R2.0 implementation plan which supports updated technical specifications in October 2017 and the DSP code was dropped a year later in October 2018. Continued work is required to enable final device testing, which is discussed in greater detail in Part 2.

R2.0 required CRs to be raised for Telefonica, Arqiva and CGI. Some of these CRs were justified in the previous price control submission for RY2017/18.

Given the complexity of R2.0, this section does the following:

- Summarises R2.0
- Summarises the CRs
- Sets out the approach to Financing CANs for R2.0
- Sets out the finances for all relevant CRs
- Addresses specific CRs/grouped CRs by FSP

3.1 Overview of R2.0

R2.0 is a major upgrade project which commenced in RY2017/18 and is due to complete in RY2019/20. It comprises multiple commercial changes covering different aspects of the project and, as such, a number of these changes were justified in previous Price Control submissions but are included for completeness.

A summary of the commercial changes covered in this Price Control submission is set out below, which also indicates where a change has been justified in a previous Price Control submission. Inclusion in this submission may indicate that a previously negotiated price was formally contracted via a CAN in RY202018/19.

RY2017/18 submission

The progress R2.0 has followed through from initial design work for the DBCH that was funded under PR023, to development of the DBCH under CR184 and upgrade of the system for GBCS 2, through to support for DBCH under CR194. Both CR184 and CR194 covered the period during which each CSP worked independently to develop their solution to the end of the Pre-Integration Testing (PIT) phase. PR023/CR184 and CR194 were covered in the Price Control submission for RY2017/18, but some payments for those changes were financed during RY2018/19. Hence these payments appear in this year's submission, however it is important to note that this does not represent additional commitment.

RY2018/19 submission

During RY2018/19, the project moved to the collaborative SIT phase and DIT phase. Thereafter testing with Service Users commenced in the UIT phase. This was initially covered by CR253 for SIT and DIT phases and CR274 for the UIT phase. CR253 and CR274 are covered in this PC submission.

In practice there were multiple streams of testing for the various Comms Hub units being produced by the two CSPs, hence testing phases progressed in parallel. There were also challenges related to the availability of third-party devices (e.g. meters operating in the sub-GHz band) which meant that overall testing extended beyond the timescales envisaged in CR253/CR274 and were ongoing in RY2019/20.

Consequently, most of the additional work undertaken in RY2018/19, over and above the fixed price work up to the end of CR253/CR274, was undertaken on a time and materials basis and is verified retrospectively. The work was authorised in advance by the issue of purchase orders for 'cover, subject to final approval of the

DCC Board'. There is therefore not the same challenge methodology which applies in the case of fixed price CRs agreed in advance. Instead, DCC challenged cost through ongoing management of the performance of suppliers against the existing contract and by enacting Arqiva's large volume project discount charges. The CRs are listed below.

Change Requests Associated with R2.0

Table 4: Change Requests Associated with R2.0

Material CRs	Description	Service Providers Affected	DCC Activity / Programme
R2.0			
CR253	CR253 came from the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to System Integration Testing (SIT) and Device Integration Testing (DIT) for R2.0.	CSP (N) CSP (S&C)	R2.0
CR274	CR274 was raised due to the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to UIT for R2.0.	CSP (N) CSP (S&C) DSP	R2.0
CR1005	CR1005 is required to ensure sufficient coverage of SIT and DIT requirements following the addition of further functional changes for R2.0 and delays in the availability of real devices for testing.	DSP	R2.0
CR301	CR301 covers Transition to Operation (TTO) activities that are required to ensure the DCC eco-system is ready to go live with R2.0. The purpose of the TTO phase is to ensure that Service Management processes are prepared, and that Operations teams are ready to support the changes introduced by the wider release	DSP	R2.0
CR1034	CR1034 was raised due to the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. It relates to the continuation of SIT and DIT for R2.0 in October and November 2018.	CSP (N) CSP (S&C) DSP	R2.0
CR1046	CR1046 covers the inclusion of additional scope for DIT for R2.0. This additional testing is required to ensure that the DIT phase covers all test requirements sufficiently.	CSP (N) DSP	R2.0

Financing CANs

Another feature of R2.0 work is that it involved a number of 'Financing CANs', particularly for Arqiva. These have been used where part or all the cost of a change is subject to third party external financing. DCC and its FSPs have set up facilities to undertake 'sale of receivables' financing at rates that provide better value for customers. In order to draw down on these facilities, DCC and the FSP must provide physical evidence of a payment milestone linked to a contractual milestone and a corresponding Milestone Achievement Certificate. These payment milestones have also to be explicitly listed in a Financing Addendum to the contract. This is often done in a specific 'Financing CAN'.

Financing drawdowns tend to be grouped in 'tranches' and put in place up to monthly. DCC has tried to finance additional charges as soon as possible after incurring them to take advantage of the financing facility and to avoid or minimise working capital charges from FSPs.

Taking these requirements into account DCC has agreed and signed various 'Financing CANs' which have been put in place specifically to facilitate finance drawdown. This has included interim payment for CRs which were in the process of being agreed to cover extensions to the testing of R2.0. Financing CANs do not therefore represent commitment to new spend but are merely a mechanism for rescheduling the payment of interim payments for CRs.

When the final IA for a CR is agreed, the CAN for that CR reconciles the finally agreed value with any interim financed payment already paid and then includes milestone payment(s) for any balance.

In the summary below we set out the prime CRs and, where applicable, the CAN that agreed the final value alongside the Financing CANs that have been used to make interim payments for that work. This shows that there are Financing CANs in respect of CRs that have subsequently been agreed in a final CAN, and some that, as at the end of RY2018/19 were not yet agreed. Note that a Financing CAN may cover payments for more than one CR.

The individual financing payments can be reconciled to the summary of Finance Tranches shown in the RIGS.

3.1.1 Drivers to CR253 and CR274

CR253 and CR274 arose from the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission:

- CR253 relates to SIT and DIT for R2.0.
- CR274 relates to UIT testing for R2.0.

As was noted in the last year's submission, because of the dynamic nature of the project and the need for work to progress to meet BEIS timescales, DCC funded ongoing work via commercial cover while the final fixed price was being negotiated for these two CRs. This was to ensure stable cash flows for service providers. DCC always ensure the commercial cover was much less than the IA values to ensure Service Providers did not over collect.

Work commenced in RY2017/18 under PR062 for CR253 and PR080 for CR274 and the final CAN, ARQCAN065 covering both CRs, was signed in November 2018.

DCC agreed several payments whilst work was in progress which were then credited to the final agreed sum. The amounts were less than the overall total and justified by DCC's view of testing work in progress. These payments were made via financing, so several specific Financing CANs were agreed to formalise payment milestones to enable the financing transaction to go ahead.

The total value of the CRs and the reconciliation of the interim financing CANs to this final value is shown in the Arqiva Financial Summary Appendix A – of this document.

3.1.2 Scope of the change / project

R2.0 involved the update of Interface Specifications. The changes that arise as a result of these updates include:

- the inclusion of fault analysis and diagnostic information in the DSMS Interface;
- Job Status Reports and related information now being included in both the DSMS Interface and the CSP Management Interface.

The CR091 baseline (start point) versions of these Interface Specifications are those agreed in ARQCAN021/CR032a, together with further updates that:

- are included in the scope of CR091
- are further document iterations already agreed by Authority to Proceed.

As a result, the CR091 baseline versions for the purposes of this CR are as follows:

- SD4.4.3 v1.9
- SD4.7.1 v1.0 and the changes in ARQCAN021/CR032a.

3.1.3 Consideration of options and chosen scope

Not applicable.

3.1.4 Due diligence

[REDACTED]

Table 5: Change process for CR274

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR253	15/06/2017	08/08/2017	15/02/2018	09/08/2018	29/11/2018
CR274	25/08/2017	23/11/2017	01/06/2018	09/08/2018	29/11/2018

3.2 CR253 and CR274 – Telefonica

3.2.1 Drivers to CR253 and CR274

These were as for Arqiva, see 3.1.1 above.

3.2.2 Scope of the change / project

These were as for Arqiva, see 3.2.2 above.

3.2.3 Consideration of options and chosen scope

Not applicable.

3.2.4 Due Diligence

[REDACTED]

3.2.5 Adherence to Change Process

CR274 was originally raised on 25/8/17 but was revised to version 0. 6 (ref 9) on 26/9/17. A PA (Ref 10) was received on 12/10//17. The cost of producing an IA was [REDACTED]. DCC raised a PO to produce the IA on 3/11/17 (Ref 12).

Table 6: Change process for CR253 and 274

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR253	15/06/2017	05/07/2017	29/03/2018	09/08/2018	13/02/2019
CR274	02/10/2017	13/10/2017	16/04/2018	09/08/2018	13/02/2019

3.3 CR253 and CR274 (CGICAN081) – DSP

CR253 was not applicable to the DSP – this was just relevant to the CSPs.

3.3.1 Drivers to CR274

PR080, which was justified in the 2017/18 Price Control Submission, was the precursor to CR274. CR274 provides activities for the provision of UIT which bring together a unified approach from Schedule 6.2, the Testing Approach Document for R2.0 (R2.0 TAD), and the Joint Test Strategy. This culminated in the approach within the approved IA embedded within this CAN081. This CR also contained requirements on the roles/support functions and applicable assumptions.

Subsequent to the issue of the CR, the scope of supply has been revised to include R2.0 UIT preparation activities as described within the approved IA. R2.0 UIT execution activities are to be performed under the scope of CR279.³

3.3.2 Scope of the change / project

The DSP scope of supply under this CR is as follows:⁴

1. Set-up activities by the UIT, Triage, AMS, Infrastructure and SI teams to uplift to R2.0 and prepare the new UIT-B environment to be ready for TPs to perform R2.0 UIT.
2. Planning, execution and support for an uplift and rollback activity to prove that this can be achieved, if required, as part of the R2.0 deployment.
3. On-boarding of TPs (Pre-UIT):
 - a. End User Connectivity Testing (EUCT). This verifies that Test Participants can connect to the environment (although this does not include infrastructure level re-configuration of links).
 - b. Data set-up.
4. Testing with Meters scenario (Pre-UIT)
 - a. This testing verifies that the existing meters used in UIT operate correctly in UIT-B against R2.0. This testing is separate to the meter regression testing requested under PR067.
5. As DSP Systems Integrator, provide cross party integration strategy, planning and environment management across all suppliers involved in R2.0 UIT.
6. Cover for programme support functions. This relates to the DSP management team, Programme Office functions and programme assurance functions.

3.3.3 Consideration of options and chosen scope

Not applicable.

3.3.4 Due diligence

[REDACTED]

3.3.5 Adherence to Change Process

CR274 [2.a] was issued on 12/10/2017 and a PA [2.b] was received back from CGI on 10^h November 2017.

[REDACTED]

Table 7: Change process for CR274

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR274	25/08/2017	10/11/2017	28/06/2018	30/07/2018	

³ Source: CAN081

⁴ Source: Word document embedded n CAN081

3.4 CR1005 (CGICAN084) – DSP

3.4.1 Drivers to CR1005

R2.0 contains changes which align with updated SEC Technical Specifications. CR1005 is required to ensure sufficient coverage of SIT and DIT test requirements following the addition of further functional changes for R2.0 and delays in the availability of real devices for testing.

Without this CR, DCC would not be able to meet its SEC obligations: the potential impact of not progressing this change was that a lack of proven test results may give rise to a fall in confidence and may delay the rollout of DBCHs.

3.4.2 Scope of the change / project

CR1005 covers scope changes for R2.0 SIT and DIT and the associated updates to the R2.0 SIT and DIT plan. As R2.0 SIT and DIT testing progressed under CR253, it became necessary to:

- increase the scope of DIT;
- add a pre-DIT SMETS2 Meter confidence testing phase;
- add a SIT Final Regression Test stage with the inclusion of further CRs into the scope of R2.0;
- re-plan the Single Band Comms Hub/Dual Band Comms Hub (SBCH/DBCH) DIT and related testing due to delays in the availability of viable SMETS2V3 meters.

Finally, the removal of NXP emulators from the scope of R2.0 testing, as requested under CR1010, was formalised as part of CGICAN084.

The high-level scope of supply under this CR was preparation, execution and support for SIT and DIT changes listed above. This involved additional effort above that provided under CR253 for the:

- SIT team;
- Triage team;
- AMS, PIT and Infrastructure teams supporting defect fix release deployments to SIT-B.

As a result of the revised scope, R2.0 testing on the SIT-B environment needed to be extended. Under CR253, SIT and DIT for DBCHs was due to complete by 13 July 2018 with a work off⁵ period running into August 2018. Formal testing would now run into September 2018 with limited time allowed for work off activities. These additional activities need to be considered as a new test phase to enable existing CR253 commercial milestones to be achieved.

3.4.3 Consideration of options and chosen scope

Not applicable.

3.4.4 Due diligence

[REDACTED]

3.4.5 Adherence to Change Process

CR1005 was raised on 26/06/2018 [1]. On receipt of the required internal approvals in the Change Management System, CR1005 was issued to Service Providers. CGI did not submit a PA because the scope of work was essentially an extension of the existing environments. This change went straight to IA and the costs of creating the IA were included in the IA itself.

Table 8: Change process for CR1005

⁵ A work off period is where testing continues for defects which are not critical to system functionality. DCC will sign off on the core testing, ensuring that critical Level 1 and Level 2 defects are resolved, but testing may continue to mop up lower importance defects.

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1005	26/06/2018	27/07/2018	07/09/2018	N/A	18/12/2018

3.5 CR1005 CSP (N) - Arqiva

3.5.1 Drivers to CR1005

ARQCAN078 added milestones and charges to the agreement relating to Arqiva core team funding due for work in February and March 2019 on CR1046 on other CR related work.

