

Conclusions on 4G Transition Strategy, following collaborative workshops

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1. Background

The Communications Hubs and Networks Programme (CH&N) is a Data Communications Company (DCC) initiative geared towards defining and delivering future-proof Communications Hubs & Networks with an efficient supply chain and a targeted longevity of at least 15 years. To ensure this longevity of Smart functionality DCC is developing a solution to allow for the introduction of new Communications Hubs (CHs) which use the 4G network. To achieve this, DCC established the CH&N Programme to assess development and implementation options for a 4G solution.

Section F13 of the SEC places an obligation on DCC to produce a Network Evolution Transition and Migration Approach Document (NETMAD). DCC is required to develop and consult on a first version of the NETMAD. This document will include, amongst other things, any rules required to support the transition to and implementation of the DCC 4G service.

In its conclusions on the revised delivery plan for the CH&N Programme¹, DCC proposed a number of milestones in its LC13B milestone table (see Appendix A). One of which is 'conclusions of engagement on 4G Transition' with a milestone date of 30 June 2023, also included in the Joint Industry Plan where it is referred to as JM_5030, which will help to inform the proposed content of the NETMAD.

DCC has been engaging with Energy Suppliers since 15 February 2023 on a transitional strategy through a series of workshops, reviews and engagement with the SEC Panel and subcommittees. This document comprises DCC's conclusions on this engagement thus far in line with its LC13B milestone.

In preparation for the workshops, DCC identified various subjects that were of importance for the transition to 4G Comms Hubs. Workshop engagement identified additional areas of interest.

This document reflects the areas that were discussed including pertinent details of these discussions. The document also sets out the conclusions that DCC reached with participants in the workshops. The conclusions set out in this document will be developed into proposed regulatory rules to be included in the NETMAD which will be the subject of consultation.

Following publication of this conclusions document, DCC will follow the process set out in Section F13 of the SEC to develop a proposed NETMAD document, which will include publication of a consultation on the proposed content.

DCC has set out a number of sections in this conclusions documents on various subjects that were discussed in the workshops. These sections are as follows:

- Ongoing Commercial Consideration aspects of ordering and forecasting that are currently unable to be finalised as they are subject to ongoing commercial discussions with DCC's service providers
- Ordering and Forecasting the ordering and forecasting discussions and proposals for 2/3G Comms Hubs and 4G Comms Hubs during the transition period, but excluding ordering for Initial Pallet Validation (IPV)

¹ Conclusions on the revised delivery plan for the CH&N Programme | Smart DCC

- IPV all aspects and considerations relating to IPV that were discussed in the workshops including ordering 4G Comms Hubs for IPV
- Mass Roll Out Confidence a consideration that was raised by participants in the workshop that falls outside of IPV
- Reporting The reporting approach for the transition period
- Mechanisms for disabling transitional provisions and activation of enduring obligations content to be incorporated in the NETMAD that have been raised by the Department for Energy Security and Net Zero.
- Appendix A The LC13B milestone table published by DCC that shows the high-level milestones for delivery of the 4G CH&N Programme.

2. Ongoing Commercial Considerations

In the final customer engagement workshop prior to this conclusions document being published, held on Tuesday 27th June 2023, DCC informed all stakeholders that several items will need to remain open and require further engagement to document key positions. DCC discussed its proposals in the workshop but as these have not been commercially concluded at this time, DCC is not including the complete details in this document in order to avoid confusion. However, in this document some views have been set out on Forecasting and Ordering that DCC does not believe will be impacted by the commercial considerations.

All items related to IPV were completed and DCC is concluding on these aspects of engagement ahead of NETMAD development. However, as commercial engagement with VMO2 is ongoing, some key items for Forecasting and Ordering remain open. DCC understands that these details are crucial for DCC Customers to make informed decisions in relation to forecasting and ordering required for the next stage of development of the regulations. Following publication of this conclusions document, DCC will continue engagement with DCC Customers and all stakeholders to close the remaining open items.

All key items discussed during the engagement are captured in the tables below, with an indication whether they are complete or remain open into the next stage of engagement. These items and the discussions are set out in the body of this document.