Please refer to section 3.4.1 for further details on of CR1005.Drivers to CR1005

3.5.2 Scope of the change / project

Please refer to section 3.4.2 for the scope of CR1005.

3.5.3 Consideration of options and chosen scope

Not applicable.

3.5.4 Due Diligence

[REDACTED]

3.5.5 Adherence to change process

Table 9: Change process for CR1005 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1005	27/06/2018	23/08/2018	24/08/2018	N/A	N/A

3.6 CR301 (CGICAN090) – DSP

3.6.1 Drivers to CR301

CR301 covers TTO activities that are required to ensure the DCC eco-system is ready to go live with R2.0. Whereas SIT tests the technical end-to-end functionality, the purpose of the TTO phase is to ensure that Service Management processes are prepared, and that Operations teams are ready to support the changes introduced by the wider release.

3.6.2 Scope of the change / project

Under CR301, the DSP will supply the following services in its role as System Integrator:

- **Overall Systems Integration:** Integrated Planning, Governance, Release Management, Integrated Environment Management and Strategy for R2.0 based on the CRs documented in section 3.5 for the logical steps which follow Solution Test Complete, UAT Complete and DIT Complete through to DCC Ready for Live for R2.0;

- **Oversight and co-ordination test environments:** Configuration and subsequent use of the SIT-A, UIT-A and Production (primary and DR) environments including management of all SP product releases into those environments.
- **Oversight of Non-Functional Requirements:** Validation for each Service Provider of their compliance with the requirements to feed into the Operational Acceptance gate reviews for each Service Provider.

In its role as Service Provider, the DSP will supply the following services under this CR;

- Preparation, execution and support for TTO;
- Co-ordination of the UIT-B environment (on which both R2.0 BAT and OAT may be performed);
- Support for production (primary and DR), SIT-A and UIT-A environments uplift as directed by the DSP Systems Integrator;
- Application Management Support (AMS) Team and Infrastructure team support for OAT and BAT activities on UIT-B including support for issue investigation, resolution and deployment to production, SIT-A and UIT-A;
- Enhanced Application and Service Desk support for up to three months post go live in particular to support the commissioning of a small number of DBCHs.

Cover for programme support functions. This relates to the DSP management team, Programme Office functions and programme assurance functions.⁶

3.6.3 Consideration of options and chosen scope

Not applicable.

3.6.4 Due diligence

[REDACTED]

3.6.5 Adherence to Change Process

Table 10: Change process for CR301

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR301	01/02/2018	22/02/2018	13/12/2018	01/02/2019	18/12/2018

3.7 CR 1034 (Arqiva)

This CR arises from the continuation of the R2.0 programme previously described in the RY2017/18 Price Control submission. CR1034 relates to the continuation of SIT and DIT for R2.0 in October and November 2018.

3.7.1 Drivers to CR1034

This CR covers the charges relating to the extension of DCC R2.0 SIT, DIT and UIT from 7 September 2018 to 31 October 2018. This IA is priced on the basis that ASML is providing a testing facility and resource for the period specified above during working hours with extended hours for evening working and any charges relating to the testing extending beyond these dates for any reason to be addressed in a further CR.

3.7.2 Scope of the change / project

The total increase in charges for the implementation of the change associated with CR1034 is as follows:

⁶ Source: CAN

- Total charges for the activities required by CR1034 including the elements of the core team used in performing CR1034 are [REDACTED].
- Charges for the activities required by CR1034 excluding the elements of the core team used in performing CR1034 are [REDACTED]. A breakdown of this figure is also shown in the spreadsheet above.
- Charges for the agreed core team for the period from 8 September 2018 to 31 October 2018 as agreed with the DCC are [REDACTED].
- This CR covers the charges relating to the provision of the Core Team from 7 September to 31 October 2018 only. Any resource in the team not utilised on CR1034 in that period would, where practicable, be utilised on other CRs and discount for the cost of these resources will be shown in the IAs for those CRs.⁷

3.7.3 Due diligence

[REDACTED]

3.7.4 Adherence to Change Process

Table 11: Change process for CR1034 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1034	20/09/2018	16/10/2018	28/03/2019	N/A	N/A

3.8 CR 1034 (TEFCAN065) - Telefonica

CSP Drivers to CR1034

These CRs are as for Arqiva above.

The DCC and Telefónica entered the Funding Addendum relating to the Provision of Communications Services in Relation to the Smart Metering Programme (the “Funding Addendum”) dated on or about the date of this CAN. The purpose of this CAN was to record certain Milestones for inclusion in the first tranche of funding.

The DCC and Telefónica entered the Funding Addendum relating to the Provision of Communications Services in Relation to the Smart Metering Programme (the “Funding Addendum”) dated on or about the date of this CAN. The purpose of this CAN was to record certain Milestones for inclusion in the first tranche of funding.

There would not be an effective contractual mechanism for inclusion of the Charges within the proposed refinancing arrangement if these were not changed.

3.8.1 Scope of the change / project

CR1034 served the creation of a series of new contractual Milestones and associated Set Up Charges to facilitate payment to the Contractor under a proposed refinancing arrangement as set out in the Funding Addendum.

3.8.2 Consideration of options and chosen scope

Not applicable.

⁷ Source: Arqiva IA CR1034

3.8.3 Due diligence

[REDACTED]

3.8.4 Adherence to Change Process

Table 12: Change process for CR1034 Telefonica

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1034	20/09/2018	02/10/2018	11/12/2018	04/04/2019	23/03/2019

3.9 CR1034 (CGICAN095) – DSP

3.9.1 Drivers to CR1034

The R2.0 IAs were aligned with a Go-live date of 30th September 2018. This CR1034 IA provides the delta impact to the IAs below resulting from the additional testing and revised plan described in the full R2.0 IA.⁹

3.9.2 Scope of the change / project

CR1034 includes additional scope for SIT and DIT for R2.0. This is required to ensure that the SIT and DIT test phases cover all test requirements sufficiently.

DSP's high-level scope of supply under this CR is for the preparation, execution and support of extended scope and timescales of R2.0 SIT and DIT. It also accommodates a revised go live date for R2.0. This involves additional effort to that provided under CR253, CR1005 and CR301. The following DSP teams are impacted by this change:

- Extension of SIT team from October to December 2018 to re-plan, update test artefacts and execute the additional tests (including work off);
- Extension of Triage, Application Support and Infrastructure Support teams to support the additional testing;
- DSP Systems Integrator to provide R2.0 co-ordination for the additional testing and extended timeline;
- Systems Integrator support for the SMKI recovery event described in the CR260 IA¹⁰;
- Programme Leadership and Operations team will be required until the end of November 2018.

Note that any impact on UIT-B based integration activities is assumed to be covered by CR279. There are no direct additional costs for TTO for DSP as a Service Provider.

3.9.3 Consideration of options and chosen scope

Not applicable.

3.9.4 Due diligence

[REDACTED]

3.9.5 Adherence to Change Process

Table 13: Change process for CR1034 CGI

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1034	20/09/2018	03/10/2018	01/11/2018	15/01/2019	

3.10 CR1046 (CGICAN094) – DSP

3.10.1 Drivers to CR1046

CR1046 covers the inclusion of additional scope for DIT for R2.0. This is required to ensure that the DIT phase covers all test requirements sufficiently.

This CAN094 provides for the additional DB DIT test scope and revised plan as detailed in the embedded IA.⁸

3.10.2 Scope of the change / project

This CR comprises R2.0 dual band testing activities with 868 MHz meters and covers the following items:

- MM1 (Meter Manufacturer 1) Dual band DIT and associated governance, including UAT. This will include preparation and an End of Cycle regression test;
- MM1 dual band Operational Confidence Testing (OCT). Previous R2.0 related OCT has been carried out under PR056. As requested in CR1046, MM1 dual band OCT is included here.

Though the original scope of dual band DIT was with two-meter manufacturers (MM1 and MM2), CR1046 covers the dual band test activities related to NXP based meters from MM1 only. MM2 is not in scope of this IA.⁹

DSP's high-level scope of supply under this CR is for the preparation, execution and support of additional DIT scope. This involves effort and time over and above that provided under CR253, CR1005 and CR1034. The DIT scope in this CR1046 is based on DIT Approach v1.1. The following DSP teams were impacted by this change:

- Extension of resources from the SIT team to re-plan, update test artefacts and execute the additional tests (including work off);
- Extension of Triage, application support and infrastructure support teams to support the additional test scope;
- DSP Systems Integrator to provide release management and technical support for the additional test scope and extended timeline;
- A subset of the Programme Leadership and Operations team will be required to support the extended testing to support the CR1046 resources.

3.10.3 Consideration of options and chosen scope

Not applicable.

⁸ Source: CAN

⁹ Source: Impact Assessment v2.0

3.10.4 Due diligence

[REDACTED].

Relationship to CR253

During the implementation of CR253 the DCC and DSP acknowledged that the documented scope of DIT could not be completed as it was originally specified in “DG.0302 CR253 DSP R2.0 SIT and DIT FIA v1.1”, due to certain device models being unavailable or in an early state of their development. Consequently, the DCC and DSP agreed a revised scope of testing that enabled both testing of device prototypes and additional testing, not originally in the scope of CR253, to be carried out. In recognition that the original scope could not be completed, the Parties agreed within the CR253 Milestone Achievement Certificate (MAC) that DIT would not be classified as fully complete until devices were available that enabled this. This has resulted in ten percent of the total value of CR253 being retained. DSP and DCC have now discussed and agreed the following principles for payment of the retention:

1. [REDACTED] will be invoiced alongside CR1046, specifically when DB DIT for MM1 completes. This is expected to be the end of March 2019.
2. The remainder of the retention [REDACTED] will be invoiced when MM2 testing completes. Testing with Meter Manufacturer Two will be covered under a separate CR and have a target completion date of the end of June 2019 based on current expectations.
3. A Working Capital Charge will apply for the retention payment associated with the CR1046 completion milestone (point 1 above) and for the second retention payment milestone (point 2 above).
4. In the event that DCC decides not to proceed with the MM2 test phase before completion of testing with MM1, then the full retention amount will be payable on completion including a Working Capital Charge equivalent to that defined under point three above.
5. In the event that DCC decides not to proceed with the MM2 test phase after completion of testing with MM1, then the remaining retention amount will be payable immediately with a corresponding Working Capital Charge aligned to the payment date.

3.10.5 Adherence to Change Process

Table 14: Change process for CR1046 DSP

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1046	01/11/2018	15/11/2018	29/03/2019	01/11/2018	31/01/2019

3.11 CR1046 (Arqiva)

CR 1046 extension for the month of March 2019, final values are material for the PC for RY2019/20.

3.11.1 Drivers to CR1046

This CR is needed to provide cover for the core team in February and March to complete the dual band DIT Phase of the R2.0 programme.

The change facilitates the payment mechanism set out in the Funding Addendum by adding milestones to trigger payments for advance. Without this change, DCC would be obliged to pay these charges as lump sums directly.

3.11.2 Scope of the change / project

The CR covers R2.0 dual band testing activities with 868 meters from 1 December 2018. Though the original scope is DB DIT with 2 meter manufacturers, this CR only covers the dual band test activities related to [REDACTED] based meters from [REDACTED].

The DCC and Arqiva have entered into the Funding Addendum relating to the Provision of Communications Services in relation to the Smart Metering Programme (the ‘Funding Addendum’) date on 8 December 2017.

ARQCAN078 added milestones and charges to the Agreement relating to core team funding due for work in February and March 2019 which the DCC allocated to CR1046 in advance of this work being incorporated into a CAN. It adds milestones and provisions allowing charges to be paid under the funding mechanism.¹⁰

Table 15: Milestones agreed for CR1046

Charges Related to CR1046	Milestone	Charge (£)
Charges for February 2019 Part 1: On achievement of Milestone	CaFA24: The CSP (N) provided the resource agreed with the DCC to support the Release Stream 7 and the change programme in February 2019.	[REDACTED]
Charges for February 2019 Part 3: On achievement of Milestone	C13a7.2: Solution Testing Stage Exit Criteria for Release Stream 7.2 achieved; and relevant Test Stage issued by DCC	[REDACTED]
Charges for March 2019 Part 1: On achievement of Milestone	CaFA25: The CSP (N) provided the resource agree with the DCC to support the Release Stream 7 and the change programme in February 2019	[REDACTED]
Charges for March 2019 Part 2: On achievement of Milestone	C13A7.2: Solution Testing Stage Exit Criteria for Release Stream 7.2 achieved; and relevant Test Stage issued by DCC	[REDACTED]

DCC had not received a revised estimate for the extension of CR1046 for the month of March 2019 so this shows a nominal credit in [REDACTED] which will be reconciled in the final CAN. Continuing work from April 2019 onwards will be accounted under CR1079

3.11.3 Due diligence

[REDACTED]

3.11.4 Adherence to Change Process

Table 16: Change process for CR1046 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1046	01/11/2018	15/11/2018	29/03/2019	N/A	N/A

¹⁰ Source: ARQCAN078

4 Release 1.2

The RY2016/17 Price Control submission, described the successful delivery of Release 1.2 in November 2016, achieving DCC live across the three regions. Release 1.2 marked the point at which DCC was operationally ready and able to manage messages to and from meters on our production platform, enabling energy suppliers to roll out smart meters to credit customers and providing networks with an initial set of service requests. Further functionality was added in the context of Release 1.3.

While Release 1.2 and 1.3 are live, there have been CRs released for post-production work related to hardware life-cycles, i.e. comms hubs. CRs144 and 135 in this section are related to such post-production work.