	Discussion Item	Current Status
1	Entry Criteria	Complete - Key concepts and current position documented
2	IPV Exit Criteria	Complete - Key concepts and current position documented
3	IPV Minimum Exit Criteria	Complete - Key concepts and current position documented
4	Exit Criteria	Complete - Key concepts and current position documented
5	Mass Rollout Confidence	Complete - Key concepts and current position documented

Initial Pallet Validation – Items Discussed

6	Service Management Post 4G Mass Supply	Complete - Key concepts and current position documented
7	Operational Confidence Post IPV	Complete - Key concepts and current position documented
8	Network Coverage Drop Scenario	Complete - Key concepts and current position documented
9	Acceleration Framework	Complete - Key concepts and current position documented
10	Addition of Meter Firmware Upgrades	Complete - Key concepts and current position documented
11	4G Early Deployment Group	Complete - Key concepts and current position documented
12	Incident Management	Complete - Key concepts and current position documented
13	Potential Supporting Confidence Activities	Complete - Key concepts and current position documented
14	IPV Comms Hub Ordering	Complete - Key concepts and current position documented
15	IPV Governance	Complete - Key concepts and current position documented
16	9 Week IPV Duration	Complete - Key concepts and current position documented
17	Incremental Firmware Versions	Complete - Key concepts and current position documented
18	IPV Incident Masks	Complete - Key concepts and current position documented
19	Set Out Reporting	Complete - Key concepts and current position documented
20	Use of Adapters as Exit Criteria	Complete - Key concepts and current position documented
21	Dual Fuel	Complete - Key concepts and current position documented
22	IPV Comms Hub Ordering – Prorate	Complete - Key concepts and current position documented
23	Coverage Checker Transitional Arrangements	Complete - Key concepts and current position documented
24	SMETS1 Replacements	Complete - Key concepts and current position documented
25	Maintenance	Complete - Key concepts and current position documented
26	Mesh Replacement during	Complete - Key concepts and current position documented
27	Additional IPV Hub Orders	Complete - Key concepts and current position documented
28	IPV Unhappy Path Discussion	Complete - Key concepts and current position documented

 Table 1 - Initial Pallet Validation - Items Discussed

Forecasting & Ordering – Items Discussed

	Discussion Item	Current Status
29	Roles and Responsibilities	Complete - Key concepts and current position documented

30	Order Management System	Complete - Key concepts and current position documented
31	Forecasting and Ordering	Complete - Key concepts and current position documented
32	Key Principles to Manage 2/3G to 4G Cutover	Complete - Key concepts and current position documented
33	End of Supply of 2G/3G Comms Hubs	Open Item, DCC to provide further feedback and continue future engagement
34	Cellular Network Coverage	Complete - Key concepts and current position documented
35	Environmental Considerations	Complete - Key concepts and current position documented
36	Mechanisms to Support Transition Management Flexibility from 2G/3G to 4G	Open Item, DCC to provide further feedback and continue future engagement
37	2/3G Returns at Volume	Complete - Key concepts and current position documented
38	DCC establishing costs for the proposed solutions with CSP C&S VMO2	Open Item, DCC to provide further feedback and continue future engagement
39	Minimum 2/3G Orders	Open Item, DCC to provide further feedback and continue future engagement
40	2/3G Refurbish Capacity	Open Item, DCC to provide further feedback and continue future engagement
41	2/3G Residual Supply	Open Item, DCC to provide further feedback and continue future engagement
42	Coverage Checker Transitional Arrangements	Complete - Key concepts and current position documented
43	4G Manual Ordering Process	Complete - Key concepts and current position documented
44	Bulk Returns	Complete - Key concepts and current position documented

Table 2 – Forecasting & Ordering – Items Discussed

3. Coverage Checker

Wide Area Network (WAN) coverage is required for a Communications Hub to operate. To provide Energy Suppliers with the ability to check whether a specific premises is able to connect to the WAN and thereby have smart connectivity, DCC has developed a tool that allows Energy Suppliers to check 4G coverage. This tool is the coverage checker which can be queried via the SSI or using DUIS Service Request Variant (SRV). The Coverage Checker will not be available in December 2024 and an interim solution will therefore be required.

The Coverage Checker has been discussed in a number of workshops and DCC has developed its proposed approach on the Coverage Checker in line with these discussions. It is clear from the discussions in the workshops that the Coverage Checker is a vital component for Energy Suppliers to establish their strategy for installing Comms Hubs during the IPV period as well as for the transition to 4G once the mass volume decision has been made.