4.1 CR144 (ARQCAN039) – CSP (N) Arqiva

4.1.1 Scope of the change / project

Specifically, each of the CSPs was required to impact-assess the following solution:

- CSPs are required to update their solution to provide automatic updates for the new Remedy Returns (RR) statuses on completion of fault analysis for returned comms hubs. This would require solution changes to these additional updates (indicating disposal or reconditioned state of returned hubs).

The DCC Charging Methodology sets out that, following conclusion of the Fault Analysis Process, if SEC Parties are liable for a communications hub fault, or liable for termination costs under a No-Fault Removal, said SEC Parties will pay either a Comms Hub Termination Charge or a lesser Reconditioning Charge where a Hub may be economically re-used.

The CSP contracts do not currently require CSPs to notify DCC and SEC Parties of reconditioning except via:

- Charging/invoice data
- Advance Shipping Notification data files sent to Parties in advance of Comms Hub deliveries

Without this change, DCC will be unable to track reconditioned Hubs via the Remedy RR and will be unable to bill for them appropriately. Reconditioned Status is not recorded in the DSP SMI so workarounds will require analysis and reconciliation of CSP invoices, Remedy Returns Records and/or charging data.

At a high level, the Arqiva solution proposed to fulfil this requirement was as follows:

- Support a new Web Services method to notify the Remedy Returns Module for refurbish and disposal, as specified in SD4.7.1 v2.7 Section 5.4.
- Implement the same communication retry and recovery strategies (synchronous & asynchronous) as for other SD4.7.1 Section 5 Returns services used e.g. Update Return and Create Return. CSP (see SD4.7.1 v2.7 Section 5.5 – this covers when Remedy is down for any reason).
- Implement new CHDB functionality to handle “refurbished” and “disposal” status updates to Returns Records.
- Change ETL, Staging, ODS and Data Mart for new functionality to record relevant data in relation to the Returns process for refurbish and disposal notifications
- Update existing Returns Dashboard reports for impact of new functionality
- Consider impacts to Data Recovery, Operational Dashboard & Standard Error Handling

4.1.2 Drivers to CR144

This CR144 was raised for FSP’s to assess the impact of implementing a capability for the DCC to track reconditioned communications hubs through the existing Remedy Returns Record module design, principally in order to comply with the DCC Charging Methodology obligations defined by SEC Sections K7.5(o) and K7.5(p).

The practical reason for this was so that DCC can apply the correct billing to Service Users based on whether a Communications Hub had been refurbished or not.

The existing FSP contracts did not contain the obligation to transfer the required data to the Remedy Returns system, so the main driver for the change is to enable DCC to comply more fully with its obligations under the SEC.¹¹

4.1.3 Scope of the change / project

Each of the CSPs was required to impact-assess the following solution:

- CSPs are required to update their solution to provide automatic updates for the new Remedy Returns (RR) statuses on completion of Fault Analysis for returned Hubs. This would require solution changes to these additional updates (indicating disposal or reconditioned state of returned Hubs).

At a high level, the Arqiva solution proposed to fulfil this requirement was as follows:

- Support a new Web Services method to notify the Remedy Returns Module for refurbish and disposal, as specified in SD4.7.1 v2.7 Section 5.4.
- Implement the same communication retry and recovery strategies (synchronous & asynchronous) as for other SD4.7.1 Section 5 returns services used e.g. Update Return and Create Return. CSP (see SD4.7.1 v2.7 Section 5.5 – this covers when Remedy is down for any reason).
- Implement new CHDB functionality to handle “refurbished” and “disposal” status updates to Returns Records.
- Change ETL, Staging, ODS and Data Mart for new functionality to record relevant data in relation to the Returns process for refurbish and disposal notifications
- Update existing Returns Dashboard reports for impact of new functionality
- Consider impacts to Data Recovery, Operational Dashboard & Standard Error Handling

4.1.4 Consideration of options and chosen scope

Not applicable.

4.1.5 Due Diligence

[REDACTED]

4.1.6 Adherence to Change Process

Table 17: Change process CR144 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR144	23/09/15	25/01/16	20/09/17	02/10/17	21/08/2018

4.2 CR135 (ARQCAN039) – CSP (N) Arqiva

4.2.1 Drivers to CR135

This DCC-led CR arises as a result of updates to SD4.4.3 and SD4.7.1 Interface Specifications, which govern the interface between the CSP(N) and the DSP systems, since the previous ARQCAN021/CR032a was

¹¹ Source: CR144 Reconditioned Status to Remedy RR

agreed. For this CR the following versions of the specs had to be adopted to align with the Release 1.2 baseline which had been approved by Arqiva/CGI and by the DCC Design Assurance Board:¹²

- SD4.4.3 v3.7 CSP Management Interface
- SD4.7.1 v2.5 DSMS Interface

4.2.2 Scope of the change / project

The Changes that arise as a result of the update of these Interface Specifications include:

- The inclusion of fault analysis and diagnostic information in the DSMS Interface.
- Job Status Reports and related information now being included in both the DSMS Interface and the CSP Management Interface.

In practice these changes were needed to ensure that the lifecycle of the Comms Hub, for example, when returned through the returns process, was being correctly tracked. This impacts DCC’s ability to comply with its obligations to Service Users under the SEC.

This change only affects CSP(N) because CSP (C&S) does not utilise the DSMS system for fault tracking etc.¹³

4.2.3 Consideration of options and chosen scope

There were no other feasible options as this change was required to ensure compliance with specifications that had already been updated.

4.2.4 Due diligence

[REDACTED]

4.2.5 Adherence to Change Process

Table 18: Change process CR135 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR135	14/07/15	-	16/03/17	20/04/17	21/08/2018

5 Operate at Scale Programme

5.1 CR1003 (CGICAN085) – DSP

5.1.1 Drivers to CR1003

As part of DCC’s assessment of readiness to Operate at Scale, the DCC commissioned a review (Ready to Scale review¹⁴) of the DSP Services. Working with the DSP, a number of recommendations have been agreed to implement changes and improvements to the DSP services.

¹² Source: IA CR144

¹³ See footnotes above.

¹⁴ Readiness to Scale is described in Part 2 of the RY2017/18 submission. Readiness to Scale evolved into Operate at Scale in RY2018/19.

This CR covers changes related to the network infrastructure resilience and failover. Whilst the current network infrastructure is designed as a highly available service, the changes proposed will further increase the availability of the service by reducing the likelihood of failover and the time taken to recover from a fault.

This change will bring the management and security services firewalls in line with the production firewalls and enhance the availability of the service by adding in a third node to each cluster.¹⁵

5.1.2 Scope of the change / project

The scope of supply under this change will be for a subset of items identified in the R2S discovery program. These items are R2S-DSP-4, R2S-DSP-8, RS2-DSP-142 and R2S-DSP-149. For these items the DSP will supply as follows:

1. Procurement of equipment listed under the Price Breakdown
2. Build and configuration of these items involving the DSP Infrastructure Project team and Applications Team where the change impacts the application or security solution
3. Validation of correct implementation of the solution as part of service cutover activities
4. Service on-boarding to ensure that the service team is aware of the revised solution and can support and report on it.
5. Any ongoing service uplift to the end of the DSP contract (31st October 2021).
6. Management of the project.
7. Systems Integration team oversight to DSP Release activity (e.g. CRB and Red Line testing support).¹⁶

5.1.3 Consideration of options and chosen scope

Not applicable.

5.1.4 Due diligence

[REDACTED]

5.1.5 Adherence to Change Process

Table 21: Change process CR1003 CGI

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1003	20/06/2018	22/06/2018	30/08/2018	N/A	12/2018

5.2 CR1004 (CGICAN086) – DSP

5.2.1 Drivers to CR1004

This CR originated from the Operate at Scale recommendations.

The DSP implementation at the Production site does not include application N+1 resilience for all components. This creates an increased risk that application failure will impact DSP services. This CAN and associated

¹⁵ DG.0414 CR1003 DSP FIA

¹⁶ CAN DG.0414 CR1003 DSP FIA

change request 1004 provides for enhancements to the DSP solution to support improved availability of applications.¹⁷

5.2.2 Scope of the change / project

The scope of supply under this Change is a subset of items identified in the Ready to Scale (R2S) discovery program (later known as Operate at Scale). The following applications were identified as requiring additional N+1 resilience.

Table 22: Requirements for CR1004

Application	Reference	Rationale for N+1
CSP Management Gateway	R2S-DSP-15	Supports the “Birth Event” for I&C, Service Requests (SR12.1) and SSI screens for network coverage, plus Comms Hub Diagnostics.
SSI/SSMI Database	R2S-DSP-17	Supports the SSI and SSMI applications for Service Management functions. (Note: the requirement is to provide a standby database instance in the DR site.)
SSMI Application Server	R2S-DSP-16	Supports DCC Service Desk and other Service Providers for Service Management functions. (Note: may also require additional reverse proxy server)
IDP GetAccess server	R2S-DSP-161	Supports new user logins to the SSI and SSMI. (Note: may also require additional reverse proxy server)
IDP LDAP database	R2S-DSP-164	Supports user logins to the SSI and SSMI. (Note: Already has N+1 configuration but is required to be changed from Active-Passive to Active-Active.)
DCCKI repository	R2S-DSP-165	Provides DCCKI services to Users and Service Providers. (Note: may also require additional reverse proxy server)
Application	Reference	Rationale for N+1
DSMS Reporting (Business Objects)	R2S-DSP-160	Supports DCC Service Desk and other Service Providers for Service Management functions.

5.2.3 Consideration of options and chosen scope

Not applicable.

5.2.4 Due diligence

[REDACTED]

5.2.5 Adherence to Change Process

Table 25: Change process for CR1004 CGI

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1004	22/06/2018	27/06/2018	30/08/2018	15/01/2019	18/12/2018

¹⁷ CAN Baringa’s recommendation

5.3 CR1007 (CGICAN088) – DSP

5.3.1 Drivers to CR1007

This change is about providing improved resilience for DCC Services in the event of those services running from the DSP's Disaster Recovery (DR) site.

The DR environment provides an alternative hosting environment in case of failure of the Production Environment. The physical infrastructure supporting the DR environment is not an exact replica of the Production environment; for example not all physical components are deployed in an N+1 resilient hardware configuration.

This change introduces additional physical servers into DSP's recovery data centre to enable N+1 server resilience in a DR scenario. The exact scope and impacted servers are detailed within the IA.

The primary benefit of moving the DR environment to an N+1 hardware configuration is to provide a significant additional layer of service continuity in the event of an infrastructure failure during a DC failover scenario. Currently this does not exist, hence in the event of such a secondary failure there could be a serious impact on the service. It also allows both the Production (Live) and DR facilities to share a more closely aligned design and operational standard. This is a first step towards possibly moving to an active-active data centre configuration in the future.

5.3.2 Scope of the change / project

To improve the resilience of the physical infrastructure within the DR site and thus allow the DSP solution to run from the DR site for an extended period with no increased risk to availability due to hardware failure. Without these improvements the DSP solution will be limited in the amount of time that it can run in the DR site, due to the increased risk of running without N+1 resilience.¹⁸ The deliverables of this CR1007 are as described in the table below:¹⁹

Table 26: DR requirements

Deliverable	Changes Required
SD 1.6 – Solution Architecture	Update to add additional components and integration
Physical Control Register	Update to add additional components and integration
Trend Deep Security HLD/LLD	Update to add additional components and integration
F5 HLD/LLD	Update to add additional components and integration
DCCKI HLD	Update to add additional components and integration
HSM LLD	Update to add additional components and integration
1. DSP Failure Modes, Effects and Criticality Analysis Report (FMECA; DQ.0019). 2. DSP System Hazard Analysis Report (SHAR; DQ.0005). 3. DSP Hazard Log (DQ.0007).	Minor updates to the DSP Safety and Environmental Case

5.3.3 Consideration of options and chosen scope

Not applicable.

5.3.4 Due diligence

[REDACTED]

¹⁸ Source: CAN

¹⁹ Table extracted from Impact Assessment Section 8.8 "Deliverables"

5.3.5 Adherence to Change Process

Table 29: Change process for CR1007 CGI

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR1007	27/06/2018	27/06/2018	30/08/2018	15/01/2019	23/12/2018

5.4 PR069 – DSP

The DCC Ready to Scale Programme was the precursor to Operate at Scale. This had been shaped to provide a holistic approach to address gaps and constraints to DCC operation at scale and establish a roadmap to support DCC mission of being an enabler for the Energy industry transformation.

Please refer to DCC's RY2017/18 Price Control Submission: Part 2 – Business Transformation and Delivery, Section 4.3 for further information on Smart DCC's Readiness to Scale programme.

5.4.1 Drivers to PR069 (Remedy and Agile Development)

A key element in the approach to DCC's Ready to Scale programme is to minimise the volume of contact in to the DCC Service Desk by enabling customer self-service. customers currently interact with DCC via the Self Service Interface (SSI) web portal. DCC users can also interact with the portal via Self-Serve Management Interface (SSMI). The underpinning SSI is the main service management system DSMS/Remedy, which is also the key system used by the Service Desk to deliver Service Management processes.

Customers are reporting that they have a poor experience of using the SSI which has resulted in them raising over 50 separate issues to date. DCC has raised a further 140 problems. In addition, the systems are hard to navigate with large numbers of clicks required to complete the work they are attempting to do.

As part of the Operate to Scale initiative, DCC has to transform the customer experience to ensure that our customers can complete their work with DCC in a digital, seamless manner, with no need to contact our Service Desk. Customers will be able to complete tasks in a guided and intuitive manner that simplifies the experience, enables accurate input and provides easy to use guidance where required. This will enable the Service Desk to focus delivering an effective service in managing incidents, problems and service requests and enable FTE targets to be met.

DCC wishes to build a dedicated team that is capable of delivering agile developments of SSI, SSMI and Remedy to deliver the vision described above. This will enable new functionality to be delivered every week, enabling rapid improvement of these systems to deliver the improvements required at a pace. This will rapidly improve customer experience and deliver Service Desk efficiencies that will enable it to meet the FTE targets outlined in the Business Plan for FY2018/19 and beyond. Specifically, estimates based on current workloads indicate that 400 FTE would be needed for the DCC Service Desk. By shifting work from the Service Desk to the customer using SSI we believe that this should significantly contribute to meeting the 120 FTE contained in the Business Plan.

The Agile delivery capability will also considerably reduce the lead time for delivery of high priority changes from months to weeks and will increase the level of responsiveness to change.

DCC will face a significant risk of not being able to manage demand from customers in to the Service Desk at scale [Ref. 1].

5.4.2 Scope of the Project

The DSP was requested to provide a team to undertake Agile development of the SSI, SSMI and Remedy platforms. This should include the provision of a capability to develop User Interface strategy and design based on a design thinking approach that includes customer engagement and research.

The aim of the Agile delivery approach is to release new functionality and User Interface changes every week, with a three-week development cycle (see attached diagram below).

One release every month is expected to be service impacting, however the other three releases are not expected to be service impacting. The DSP is expected to include their approach to achieving this release approach, including any changes to release management, environment management, code control and testing to support an Agile approach.

DCC also require the DSP to investigate and improve the performance of the underlying infrastructure that impacts performance of SSI, SSMI and Remedy. This includes (but not limited to) the following applications, databases and interfaces: Inventory Database and Audit Trail.

- Identity Management
- Remedy resilience and load balancing
- Interface/API capacity.

5.4.3 Consideration of Options and Chosen Scope

Not applicable.

5.4.4 Due Diligence

[REDACTED]

6 Message Buffering

6.1.1 Adherence to Change Process

Table 30: Change process for PR069 DSP

Change / Project Request	Issue date	LOI Issued	SOW received	SOWA approved	SOWA signed
PR069	12/03/2018	12/04/2018	05/2018	05/2018	05/2018

6.2 CR313 (ARQCAN066) – CSP (N) Arqiva

6.2.1 Drivers to CR313

This DCC led change, which was contracted as ARQCAN066, was based on feedback from DCC’s customers and incorporates the addition of a Message Buffering facility to the CSP(N) Arqiva solution. The reason for the change was to alleviate reliance on the short-term retry strategy when parallel Service Requests (SRs) are sent to the SMWAN GW Interface via the DSP. If not implemented, Service Users would be unable to run their business processes.

This change required the addition of a message buffering facility to the Arqiva solution. The buffering facility is to alleviate an issue that has arisen due to the processes developed by Service Users that send multiple Service Requests (SRs are actual pings to the meters) in a parallel fashion.

When SRs arrive at the Arqiva SMWAN gateway concurrently and they are above a predetermined size, only one will be delivered and a retry strategy is entered for subsequent SRs. Whilst in line with SD4.4.1, this was deemed undesirable behaviour because it duplicated work.

6.2.2 Scope of the change / project

In absence of an E2E flow control mechanism an enduring solution was required which reduces the reliance on the retry strategy implemented by the DSP. The deliverables were core functionality for Radio Network Interface (RNI) and OSS, delivering all but the buffer and TC limit monitoring and additional monitoring for buffer and TC limits requiring further patches to the RNI and OSS.

6.2.3 Consideration of options and chosen scope

The only technical alternative to this CR would have been to require Service Users to modify their business practices but, whilst feasible, this would have relied on multiple changes rather than one.

6.2.4 Due diligence

[REDACTED]

6.2.5 Adherence to Change Process

Table 31: Change process CR313 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR313	1/03/18	25/07/18	25/09/18	N/A	11/12/2018

7 Testing Services

This section on Testing Services justifies the Material CRs that cover the continued provision of Testing Services to support User Entry Process Testing (UEPT) and End to End Testing by Service Users and Production Support Testing. These are existing services necessary to support Industry Testing and to ensure defect fixes en-route to production are tested. This CAN and associated CR279 is effective from 31st March 2018 and covers a period of 12 calendar months.

7.1 CR279 (CGICAN097) – DSP

7.1.1 Drivers to CR279

CR279 relates to the continued provision of Testing Services to support User Entry Process Testing (UEPT) and End to End Testing by Service Users and Production Support Testing. This CAN and associated CR279 is effective from 31st March 2018 and covers a period of 12 calendar months.

The UIT service described in this CAN097 and associated embedded FIA is based on providing testing services to DCC from a core service composed of different functions. The services provided under this CAN comprise of;

- Testing Services which provides industry facing testing services across the UIT-A and UIT-B environments.
- Production Support Testing provides testing support for production Systems Integration Activities on the SIT-A environment
- System Integration (SI) Release Management Team

Furthermore, when determining the size and mix of resources to undertake the testing services, provision has been made to deliver ad-hoc projects, provided that the ad-hoc projects do not impact the core service (an ad hoc project is an activity of sufficient size to merit the agreement between the DCC Head of Testing Services and DSP Head of UTS that is in addition to the normal day to day activities of testing with Testing Participants (TPs)).

This CAN and associated embedded FIA allows for the ability to scale up and down the services through a regular dialogue and agreement between the Parties.²⁰

7.1.2 Scope of the change / project

The DSP scope of supply under this CR is summarised below and extends across use of UIT-A and UIT-B environments. A model for resourcing has been developed based on the profile proposed by DCC in the previous section and ensures that there is no overlap between CR274 R2.0 UIT and this revised Testing Services proposal. This Full Impact Assessment covers a 12-month period of Testing Services. After 12 months the model is subject to a review but may be extended upon agreement of DSP and DCC.²⁵ Under CR279, DSP will provide:

- Test Analysts Support for Test Participants (TPs);
- Technical Lead Support for Test Participants;
- Technical Lead Support for CSPs;
- Data Setup and Management for Test Participants;
- Defect Management and Triage, noting that for other SPs the DSP SI provides a coordination and reporting service;
- Reporting;
- Management of overarching UIT Testing Services;

²⁰ EV.0099 CGICAN097

²⁵ EV.0099 CGICAN097

- Release Management;
- Environment and Applications Support as agreed by DCC;
- Licensing for HP ALM use;
- Service Testing for all new releases and devices;
- Co-ordination with DCC of any new testing service that is controlled, including resource availability;
- Participation in site visits.

7.1.3 Consideration of options and chosen scope

Not applicable.

7.1.4 Due diligence and adherence to change process

DSP

[REDACTED]

Table 32

Adherence to Change Process

Table 33: Change process for CR279 CGI

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR279	08/11/2017	09/11/2017	20/03/2018	30/04/2019	

CSP (N) Arqiva

[REDACTED]

Adherence to Change Process

Table 35: Change process for CR279 Arqiva

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR279	08/11/2017	08/11/2017	08/06/2018	N/A	26/08/2018

CSP(S&C) Telefonica

[REDACTED]

Adherence to Change Process

Table 36: Change process for CR279 Telefonica

Change / Project Request	Issue date	PA received	IA received	IA approved	CAN signed
CR279	08/11/2017	25/06/2018	07/12/2018	N/A	15/02/2019

8 SMETS1

8.1 Programme Overview

8.1.1 Introduction

In introducing the Smart Metering Implementation Programme (SMIP), the Government has made a clear step in its ambition to offer consumers more choice and increase competition within the UK energy market. SMETS1 meters installed from 2012 are unable to retain their smart functionality (interoperability) when consumers decide to change supplier, however, preventing this key consumer benefit of the Programme. Given that SMETS1 meters now number over 12m, there is increased importance of SMETS1 meters in delivering the benefits of smart metering. As such, the Government commissioned DCC to develop a solution i.e. a SMETS1 service that enables consumers to switch supplier whilst retaining smart functionality of their SMETS1 meter. One of the initial steps in developing the SMETS1 service follows on from a requirement within section N of the SEC, which placed an obligation on DCC to prepare an Initial Enrolment Project Feasibility Report (IEPFR).

The purpose of the IEPFR was to explore and assess a range of options on how SMETS1 (Foundation) meters could be brought under DCC management. The IEPFR consultation completed on 20 January 2017 and DCC published the findings in May 2017. In June 2017, the Government provided DCC with guidance on how to refine and simplify the design options relating to how meters are integrated, the interface that DCC’s customers will use and guidance on pre-payment functions and security. Following on from the conclusion of the IEPFR, a SMETS1 Delivery plan (“LC13” plan) was consulted on by DCC a first time and approved by the Government in October 2017.

Two key (competing) technical options emerged from the IEPFR conclusions i.e.:

- A Direct to Meter (D2M) solution whereby DCC effectively communicates with the SMETS1 meter via new software developed specifically for this purpose (IP4); and
- A solution utilising and integrating the existing market framework (SMSOs) (IP5b), considered to be lower risk as already being operated.

Under current market arrangements, five Smart Meter Service Operators (SMSOs)²¹ serve over 80 energy suppliers with six different brands²² of meters, supported by four different CSPs. Establishing a solution that provides a single interface and system that will enable interoperability under the given circumstances, demonstrates the level of complexity (both technically and commercially) which the programme is subjected to.

The programme complexity itself is described in greater detail in Part 2, while delivery teams and resourcing is described in Part 4. The following sections describe the commercial contracts and frameworks DCC negotiated to bring the existing service providers of the SMETS1 services onto the existing SMETS2 network.

In this section we describe the key components of the SMETS1 programme:



Figure 4: Components of the SMETS1 programme

²¹ Trilliant, CGI Instant Energy, Secure, MDS and EDM I.

²² Honeywell Elster, Aclara, Itron and Landis + Gyr, Secure and EDM I

8.1.2 Design

There are three design principles are key to the SMETS1 programme. Ultimately, the design has created direction for the commercial arrangements in terms of what service providers must deliver by certain milestones, as well as how DCC has organised itself as a team. Therefore, it's important to understand the design foundations to act as a reference for later discussions of due diligence or key milestones. The fundamental design principles are:

- **Integration path** - Government's Go/No-Go decision in 2018 opted to continue with IP5b – based on the assessment of the relative costs, risks and benefits of IP5b against those of IP4;
- **Supply chain configuration**- The agreed **SMETS1 design** utilises the existing DSP, the procurements of new SMETS1 Service Providers (S1SP's) and enhanced security arrangements. The solution effectively involves the transfer in management of SMETS1 devices from current head ends (referred to as SMSOs) to new DCC Service Providers (referred to as S1SPs); and
- **Transition and migration of SMETS1 meters to DCC** - The SMETS 1 Programme also set up the transition workstream which encompasses the phase leading up to device migration (the preparatory activities for transition of service from the SMSO to the new S1SP) through to the period immediately after device migration in the DCC system.
 - **Transition** comprises engagement with stakeholders (DCC Operations, Customer Engagement (Industry) and BEIS) to agree the design, build and test of the migration solution; Capacity Management and Migration scheduling.
 - **Migration** involves the technical transfer of SMETS 1 devices sets (meters, IHDs etc.) from Energy Suppliers (through their existing SMSOs) to DCC's managed service. This involves the design, build, test, migration and support into live service of these device sets. An important part of the planning has been around the design of the migration solution and the regulatory documents associated to that.

8.1.3 Commercial implementation

In order to implement the commercial strategy, DCC had the immense challenge of taking existing contracts and terms of service and converting them into new enduring contracts and competitively procuring new aspects of the Interoperability solution such as the Security component known as the Dual Control Operation (DCO).

Like any incumbent, the existing service providers had years of experience in operating the service and naturally wanted to achieve terms which benefitted them and this experience. Additionally, the threat always existed that in the future, they may become obsolete once the SMETS1 meters reach the end of their useful life.

Therefore, DCC sought to use a variety of negotiation techniques and commercial levers to achieve value for money for consumers. In this section we briefly describe the principle commercial levers which DCC has operated and the value delivered therefore.

Commercial levers

- **Competitive pressure** through **parallel development** of the two competing options (**IP4 vs IP5b**) – in anticipation of the Government's Go/No-Go decision, the parallel development of both options IP4 and IP5b has created a competitive environment that has shifted delivery time and costs down on existing SMSOs. In order to deliver the SMETS 1 service, DCC needed to negotiate contracts with existing SMSOs to perform the new role of S1SP. The complexity of the current ecosystem however – especially for where there are existing market commercial relationships – also meant that there was insufficient leverage for DCC to negotiate better terms and better costs in the supply chain. To overcome this problem, DCC has developed a commercial strategy that is intended to exclude existing SMSOs if they failed to be competitive on price, time and delivery confidence;
- **Agreed labour rates** and **exerted control over development costs** through **iterative working** – S1SP contracts are not fixed price. DCC negotiated an appropriate contractual framework and a rate

card reduction (e.g. with Trilliant). In the case of Trilliant this reduction was delivered through negotiation, but also by undertaking a market testing exercise, where DCC compared day rates it had already negotiated with other suppliers for various roles and responsibilities and used this evidence to demonstrate to the supplier that they were uncompetitive in the market. In addition, DCC also required that service providers adopt an iterative approach to development. Additionally, DCC's 'overlay' of rigorous project management and access to performance incentives ensured a continued and ongoing control of costs;

- **Acquiring capabilities through a formal procurement strategy and operating model** –the SMETS1 programme has procured the Dual Control Organisation, hosting services and SMETS1 Service Providers. Given the different commercial circumstances in which these roles are procured, DCC developed a sourcing strategy as a logical and transparent step towards demonstrating a value for money approach. The approach for these components is described further below within their respective sections;
- **Independent and External Reviews** – Throughout the commercial negotiations, DCC sought to get outside and independent assurance of resulting contract negotiations. For example, contracts were independently reviewed by DCC Commercial and Legal team members who were not part of the contract negotiation team. In some cases, as independent legal review of the contract was undertaken by Pinsent Masons, which did not identify any material issues.