The current Comms Hub & Network programme plan requires that the Coverage Checker capability will be updated to provide Energy Suppliers the ability to query the Coverage Checker by postcode to determine all available coverage at a given location.

DCC intends to make a full version of the Coverage Checker available prior to the go live of the 4G service on 12 December 2024 However, in the workshops, Energy Suppliers made it clear that they require access to a version of the Coverage Checker as soon as possible.

DCC has discussed this with its service providers and as part of the CH&N programme DCC will provide an early insight into 4G Coverage Data to support Energy Suppliers in their planning activities to prepare for the IPV period and 4G service go live. DCC intends to provide a database that will set out coverage at a postcode level of detail in September 2023 and this will reflect the coverage as it will exist from the start of the IPV period onwards (December 2024). This coverage database will be able to be queried on a postcode basis, but until the Coverage Checker goes live on 2 December 2024, it will not be possible check coverage using BAU processes.

Once 4G goes live (after the first Live Services Criteria Decision) on 2 December 2024, the Coverage Checker will be available for use by Energy Suppliers in line with current BAU processes. For both IPV and BAU, Energy Suppliers will be able to query coverage as detailed above to ensure the installation location has appropriate coverage to commence the installation of a 4G CH.

DCC presented this to the workshops and there were no objections to this approach.

4. Forecasting and Ordering

4.1. Introduction

The rules in the SEC regarding the forecasting and ordering of Comms Hubs support DCC in planning the production and delivery of Comms Hubs to Energy Suppliers (via the DCC supply chain). Accurate forecasting and ordering is key to providing a sufficient supply of Comms Hubs to ordering parties whilst also minimising the risk of excess stock and therefore wastage, along with mitigating the risk of a shortfall in Comms Hubs.

Forecasting and ordering is a vital aspect to the 4G rollout and DCC is of the view that the following are important transitional elements that should be addressed:

- The point when Energy Suppliers can forecast and order 4G Comms Hubs, and the process / timeframes for doing so (if different during transition compared to the enduring rules)
- The manner in which 4G Comms Hubs will be forecast and ordered prior to the availability of the 4G OMS system
- The mitigation options that are available to ensure an adequate supply of hubs in the event of a delay to the 4G Comms Hub & Network programme

• The continuation of the timeframe and process for Energy Suppliers to order 2/3G hubs (i.e. aside from any potential ongoing residual capability).

DCC provides details of forecasting and ordering for IPV in the IPV section of this document.

4.2. Roles and Responsibilities

The Roles and responsibilities of DCC and SEC parties in the forecasting and ordering process are important and DCC is of the view that the following principles will apply:

- In accordance with the current SEC obligations, Energy Suppliers, as Service Users, will remain responsible for forecasting and ordering of the Comms Hubs they require to meet their roll out obligations;
- DCC shall provide the necessary tools to support the transition to the ordering of 4G Comms Hubs and the end of mass ordering of 2G/3G Comms Hubs;
- DCC will continue to provide the necessary tools and services to support the end-to-end management of 2/3G Comms Hub Supply and managing 2/3G Comms Hub returns until these processes are no longer required;
- DCC will provide reporting during the transition period to enable optimal decision making and assist Energy Suppliers through the transition period e.g. status reporting against the planned volume manufacturing date for 4G CHs. DCC will also continue to provide reports currently produced e.g. stock level, burndown;
- Following conclusion of this engagement DCC will continue engaging with appropriate SEC Panel Subcommittees and Energy Suppliers through to successful transition to mass 4G Comms Hub supply. This engagement will also align to regular engagement with Energy Suppliers on a continuing basis at the Supply Chain Working Group for all critical matters related to the Comms Hub supply chain.

4.3. Order Management System (OMS)

Service Users will continue to use the current OMS solution to forecast & order 2/3G Comms Hubs. In the workshops it was discussed that DCC will continue to use the required 2/3G systems and processes as long as DCC is required to process returns. Comms Hub returns are currently managed outside of OMS.

DCC is in the process of procuring a 4G Comms Hubs OMS which is likely to be used for 4G Comms Hub forecasting and ordering post go-live as well as the returns of 4G Comms Hubs.