Value delivered

The expected negotiated savings of c. £300m over the 12-year period has been achieved by a combination of competitive pressure plus fair negotiation.

[REDACTED]

8.1.4 Delivery: the LC13 re-plan

Through the discovery and development phases, DCC undertook frequent risk assessments, which identified that there was an aggregate increase to delivery risk to the IOC capability release (as per the October 2017 LC13 plan) mainly due to:

- Previously unknown meter specific behaviours, and the time taken to resolve variations in the performance of these devices;
- A further consequential impact to the integration of the DCO;
- Finalisation of the migration approach for the SMETS1 Service increasing the scope of DCC work;
- For MOC as originally planned, development issues being reliant upon energy suppliers working with their manufacturer to update firmware to their meters prior to the commencement of User Integration Testing; and
- For FOC as originally planned, the time to establish an agreed design and commercial position between DCC and Secure Meters was longer than anticipated, with consequential impacts on delivery planning.

These issues were raised with BEIS as a significant risk to delivery and articulated in relevant governance forums with industry and BEIS. As a result, BEIS ordered a re-plan of the LC13 plan.

The main changes include moving the Initial Operating Capability (IOC) to end May 2019, to allow for testing and migration preparation activities for the [REDACTED] meter group to complete and to establish the new DCO. At the request of BEIS, DCC re-consulted on a revised delivery plan in October 2018. These revised dates, however, continued to lack contingency. The revised present dates for operating capabilities were as follows:

- **IOC** in end May 2019 comprising the [REDACTED] meters currently operated by CGI IE;

- **MOC** at end August 2019, comprising the [REDACTED] meters currently operated by MDS and the Secure Meters group; and
- **FOC** at end October 2019 comprising [REDACTED] meters currently operated by either [REDACTED] if directed by Government following a consultation in due course, the [REDACTED] meter group.

This is important to include in this Part because any increases in timeline mean additional cost. As a result, this year's submission includes justification of the foundation contracts, but also start to include project and change requests. We expect there to be a number of CRs in next year's submission.

8.1.5 High-Level Overview of the SMETS1 Supply Chain and Role Description

As already referred to above, the SMETS1 Service will incorporate a range of existing SMETS1 Service providers, along with new service providers, to enable a service whereby all DCC Users are able to communicate with all enrolled SMETS1 meters. The SMETS1 Service design has remained unaffected by the proposed plan revisions compared to the October 2017 position, and the plan itself remains predicated on the concept of 3 capability releases deployed sequentially, with periods of platform stabilisation built in to mitigate the risks associated with a large volume of change.

A high-level overview of the SMETS1 service design and the SMETS1 Supply Chain model are shown in the figures below.

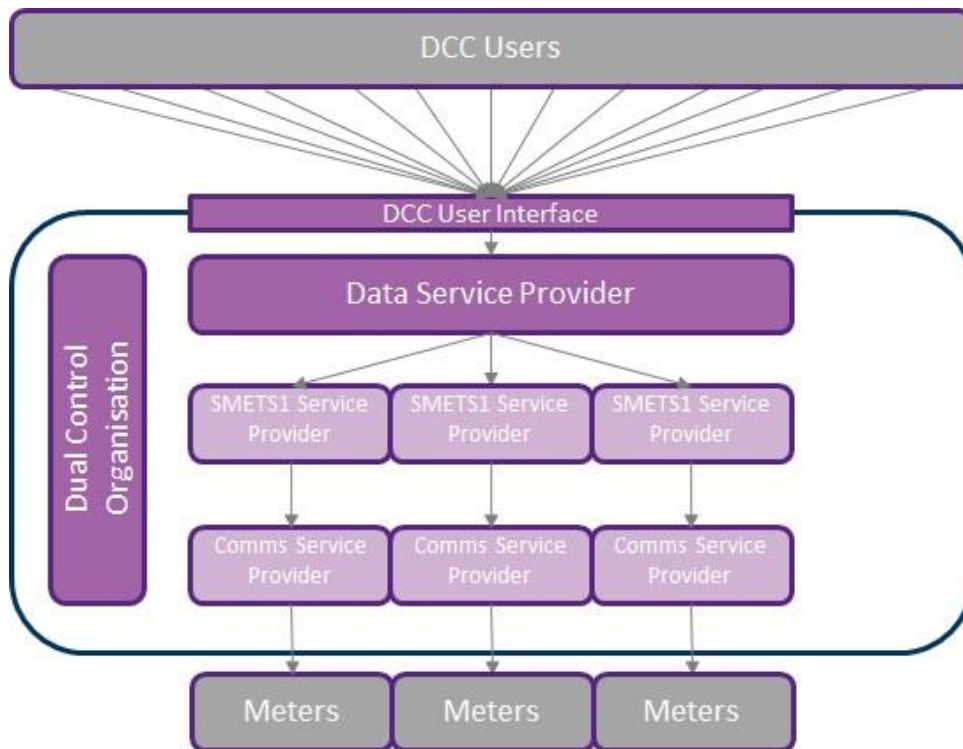


Figure 5: SMETS1 Services Design

[REDACTED]

A high-level description of each component of the SMETS1 Supply Chain is set out in the table below.

Table 37: High-level description of each component of the SMETS1 Supply Chain

System Component	Existing/ New Role	Description
DSP	Existing SMETS2	Amendments will be introduced to the existing DSP framework to accommodate SMETS1 device validation and routing rules. Upgrades to the network have either already been initiated or are yet due to be raised through several CRs and/or PRs.
DCC User Interface	Existing SMETS2	Provides the functionality for DCC Users to access smart metering devices. These are provided by the DCC's DSP (Data Services Provider) service. Amendments will be introduced to accommodate SMETS1 device validation and routing rules.
S1SPs	SMETS1 specific	SMETS1 Service Providers (SMSP) provide the service that translates the DCC format service requests into a format that SMETS1 meters can understand and to generate UTRNs in support of top-ups to prepayment meters. The S1SPs perform in effect an upgraded instance of existing SMETS1 Head End System (HES) software i.e. SMSOs. Three separate companies provide this for different networks and meter types ²³ An overview of the software development agreements (SDA) and enduring agreements for each of the S1SPs described in the corresponding section.
S1CSP	SMETS1 specific	DCC will be utilising the S1SP network to communicate with and control the SIM in each communication hub. Negotiations of the enduring agreement with Vodafone and Telefonica for the commoditised air time service is expected to complete within RY2019/20. A justification for the respective contracts will therefore be provided as part of the RY2019/20 price control submission.
DCO	SMETS1 specific	Existing SMETS1 services being administered by SMSOs on behalf of energy suppliers have been deemed by DCC and BEIS to be deficient with respect to their ability to safeguard the integrity of messages passing to a meter. In the current systems, messages are created by and sent by the SMSO to the meter. This lack of division of duties faces a security threat to the SMSO and by extension to the meter. To address these risks, the SMETS1 Programme has established a new entity called the Dual Control Organisation" (DCO) to detect if the S1SP is compromised and prevent mass meter attack through the use of anomaly monitoring and cryptography.
ANSO	SMETS1 specific	Application, Network, and Security Operations (ANSO) services provide the infrastructure and the operational service management for a software application, all together delivering a fully integrated operational service to the DCC. Each ANSO service provider provides the hosting, associated infrastructure and service management wrapper for a software application, including taking responsibility for service design, service availability, service performance, and incident resolution. The SMETS1 solution requires an ANSO service for the following three software applications: [REDACTED].
System Component	Existing/ New Role	Description

²³ Note that the division of meters and network against the different service provides cross different Operating Capabilities. It is not a one to one match in all cases.

		<p>Together with the associated ANSO service (DXC), the Trilliant Head-End System forms the S1SP service for these devices;</p> <ul style="list-style-type: none"> • Dual Control Organization (DCO) software. Together with the associated ANSO service operated by Capgemini, Critical Software (CSW) performs the function of the DCO; and • Commissioning Party (CP) software – The functionality was requested by BEIS following discussions with DCC customers (Users), which identified that the enrolment of meters into the DCC SMETS1 Service is likely to be easier and cheaper through an expanded DCC provided service, rather than through each DCC Customer developing their own enrolment solution. This functionality will be solely required for the duration of the migration process of SMETS1 devices. A justification of the CP and associated costs will not be set out in this part. Instead it will be described in part 4.
--	--	--

8.1.6 Approach to justifying the SMETS1 contracts

As set out above, the SMETS1 service will incorporate a range of existing SMETS1 service providers, along with new service providers, to enable a service whereby all DCC Users are able to communicate with all enrolled SMETS1 meters. This is the first year the contracts for these new service providers are reported in the RIGs.

There are several things to consider for these contracts. The first is that they were often negotiated under a single procurement strategy. This is particularly the case for the S1SPs and S1CSP's. CRs and PRs, however, were negotiated individually. As a result, we have structured the justification under each strategy. The contracts therefore are grouped as follows:

Table 38: Structure of SMETS1 External Costs²⁴

Service Provider Group	RIGs Reference: Supplier name	Overview / Procurement Strategy	Due Diligence
S1SPs	S1SP_1: CGI / Instant Energy (S1SP - IOC)	Section 8.2.1	Section 8.2.2
	S1SP_2: Secure (MOC)		Section 0
	S1SP_3a: Trilliant / DXC (FOC)		Section 0
	S1SP_3b: ANSO for the Trilliant Head-End System (DXC)		Section 8.2.5
DCOs	DCO_a: Capgemini	Section 8.3.1	Section 8.3.2
	DCO_b: Critical Software		Section 0
PRs	PR065		Section 0

²⁴ Note that this excludes the CSP contracts for SMETS1. Contracts for these service providers have been signed in RY19/20 and will be justified as part of the RY19/20 price control submission.

Service Provider Group	RIGs Reference: Supplier name	Overview / Procurement Strategy	Due Diligence
	PR1017		Section 8.4.1
	PR1001		Section 8.4.3
	PR1004		Section 8.4.18.4.4
	PR1020		Section 8.4.5
	PR1047		Section 8.4.6

Structure of Justification

The table below provides a status update on all the contracts that make-up the fundamental service capabilities for the SMETS1 service, and that have been completed by the end of the RY2018/19.

Table 39: Status update on all contracts that the fundamental service capabilities for SMETS1 service completed in RY2018/19

Role + Capability	Supplier
IOC	S1SP_1: CGI IE
MOC	S1SP_3: Secure
FOC	S1SP_3a: Trilliant
	S1SP_3b: DXC (ANSO)
DCO (All Operating Capabilities)	DCO_b: Critical Software
	DCO_a: Capgemini (ANSO)

Not included within this year's price control submission are justifications for the SMETS1 Communication Service Providers (S1CSP_1 and S1CSP_2). [REDACTED] was the end of May 2019 and [REDACTED] has not yet been signed. These will be included in next year's submission. The commercial activities for the relevant service providers were not concluded within the RY18/19. The contract with [REDACTED], which supports 65% of the SMETS1 SIM cards, was signed on 20 May 2019. A justification for the respective contracts will be provided as part of the RY2019/20 price control submission.

8.2 SMETS1 Service Providers (S1SPs)

8.2.1 Overview of S1SP contract procurement strategy

The S1SP contracts are those negotiated with the SMSOs for the development of the potential IP5b solution and the potential negotiation of enduring service contracts. The SMETS1 service providers developing the S1SP capability are:

- **CGI / Instant Energy (S1SP_1)** – representing 19% of the SMETS1 meter population;

- **Secure (S1SP_2)** – representing **31%** of the SMETS1 meter population; and
- **DXC & Trilliant Networks (S1SP_3 & b)** – representing **46%** of the SMETS1 meter population.

The Application, Network, and Security Operations (ANSO) service provided by DXC works with the Trilliant head end system design. It is highly dependent on the structure of the Trilliant head end system, and therefore was part of the same procurement and negotiation strategy albeit Trilliant was a single source procurement whereas the ANSO service was procured competitively (The ANSO service is S1SP_3b in the RIGs).

Development and Request for Proposal (RFP)

Since mid-2017, DCC has worked with service providers to develop the software required to fulfil the requirements of the new S1SP components, as defined in section N of the SEC. In the initial phase of the programme, DCC pursued the development of Integration Paths (IP4 and IP5b) in parallel and with equal vigour. To assess the best integration path (**BEIS' Go/No-Go decision**) for each SMETS1 cohort and meet the delivery milestones agreed with BEIS, each potential S1SP entered into an agile development contract to uplift their existing solution to meet the DCC requirements.

As part of that development contract, each S1SP was required to submit a price (including cost-build up) and a programme plan to deliver the DCC-specified S1SP service. These data were used to inform BEIS's decision on the appropriate DCC integration path (IP4 vs. IP5b). The decision was included in the cost benefit analysis model and the assessment of delivery confidence.

In accordance with DCC's **Agile Development Methodology**, SMSO's were asked to recognise that should BEIS decide that IP5b as optimal, the requirements that would be developed would likely be used as the basis for an enduring solution. DCC therefore required SMSOs to develop the software in way that allows this development to be scaled into an enduring solution in an efficient manner and minimise on-going resource requirements and costs.

As part of the aforementioned RFP, DCC included the necessary licence requirements and SEC design principles to which an S1SP must comply. To ensure that the contracted S1SPs can meet these conditions, a requirements catalogue was compiled in conjunction with industry consultation.

The requirements typically have set out for S1SPs the:

- Base level of functionality DCC is obligated to provide, directed by BEIS;
- Compliance with Section G security controls;
- Service and system performance levels; and
- How S1SPs are expected to interact with the DCC to manage enduring operations.

Sourcing Approach for all S1SPs

A SMETS1 Sourcing Strategy (S1SS) was developed by the programme to determine the most appropriate route for sourcing each of the components of the service. The S1SS iteratively build on the IEPFR including the areas where there is still a degree of optionality. It also iteratively reflected progress in developing the SMETS1 High Level Design and in sourcing elements of the Total Supply Chain Model (TSCM). The S1SS identified approaches to deliver value-for-money through-life, using the following sourcing principles:

- Identify and apply any sourcing constraints and opportunities, including adherence to DCC Licence Conditions and impact of BEIS decisions;
- Identify the services and capabilities the SMETS1 Programme is seeking to source and by which route:
 - For competitively procured services, identify whether there is a competitive market for the supply of these services with sufficient interest in bidding; and
 - For services and capabilities sourced from existing SMETS1 or SMETS2 service providers, identify how competitive pressure be maximised.

Specifically, in relation to the S1SPs, the programme assessed the following sourcing options:

Option 1:

- Run a full contract negotiation with each SMSO for IP5b. This would be a fixed price solution for the complete service lifecycle (development and enduring) while seeking where possible a fixed price bid from a Software Provider for IP4. Option 2
- Separate the negotiation of the life cycle to maximise value of parallel option running;
- Run a contract negotiation for a time-and-materials contract (with some additional delivery incentives) so that the SMSO can start delivery of its Option 5b solution;
- Subsequently, run the contract negotiation with each SMSO for commitment to enduring agreement.

In evaluating both options, the SMETS1 programme considered that the option which provided the best value for money was option 2. Option 2 enabled DCC to carry out a strategy whereby progressing IEPFR IP4 in parallel meant that each SMSO felt under competitive pressure to offer a good deal for delivery of the changes to their service required to support SMETS1 and delivery of the competitive enduring agreements. This was considered an ideal lever to negotiate with considering that these were incumbents in the market place and therefore at a commercial advantage.

Each individual contract was also negotiated through both technical delivery elements as well as commercial contract components. Each contract is justified in the following sub-sections.

8.2.2 S1SP_1: CGI / Instant Energy (IOC)

Table 40: Cost breakdown for S1SP_1: CGI / Instant Energy (IOC)

[REDACTED]

[REDACTED]

DCC had several different phases and contracts in place with CGI Instant Energy (CGI-IE). The first was a software development agreement (SDA) to effectively prepare CGI systems to be ready for IP5b design provisions. SDAs include the build and test of the development work and excludes the run costs. In some cases, DCC continued using the existing SDA as a vehicle for delivering development work, where in other cases, the enduring contract covered both software development and the enduring running costs. Ultimately, the enduring agreements will drive costs in our forecasts. SDAs, therefore, are an effective contractual mechanism to begin work in an Agile Approach, while an enduring agreement is put in place.

At that time, not all details were complete, namely the testing approach and stakeholder engagement on IOC. These later requirements led to two sequential contract amendments.

DCC negotiated a permanent contract while the SDA was being delivered that would ensure service delivery for the next 12 years. This is the Enduring Contract and was approved by the DCC Board in April 2018. For each contract, DCC exercised different levers and commercial tactics to delivery value for money. These are explained below.

Initial Contract: Software Development Agreement (SDA) – IE

[REDACTED]

Due Diligence for the SDA

[REDACTED].

Enduring Agreement – IE

[REDACTED]

Due Diligence on the Enduring Agreement

[REDACTED]

Table 41: S1SP_1: Breakdown of costs of 12-year period

[REDACTED]

8.2.3 S1SP_2: Secure (MOC)

Table 42: Cost table for S1SP_2: Secure (MOC)
[REDACTED]

Scope

As the incumbent SMSO for [REDACTED] % of the market ([REDACTED]), Secure Meters provides an end to end (E2E) service to primarily small energy suppliers. The service for which energy suppliers pay one price per household per year, encompasses:

- A fully integrated SMSO service;
- A Communications Service Provider (CSP); and
- The devices (comms hubs and meters).

Failure to enrol this cohort would leave [REDACTED] % of the market unable to be interoperable with DCC, meaning consumers would not retain smart functionality on change of supplier. The impact of this could be for the Government to rule that those SMETS1 meters in the Secure cohort be replaced with SMETS2 meters at huge cost to industry and ultimately consumers. This put Secure in a strong market position, and ultimately Secure was one of the hardest contracts to finalise.

Secure provides an E2E per Household per Year cost in the market of [REDACTED]. This charge is mainly constructed by adding the SMSO element of the Service to the CSP charges. By disaggregating the charge into its component elements, DCC was able to negotiate the price based on its market intelligence of the SMSO price already negotiated with IE and the CSP price based on the negotiated price per SIM and data charges negotiated with Vodafone.

As a result, DCC' was able to use its market intelligence of the cost rather than us having sight of contracts which would verify this cost. Despite repeatedly asking for sight of the contracts, they were not shared with the DCC on the grounds of confidentiality. In addition to this, Secure charge overage charges beyond 300 KB of data and they charge UTRN costs, which is a text charge per message per device multiplied by the number of devices. We understand that the cost to industry of such charges is [REDACTED]. DCC was able to negotiate a price of [REDACTED] per household per year, with an increased data allowance of 1.5MB per comms hub per year. The [REDACTED] charge also included the UTRN costs.

The contract between Secure and DCC was approved by DCC Board and signed in March 2019, for a term of twelve years including two break points. The first is set to occur at 31 October 2021 then the next five years later. The service includes:

- Provision of Data needed to support Service Requests e.g. Read my Meter, Change my Tariff;
- Data Management;
- Security of the Platform;
- Service Desk;
- Provision of Prepayment and Credit Tariff;
- A Cellular Network and SIM Cards; • Service Management Capability; and
- Management Information.

Contrary to CGI/IE and Trilliant/DXC, no SDA has been put in place with Secure. Secure has agreed to fund its own development work. This was due to the low cost to Secure to carry out the work, but still represents a nominal cost savings to customers. Finally, it should be noted that Secure insisted that it would fund the development work itself in order to retain the Intellectual Property Right (IPR). Based on the CGI IE SDA work, estimated savings lie in the range of [REDACTED]

Due Diligence

[REDACTED]

Table 43: S1SP_2 breakdown of costs over 12-year period
[REDACTED]

8.2.4 S1SP_3a: Trilliant / DXC (FOC)

Table 44: Cost table for S1SP_3a: Trilliant / DXC (FOC)
[REDACTED]

Initial Contract: Software Development Agreement (SDA) – Trilliant

As for CGI-IE, an SDA was initially put in place between DCC and Trilliant to deliver the upgrade of its headend systems to be able to provide IP5b. IP5b uses existing SMETS1 meters, communications hubs and SMETS1 CSPs but also uses existing SMETS1 SMSOs (together with their existed HESs). This option involves the service request sent to the DCC by a user, a user service request being converted into an 'SMSO service request' (in the format of the current SMSO-user interface/language). As with their current arrangements, the SMSO would then convert the SMSO service request into a command to be sent to the meter. The SMSO will modify their interfaces to provide the function to translate the user service requests into the SMSO service requests. Trilliant provides a Head end System (HES) to two of the Big Six energy companies, British Gas (BG) and npower (NP).

The SDA was signed for an initial term until the date of issue of the Milestone Achievement Certificate for Milestone "Exit from UIT into Live". Over the course of RY18/19, the SDA between DCC and Trilliant networks has been subject to the following 2 variations/contract amendments incrementally increasing the initial cost by respectively [REDACTED] and then an additional [REDACTED].

Due Diligence for the SDA

[REDACTED]

Contract Amendments for the SDA

[REDACTED].

Enduring Agreement – Trilliant

The Enduring agreement between DCC and Trilliant was signed on 01 May 2018. The total cost of the enduring Perpetual Licence and Operational service for the Trilliant solution amounts to [REDACTED] for three years, or [REDACTED] over twelve years including incentive payments.

Due Diligence on the Enduring Agreement

[REDACTED]

Table 45: S1SP_3a breakdown of costs over 12-year period
[REDACTED]

8.2.5 S1SP_3b: ANSO for the Trilliant Head-End System (DXC)

Table 46: Cost table for S1SP_3b: ANSO for the Trilliant Head-End System (DXC)
[REDACTED]

The DCC SMETS1 Programme has been working with software development partners to develop new and upgrade existing software applications as part of the end-to-end DCC SMETS1 Service. DCC required a service wrapper (people, processes and systems) to manage the Trilliant SMSO capability. Unlike CGI (IE) which provides an integrated E2E service, Trilliant only provides the Head End System.

DCC issued an RFP to procure a service provider to use these software application(s) to implement, operate and maintain fully managed and delivered Application, Network and Security Operations service(s) (ANSO).

This service is using the same contract principles that were being used with CGI IE for their SMETS1 Service Provider (S1SP) enduring agreement, and with Trilliant for their Head End System software licence, support and maintenance enduring agreement.

Scope

The scope of the ANSO service can be described as follows:

Table 47: Scope of ANSO service

Service Area	Description	Included
Application Management Services (AMS)	Proactive management of software applications, including responding to event information from the applications, so as to ensure risks and issues are identified and mitigated, and normal operations are maintained, including to the defined service levels.	✓
Network Operation Centre (NOC)	Proactive management of the infrastructure, including responding to event information from the applications, so as to ensure risks and issues are identified and mitigated, and normal operations are, including maintained to the defined service levels.	✓
Security Operation Centre (SOC)	Proactive monitoring of the underlying infrastructure based on a protective monitoring implementation, to ensure abnormal events are identified and managed as security incidents until the risk is mitigated, including to the defined service levels.	✓
Hosting	Hosting for all the above services, including to the agreed service levels.	✓
	Design, configuration and management of a DCC-sourced Hosting service, including to the defined service levels.	✓
Service integration	Deliver a fully managed and outsourced service through: <ul style="list-style-type: none"> Integration of all the above services plus the relevant software applications through the full service lifecycle; Management of the Software Application Provider(s); and Management of the SMETS1 Communication Service Provider(s) (S1CSP(s)). 	✓

Due Diligence

8.3 Dual Control Organisation (DCO for IOC only)

8.3.1 Overview of DCO contract procurement strategy

During 2017 the DCO emerged as a required security control based on DCC’s assessment of security risk. SMETS1 meters do not support end-to-end cryptographic controls between the DCC User and the meter. Consequently, the DCO was identified as necessary to remove a single point of compromise to DCC’s service via an attack on an S1SP. The DCO will act as a secondary system in communications between the DSP and the SMSO/S1SP, and it will provide a security control to remove a single point of compromise for smart meters. The DCO has two key features:

- **Key Management:** by storing the keys required by devices to process messages, if an S1SP was compromised, the integrity of devices is maintained (and should DCO be compromised it has no way of communicating with smart devices as this is done by S1SPs); and
- **Detect and Prevent:** the commands sent by DCC Users are mirrored down to the DCO so if a compromised S1SP tries to create commands which have not been initiated by Users it can refuse to create the messages for the smart devices.

The DCO will be performed by two suppliers i.e.:

- A Software Development Provider, Critical Software, (CSW) who develops the functional requirements for the DCO service; and
- A service provider (Capgemini) that implements, operates and maintains a fully managed and delivered DCO ANSO service i.e. operational requirements.

Following a competitive bid during the summer of 2017 for an external software developer to develop and implement IEPFR option IP4, Critical Software was identified as the primary provider. In addition, to safeguard the development of both IP options, and as required by BEIS at the time, the decision was made to award a second contract to a contingency provider i.e. Capgemini. Subsequent to the programme's decision to not pursue IP4, variations were made and agreed to the SDAs with CSW and Capgemini to wind down the work on IP4, and to bring the development of the DCO software application and ANSO service into scope. This therefore drove the scope of the ultimate contract and the ensuing negotiations.

Sourcing Approach

In determining the preferred sourcing approach for the development and enduring contracts, the programme considered the following options:

- **Do nothing** – the DCO is an integral component service within the DCC SMETS1 Service. Without it will not be possible to deliver the Adoption, Migration nor business-as-usual operational SMETS1 service features;
- **Open Competitive Procurement of the DCO** – this option would result in delay to the SMETS1 programme and it was considered that additional price reductions would not be achieved over and above the partial open-book-accounting approach that has been adopted with [REDACTED] and [REDACTED]; **Negotiated single-source contract for DCO and Commissioning Party operations** – this was the preferred option. The DCC engagement team demonstrated that [REDACTED] are capable of jointly developing a proposal that meets the operational requirement and of working with Critical Software to deliver the DCO functions in a live operational environment. The real-world security issues are appropriate to delivery of these elements of the UK Critical National Infrastructure and have been examined through engagement of [REDACTED] and internal DCC security stakeholders [REDACTED]

The benefits of the proposed approach were that delivery of the DCO solution could take place more quickly than with an open procurement. Also, embarking on an open procurement for the DCO could have potentially resulted in similar or lower financial cost at the expense of a certainly longer timescale (arising from the procurement).

“Original” Procurement of a Software Development provider for SMETS1

As referred to above, the selection of a Software Development (Critical Software was the winning bidder for reference) provider for SMETS followed a competitive procurement process. In total a list of twelve bidders were identified as potential candidates, of which three (including the successful bidder) submitted a bid.

Evaluation

[REDACTED]

8.3.2 S1_DCOa – [REDACTED]

Table 52: Cost table for S1_DCOa – [REDACTED]

[REDACTED]

Scope and Delivery Timescales

Delivery timescales for the DCO ANSO service are as follows:

- DCC (Critical Software) to release code and documentation into PIT by 18 June 2018.
- Entry into User Test Services (UTS): 03 September 2018
- Entry into Transition to Operate Phase (TTO): 01-Nov-2018

- IOC: 30-Nov-2018

The achievement of the Milestone will be determined by [REDACTED] completing all activities as set out such that it is ready to enter into the formal IOC UTS phase, including but not limited to:

- Testing being successfully completed as defined within the SIT Test Approach and UTS Test Approach delivered in accordance with the methodology and governance as set out within this Statement of Work;
- The agreed defect mask being met;
- An agreed set of deliverables pursuant to Iterative Development Methodology successfully delivered (DCC to confirm the full list at least 8 weeks ahead of the milestone);
- Satisfaction of any other Exit criteria for SIT as defined in the SIT Approach document and Solution Test Plans;
- Satisfaction of any other entry criteria for UTS, e.g. completion of Technical Readiness Testing; and
- Satisfaction of any other entry criteria for TTO.

Due Diligence

[REDACTED]

8.3.3 S1_DCOb – [REDACTED]

Table 54: Cost table for S1_DCOb – [REDACTED]

[REDACTED]

Software Development Agreement (SDA) - [REDACTED]

A contract amendment was signed on 08 March 2018 to [REDACTED] software development agreement to include the development of the Dual Control Organisation (DCO) core service and production of the interface technical specifications that will enable third parties to develop connectivity with the core DCO:

- The core service is broadly the message crypto function and the protection of keys relating to the S1SP store of meter and message related keys; and
- The Interface Specifications are required by all IP Paths but initially this Variation Form only covers IPO3 and IPO8 (cohorts Aclara, Itron and Elster only).

In terms of the key deliverables, CSW was requested to develop:

- Working software to support the DCC DCO requirements for IPO3 and IPO8, tested and released into SIT;
- Interface Specifications to support development by third parties required to use the DCO; and
- Low Level Design (LLD) to support the solution.

As part of the contract amendment which was signed 8th March 2018, DCC proposed the following target dates based on the timescales as outlined as part of the Licence Condition 13 Plan which on approved on 17 October 2017:

- Mobilise project, update Project Plan and begin development: 16 February 2018
- Full draft of DCO interface specifications: mid-March 2018;
- Complete and ready to publish DCO interface specifications: end-April 2018; and
- Release of software into PIT/SIT: mid-June 2018.

The SDA with CSW was signed for a duration of an initial term of 24 months from the commencement date (4 Sept 2017).

8.4 SMETS1 Project Requests (PRs)

CR250 was initially raised in April 2017, to determine indicative pricing and timescales to enable BEIS to make an initial determination on the SMETS1 User Interface options outlined in the Initial Enrolment Feasibility Report (IEPFR). Prior to the start of the RY2018/19 (and therefore out of scope of this year's submission) DCC has subsequently issued a series of time and materials PRs to implement phases of the implementation as well as to better inform the final CRs. The cover, in particular, the following:

- High Level Designs (HLD) for the SMETS1 interfaces between the DSP, Service Users and SMETS1 Service Providers/SMSOs (**PR049**). HLDs are needed to size and scope work, which allows S1SPs to develop and price the work;
- HLDs for wider DSP application updates, updates to DUIS and MMC documentation, an HLD for new cloud environments as well as effort to develop an outline scope and plan for SIT (**PR050**); and
- Implementation and test of the design developed under PR050 and build of a subset of DSP environment enhancements (**PR052**).

The table below provides an overview of all of the material PRs that have been raised and completed over the course of the RY2018/19, and that have exceeded the materiality threshold of £500k. Table x also makes it clear which phase of the programme i.e. capability release each PR has been raised against. None of the CRs raised and completed over the course of the RY2018/19 exceeded the materiality threshold.

Table 55: Summary of all Change Requests and Project Requests in Part 3, exceeding the materiality threshold

CR / PR	Description	Service Providers Impacted	SMETS1 Programme-Activity
PR065 ²⁵	SMETS1 DSP System Integration Test for Initial Operating Capability (IOC) - This project request extends the scope of the SMETS1 work with the CGI DSP to cover preparation and execution of the SIT Phase (includes Solution Test Stage) for IOC	DSP	IOC
PR1017	Changes to the Licence Condition 13 Plan - In light of the LC13 re-plan, stakeholders were required to conduct an IA against the IOC timescales, as presented to the Service Integration Operations Board (SIOB) in July 2018.	DSP	IOC
PR1001	SMETS1 Migration - Design, Build & Test - This project covers the DSP design, build and test (including System Integration Test (SIT)) to support SMETS1 migration.	DSP	IOC
PR1004	SMETS1 DSP User Test Services (UTS) and Transition to Operate (TTO) for Initial Operating Capability (IOC) - This project covers the DSP activities to prepare for and deliver the User Test Services (UTS) phase and the Transition to Operate phase for the delivery of the IOC release for the DCC SMETS1 Service.	DSP	IOC
PR1020	SMETS1 SI Support for User Test Services (UTS) and Transition to Operate (TTO) for Initial Operating Capability (IOC): Increment - This project covers the DSP System Integration (SI) activities to prepare for and coordinate delivery of the UTS phase and TTO for the IOC release for the DCC SMETS1 Service.	DSP	IOC

²⁵ The rationale for PR065, and associated costs, was justified as part of the RY17/18 price control submission.

PR1047	- SMETS-1 MOC System Integration Support. This replaces the previously issued PR1006 and explicitly covers the SI activities to prepare for and coordinate delivery of the PIT and SIT phase for the MOC release for the DCC SMETS1 Service.	DSP	MOC
--------	--	-----	-----

Amongst the PRs, PR1017 (SMETS1 IOC Replan Impact) was the umbrella Statement of Work for all work required to complete the DSP SMETS1 IOC phase in accordance with the revised IOC plan. It references the individual changes that form part of the scope, for example PR1004 and PR1001. The scope of supply under this change is focused on a continuation of SIT activity after the end of August 2018 which was the period of cover requested by DCC under PR065.

PR1017 included up front rates for all PRs and an umbrella set of commercial terms. Therefore, the commercial terms for the rest of the PRs are the same as for PR1017. This was done to flow down a negotiated set of terms to a large number of other contracts. It saved considerable time. This was more efficient than negotiating separate terms for individual PRs. In general, the price may fluctuate from the original estimates based on increases in scope.

For the purposes of the submission, we have justified PR1017 first to explain the commercial terms, as they then filter down to the other PRs.

8.4.1 DSP – PR1017

Drivers to PR1017

The delivery of the SMETS1 service was initially being progressed in accordance to the original LC13 plan, as approved by BEIS on 17 October 2017. The original LC13 plan scheduled the go live of the IOC capability at end November 2018 and MOC at end March 2019. Despite good progress being made against this plan, a number of issues led to the acknowledgment from both BEIS and DCC that the timelines in this plan approved could no longer be maintained. BEIS subsequently instructed DCC to undertake a re-plan. PR1017 is regarded as the overarching PR for all the work that is required to complete the DSP SMETS1 IOC phase in accordance with the revised plan for the delivery of IOC. In summary, this PR covers the assessment of costs on the DSP that are required for the extended IOC period.

PR1017 was raised by DCC on 06/08/2018 on the Change Management System and issued to DSP shortly thereafter. Originally the Statement of Work for PR1017 was submitted individually. Subsequently it was agreed that it was more efficient to group PR1017, PR1001, PR1004, PR1020 together. PR1020 was then removed from this group and priced separately as the work related to DSP as Systems Integrator. PR1017 was the overarching PR for the re-plan with PR1001, PR1004 sitting underneath it.

Scope of the change / project

The scope of PR1017 can be summarised as follows:

- **SIT in the SIT-B environment:** Under the initial LC13 plan, IOC SIT was due to complete at the end of August 2018. The re-plan extended the integration activities beyond that period. Impact Assessment covers the extended and rescope SIT activities for IOC only;
- **Support for DCO Early Integration Testing:** The SI will work with Capgemini to execute tests against the DSP and S1SP solutions. DSP will support this testing by ensuring that the DSP environment remains available and will assist with any investigations as appropriate;
- **Early Integration Environment availability:** The availability of the DSP AWS environment for EIT (built under PR052) will be extended under this Impact Assessment to run between September 2018 and the end of May 2019;

- **Test Support Functions:** continued support will be required from the DSP to align with the extended timescales incl. the triaging and investigating of issues, the deployment of builds, and infrastructure support;
- **Pre-go live infrastructure availability:** The shift in the go live date meant that it was necessary to continue to charge pre-go live hosting and maintenance costs for SMETS1 infrastructure components. This is a shift of cost from the operational period to the setup period rather than an additional cost;
- **Integrated Non-Functional Testing:** An allowance has been made to provide resources to take part in some integrated non-functional testing with other IOC Service Providers. Testing is predicated on the availability of an integrated environment that is suitable to perform such testing; and
- **Programme Management, Assurance and PMO Costs:** A proportion of the cost of maintaining the implementation programme needs to be allocated to the extended IOC period. The full cost will be shared with SMETS1 MOC/FOC activities and the next major release. This is an extension (not overlap) of costs included under PR052 and PR065.

Consideration of options and chosen scope

PR1017 was considered the optimal option for initiating the assessment of costs that were linked to the work that was required to complete the DSP SMETS1 IOC phase in accordance with the revised plan for the delivery of IOC. It also allowed negotiations on the final price of the associated CR to proceed in parallel. PR1017 furthermore allowed DCC to mitigate against the risk of ensuring timely delivery of IOC, which is key to the overall delivery of the SMETS1 service. As is standard practice, the value of the Project Request will be deducted from the final agreed price of the associated CR on issuance of the CAN.

Due diligence

[REDACTED]

8.4.2 DSP – PR065

Drivers to PR065

DCC is running a programme of work that will enable integration of the existing deployed SMETS1 smart meters with the DCC SMETS2 based systems. DCC raised CR250 in April 2017 which outlined a number of potential solutions. DSP provided two separate Full Impact Assessments covering two different options, in October and November 2017. DCC and BEIS elected to proceed with the “Option 1” solution on 15th December 2017. This involves the existing DSP SMETS2 solution being modified to issue Service Request Variants (SRVs) to SMETS1 meters via SMETS1 Service Providers (S1SPs).

DCC has also issued a series of Time and Materials Project Requests to implement elements of the original scope of CR250:

- PR049 covered High Level Interface Designs, in particular looking at the SMETS1 interfaces between the DSP, Service Users and SMETS1 Service Providers/SMSOs.
- PR050 covered the High-Level Design for wider DSP application updates, updates to DUIS and MMC documentation, a High-Level Design for new cloud environments and effort to develop an outline scope and plan for Systems Integration Testing.
- PR052 covered the implementation and test of the design developed under PR050. It was intended to enable the DCC to progress the SMETS1 Programme in advance of a Full Impact Assessment being agreed.

This PR065 covers the next phase of work which is centred on System Integration Test (SIT) related activity for Initial Operating Capability (IOC). It also covers build of the SMETS1 infrastructure components for the environments that were not covered under PR052.

As the SMETS1 IOC single S1SP was not ready to start SIT in April 2018, this PR065 Statement of Work (SoW) includes effort for an initial SIT phase of the testing of DSP-only functionality in advance of the main IOC phase. This approach enabled faster identification of the root cause of test failures when other parties joined SIT during the SMETS2 Release 1.3 and R2.0 SIT phases. As a result, our solution for PR065 is optimised to resolve issues faster thereby reducing the cost of delivery

Scope of the change / project

The scope of PR065 can be summarised as follows:

- **System Integration Testing in the SIT-B environment:**
 - Execution and associated support of the initial DSP-only phase of System Integration Testing;
 - System Integration Test for the Initial Operating Capability (IOC) phase which includes integration with a single S1SP, up until the end of August 2018. The scope of testing is defined in the SMETS1 SIT Approach document [v1, ref [7]] and the Heatmap (v1, ref [6]);
- **Build of the remaining SMETS1 environment components:** Progress SMETS1 infrastructure upgrade of Production, DR, SIT-A, UIT-A and UIT-B during the period covered by this Statement of Work;
- **Hosting and maintenance** of all SMETS1-related environments and components built under PR052 and this PR065;
- **Environment upgrade completion, deployment and release management activities** by the PIT **Environments** and Security teams;
- **Programme Management:** Programme Management and Operational Support aligned with period of System Integration Testing covered by this Statement of Work.

Consideration of options and chosen scope

PR065 was considered the optimal option for initiating the assessment of costs that were linked to the work that was required to complete the SIT activity for the IOC phase. It also allowed negotiations on the final price of the associated CR to proceed in parallel. This was because the initial intent was to contract this work as fixed price and to drive cost savings by contracting for a set period of time. However, as the programme requirements were changing at pace, it became difficult to agree a fixed price for this work and the decision was taken to retain the flexibility of a Project Request. Had a CAN been agreed then the value of the PR would have been deducted. However, in this case it was not.

PR065 furthermore allowed DCC to mitigate against the risk of ensuring timely delivery of IOC, which is key to the overall delivery of the SMETS1 service. As is standard practice, the value of the Project Request will be deducted from the final agreed price of the associated CR on issuance of the CAN.

Due diligence

[REDACTED]

8.4.3 DSP – PR1001

Drivers to PR1001

Along with delivery of interoperable data and communications services for SMETS1 meters, DCC also need to deliver a Transition and Migration solution which enables Energy Suppliers to enrol existing SMETS1 Smart Meter Systems into DCC's SMETS1 service. This means SMETS1 device data from Supplier and/or their existing SMSO need to be migrated to DCC - specifically to DSP and S1SP(s).

PR1001 covers the implementation and SIT of the DSP SMETS1 migration solution. The implementation was due to be completed in November 2018 and introduced to a later phase of SIT with test execution commencing in February 2019.

DCC raised CR294 on 05 January 2018 to elicit a Preliminary Assessment from DSP in relation to a number of options for SMETS1 migration. In the intervening period, the Transition and Migration Approach Document (TMAD) has been developed for the Initial Operating Capability release (IOC) and is now undergoing consultation. The TMAD supersedes the migration options that were described in CR294 and DCC is now undertaking design and development with all service providers involved in delivery of the IOC solution based on the current draft of TMAD. DCC anticipates revising CR294 to cover the ongoing operation of the migration solution including requirements for performance and capacity, therefore capacity and performance requirements provided in this PR are given for guidance and may be superseded by CR294.

Scope of the change / project

The SMETS1 migration approach described in the TMAD requires DCC to accept files from external parties (SMSOs), validate those files against the rules set out in TMAD and then establish communication with, test and commission (via a new Commissioning Party) the Devices that are listed in those files. In order to discharge these SEC Obligations, we require DSP to:

- Receive certain files (Migration Common Files) from the SMETS1 Service Providers who initially receive the files from the SMSOs, undertake a sub-set of the required validation checks against the Registration Data and the Smart Metering Inventory and return a Migration Common Validation File to the S1SP.
- Make changes to the SMKI Repository such that SMKI Certificates that contain the new migration Remote Party Roles can be added and searched for.
- Make changes to the DSP Access Control rules so that Service Requests received from the Commissioning Party is able to fulfil its role in commissioning SMETS1 Devices (disapply certain validation checks and apply new specific validation checks).

As a result, the scope PR1001 can be summarised as follows:

- **Functional Implementation:** The Implementation team will perform design, development, system test, performance test and FAT activities as part of a single iteration to make the new functionality ready for formal SIT;
- **Infrastructure uplift:** Procurement, installation and configuration of the additional infrastructure component required for the Production and Non-Production environments;
- **SIT:** Additional SIT will be required to validate the functionality within the SIT-B Environment. This is testing beyond the scope of supply as defined in PR065 or PR1017 and will take place in line with the wider revised IOC plan; and
- **Application Management Support (AMS):** Establishing expertise in the AMS team in preparation for stages following SIT, service readiness and go-live.

Consideration of options and chosen scope

PR1001 is considered the optimal option for covering the implementation and SIT of the DSP SMETS1 migration solution. It also allowed negotiations on the final price of the associated CR to proceed in parallel. With the migration solution being critical to the delivery of the SMETS1 service, PR1001 was raised as a means of mitigating the risk of timely delivery of IOC. As is standard practice, the value of the Project Request will be deducted from the final agreed price of the associated CR on issuance of the CAN.

Due diligence

[REDACTED]

8.4.4 DSP – PR1004

Drivers to PR1004

This PR covers the DSP activities to prepare for and deliver the User Test Services (UTS) phase and the Transition to Operations (TTO) phase for the delivery of the IOC release for the DCC SMETS1 Service.

DCC sought to be clear that there was no overlap between PR1001 and PR1004. PR1001 covers Implementation and System Integration Test activities for Migration. The scope and costs of PR1001 are independent of PR1004. No costs for Migration UTS and TTO are included in this PR1004 response. It is assumed that the Migration UTS phase will be covered under CR279 and that there are no additional requirements for Transition to Operations associated with the migration functionality as the migration strategy, execution and associated support requirements will be covered through a separate project. However, due to changing requirements, we have not proceeded with the CR at this time.

Scope of the change / project

All User testing of the DCC SMETS1 functionality will be conducted in the UIT-B environment. The UIT-B environment will be enhanced to include:

- an instance of a single S1SP for IOC;
- an instance of the new DCO; and
- a new tactical DCC lab for SMETS1 IOC testing.

The second major element of PR1004 is Transition to Operations (TTO). In line with recent major releases, SMETS1 IOC TTO is expected to consist of:

- Business Acceptance Testing (BAT): This involves supporting DCC in its end-to-end testing of its operational processes;

Operational Acceptance Testing (OAT): This encompasses non-functional requirements testing, performance testing, BCDR testing and security testing. It validates that the system is stable and robust.

- Acceptance into Service (AIS): This involves supporting DCC in the formal gate processes that assure readiness; and
- Environments Uplift: This covers deployment of SMETS1 IOC to the SIT-A, UIT-A and Production/DR environments, including the detailed planning, environment uplift and regression testing.

The relationship between the various CRs and PRs can be confusing. Therefore, we have also included what is out of scope to create context. The following are out of scope:

- BAU support for TPs during SMETS1 IOC UTS. This is covered by CR279.
- Finalisation of the DCC Service Management System and procurement of Production Remedy licences is to be covered under PR052. DSP continues to work with DCC on evolving requirements and data setup.
- SMETS1 Migration UTS support. This is covered by CR279.
- Support for SMETS1 Migration TTO as this will be covered by a separate Change Request.
- Pre-go live infrastructure availability as this is covered by:
 - PR065 - completion of set-up of the SMETS1 infrastructure
 - PR052 – completion of message encryption functionality.
 - CR101n (aka PR1017) - pre-go live hosting, maintenance and support costs for SMETS1 infrastructure until end of May 2019.

Consideration of options and chosen scope

PR1004 is considered the optimal option for the preparation and delivery of the SMETS1 DSP UTS and TTO for IOC. Given the critical nature of these testing phases for the overall delivery of the programme, it should be noted that PR1004 was raised as a means of mitigating the risk of timely delivery of IOC. Once requirements stabilise, DCC will likely move this forward as a CR.

Due diligence

[REDACTED]

8.4.5 DSP – PR1020

Drivers to PR1020

The objective of this PR is to extend the current scope and timeline of PR058 beyond that in place as at 25 June 2018. Through the course of delivery of PR058 the full extent of the support DCC SMETS1 IOC programme needed from the System Integrator to deliver the revised go live requirement became clear. In addition, as of November 2018 a revised timeline (LC13 Plan) for the delivery of the IOC cohort was published for consultation.²⁶

Scope of the change / project

The scope of activities under PR1020 can be summarised as follows:

- Meter migration solution delivery, planning and execution;
- Orchestration of the planning and execution activities necessary to uplift the IOC Production environment, in line with the CGI SI role;

²⁶ DG.0455 PR1020 SMETS1 IOC SI Extended Scope SoW v2.3.docx

- Supporting the achievement of the Operational Governance outcomes necessary to ensure “Go Live” approval for the IOC solutions;
 - Preparation and execution of Solution Integration Testing with the Dual Control Operator;
 - Preparation for, and execution oversight of, User Testing including development of necessary testing overview documentation and the establishment of the necessary integrated proving environments;
 - Planning and leading the activities necessary to enrol and adopt the MDS / E.ON / Honeywell meter cohort;
 - Management and maintenance of device lists - Pending Product Combination List (PPCL), Pending Product Combination (PPC) and the Common Product List (CPL);
 - Support for the establishment of DMCT (PPCT); and
- Scoping and successful delivery of the SMETS1 Interoperability Demonstration to BEIS in Nov 2018.

PR058 was raised in November 2017 and approved in December 2017 to procure System Integration services in support of proving Initial Operating Capability (IOC) scope and capability through System Integration Testing (SIT). PR1005 was subsequently raised to procure additional System Integration services, beyond the existing scope of PR058 for the period July and August 2018 but was later withdrawn by DCC. PR1020 therefore extends the time period and scope of PR058 to cover the period from 25 June 2018 to end May 2019 in line with the revised LC13 plan dates for IOC.⁴³

Consideration of options and chosen scope

PR1020 was considered the optimal option for extending the scope and timeline of PR058, which was needed for the procurement of the SI services that were required to support the proving of the IOC scope and capability through SIT. To prevent double counting, the value of the PR will be deducted from the final agreed price of the associated CR on issuance of the CAN.

Due diligence

[REDACTED]

8.4.6 DSP – PR1047

Drivers to PR1047

DCC is implementing a programme of work to enable integration of the existing deployed SMETS1 smart meters with the DCC SMETS2 based systems.

PR1006 was raised in June 2018 to procure System Integration services in support of proving and implementing Middle Operating Capability (MOC) scope and capability. PR1006 was not progressed to approval, however, two Letters of Instruction against its original scope (and the subsequent mobilisation to support Final Operating Capability (FOC)) were issued by DCC in order to cover SI costs incurred on both MOC and FOC scope delivery to end Jan 2019. Note that SI costs for MOC and FOC are provided for in two separate PRs: MOC in PR1047 and FOC in PR1045.

At initial issue PR1006 was intended to support take on of the [REDACTED] SMETS1 devices, the scope of MOC has subsequently been revised (in line with the amended implementation sequence implied in the Nov 2018 update to the LC13 plan) to cover the [REDACTED] devices that are connected to MDS, along with [REDACTED] connected to [REDACTED].

DSP's previous PR1006 version 3 response is reissued as this PR1047 Statement of Work to procure the full extent of the System Integration services required to integrate and implement the MOC solution. PR1047 version 1.0 therefore covered the time period and scope of MOC implementation for the period to end August 2019 in line with the revised LC13 plan dates for MOC.

Scope of the change / project

In summary, the objective of PR1047 is to ensure successful preparation for, and subsequent execution, of MOC integration testing and, thereafter, the implementation of the MOC solution into live operation. The scope of activities under PR1047 are:

- SI Programme Management & Governance;
- Development and progressing of the MOC Integrated Implementation Plan to LC13 requirements;
- Establishing the connectivity of S1SP Early Integration participants with the DCC Cloud (EIT) environment;
- Supporting and co-ordinating Early Integration Test activities for the S1SPs in the DCC Cloud (EIT) environment;
- Establishing the connectivity of SIT participants with the DCC SIT-B environment;
- Environment Management & Proving of the integrated environments to support MOC;
- S1SP Product Release & Configuration Management into the integrated environments;
- Co-ordination for Device-related issues for MOC;
- Support for DCC in defining the Eligible Product List (EPL) and Common Product List (CPL) for MOC;
- Testing Assurance and Testing MOC SIT;
- Testing Requirements Management for MOC SIT;
- MOC Meter migration solution delivery, planning and execution;
- Orchestration of the planning and execution activities necessary to uplift the MOC Production environment, this is in line with the CGI SI role and responsibility precedent established on the SMETS2 Programme;

Supporting the achievement of the Operational Governance outcomes necessary to ensure “Go Live” approval for the MOC solutions; Preparation and execution of MOC Solution Integration Testing with the Dual Control Operator;

- Preparation for, and execution oversight of, User Testing including development of necessary testing overview documentation and the establishment of the necessary integrated proving environments;
- Planning and leading the activities necessary to enrol and adopt the Secure meter and MDS cohorts;
- Management and maintenance of MOC device lists - Pending Product Combination List (PPCL), Pending Product Combination (PPC) and the Common Product List (CPL);
- Support for the establishment of DMCT (PPCT) specific to MOC devices;
- Development and management of meter issues resolution process specific to the MOC cohort;
- Oversight for, and support to the documentation of, the MOC Solution integration baseline;
- Oversight and progressing of MOC Non-Functional testing requirements execution and evidencing.

Consideration of options and chosen scope

PR1047 was considered the optimal option in ensuring the successful delivery of integration testing for MOC as well as the implementation into live operation of the MOC solution. Raising this PR allowed negotiations on the final price of the associated CR to proceed in parallel. Given the importance of this PR to the successful delivery of the MOC, PR1047 was raised as a means to mitigate the risk of not delivering MOC in time. As is standard practice, the value of the Project Request will be deducted from the final agreed price of the associated CR on issuance of the CAN.

Due diligence

[REDACTED]

Appendix A – R2.0 Telefonica and Arqiva: Supplementary Reconciliation of CANs to CRs

This section provides clarity on which CANs were signed for the R2.0 CRs and clarifies which CANs were pure financing CANs for milestones.

Please note that the numbers in these tables do not include financing charges, therefore will be slightly lower than the total costs shown in the RIGs.

Arqiva – Cost Summary

These tables explain the financing interim payments by CR for all CRs applicable to Arqiva. This is the most complex arrangement because of the large number of interim financing payments. The tables below lay out the interim cost per milestone for each CR, as well as a second table to show the associated financing structure.

CR253 – Covered in this PC submission

Table 59: Arqiva CR253 cost summary

[REDACTED]

CR274 – Covered in this PC Submission

Table 60: CR275 Arqiva cost summary

[REDACTED]

CRs 301, 1005, 1034, 1039, 1046

CRs 301, 1005, 1034, 1039, 1046 up to the end of February 2019:

Table 61: Cost summary Arqiva CRs 301, 1005, 1034, 1039, 1046

[REDACTED]

CR1046

CR1046 extension for the month of March 2019, final values are material for the PC for RY2019/20.

Table 62: Cost summary Arqiva CR1046 (extension for March)

[REDACTED]

Further detail on CR1034 for CSP (N) in section 3.11.

Telefónica – Finance Summary

This sub-section breaks down the finances by CR for all CRs applicable to Telefonica. This is the most complex arrangement because of the large number of interim financing payments.

Finally agreed CR amounts are subject to the nominal split 55%/45% as between Central/South to replicate the split in the respective contracts. For each agreed CR there are two CANs, for Central and South. The split is not shown for clarity.

CR253

Covered by this PC submission:

Table 63: Cost summary Telefonica CR253

REDACTED]

CR 274

Table 64: : Cost summary Telefonica CR274

REDACTED]

CRs 301, 1034

Table 65: Cost summary Telefonica CRs 301, 1034

REDACTED]