The earliest point from which Suppliers will be able to forecast 4G Comms Hubs is planned to begin in October 2024 for orders in April 2025 and deliveries commencing in July 2025. The 4G OMS system will only be available from November 2024. A manual process will be used to place the first forecasts in October 2024 for the months of July 2025 and August 2025. DCC has agreed with its service providers that the July 2025 order will be a nine-month forecasting window.

The manual forecasting and ordering will be managed via an Excel template that DCC will provide. DCC anticipates that Energy Suppliers will fill in various fields including, Energy Supplier details, delivery location and the volume of devices required. The completed template will then be uploaded to a SharePoint location provided by DCC.

Once DCC receives a completed template, it will validate the order to ensure that all details are correct and compliant with SEC obligations. Once this has been completed, DCC will confirm receipt through an email confirmation as well as confirmation through bilateral engagement.

DCC will send the orders to the manufacturers. DCC will confirm the order and delivery as well as providing updates via email and through bilateral engagement.

Once the 4G OMS is available, DCC will migrate the information from the manual solution into the 4G OMS and will work with Energy Suppliers to confirm content. DCC provided this view in the workshop and there were no objections to the use of a manual process as long as it was effective. DCC is of the view that there will be no issues using a manual system as this will only be used during the forecasting period.

4.4. Forecasting and Ordering

In order to effectively transition to 4G Comms Hubs, there are two aspects of Forecasting and Ordering that need to be managed:

- 1. The number and ratio of 2/3G and 4G Comms Hubs that are ordered and delivered to Energy Suppliers following the decision at Live Service Criteria 2 (LSC2) go live with the volume manufacture of 4G Comms Hubs – referred to as the cutover; and
- 2. the ordering of 4G Comms Hubs for the IPV phase (this is set out as part of IPV in Section 4.10).

4G Cutover Management

On the 13 of April 2023, DCC held a workshop in which it proposed two options for how the cutover could be managed.

Option 1 Supplier Managed Cutover



Figure 1 - Option 1 Supplier Managed Cutover

This option proposed to switch to 4G Comms Hub supply as soon as it is available.

The result of this would be that the supply of 2/3G Comms Hubs would be limited by the number of 2/3G Comms Hubs that have been ordered by Energy Suppliers. Energy Suppliers are responsible for forecasting and ordering and Energy Suppliers would cut over in line with their own transition plans. Energy Suppliers who continue to order 2/3G Comms Hubs would continue to receive them during this period.

Under this option each Energy Supplier would control their own transition pace to 4G which means that all Energy Suppliers need not decide to completely cutover to 4G with 100% of their orders. Equally some Energy Suppliers may decide to and switch forecasts to 4G Comms Hubs at the earliest possible opportunity. DCC will work with Energy Suppliers to provide all the information and support which is required for decision making at this crucial time. Leading up to the milestone that allows for the first forecasts of 4G Comms Hubs to be made the CH&N programme will engage with all key stakeholders to communicate the current status of the 4G Comms Hub in testing at that time. The aim of this approach would be to support Energy Suppliers to make the appropriate decisions, with the best available information, at that time.



Option 2 Cutover Following 4G Manufacture Decision



In this scenario, there is a gradual ramp up of the delivery of 4G Comms Hubs through a slow and deliberate cut over to 4G Comms Hubs, only after the volume manufacture decision for 4G Comms Hubs has been approved at LSC2. The LSC2 decision takes place after the IPV period has concluded.

This approach will lessen the need for any buffer stock of 2/3G Comms Hubs being required. However, DCC notes that this will mean that 4G Comms Hubs will be delivered at a slower rate and Energy Suppliers will have a greater number of 2/3G Comms Hubs that have been installed, which will have to be replaced at some point with the 4G Comms Hubs.

Option 1 Preferred

In the workshop, Energy Suppliers expressed support for the first option, with some indicating that key stakeholders in the programme should plan for success. This means that there wouldn't be any central rules in the NETMAD to specify ratios of 2G/3G vs 4G ordering. It would be up to each individual energy supplier to determine the rate at which it cuts over to mass ordering of 4G. Energy Suppliers confirmed support for this approach at the workshop on 15 June 2023.

4.5. End of Mass Supply of 2/3G Comms Hubs

The end of 2/3G supply remains an open item as indicated in Section 2, engagement will continue as part of NETMAD development before a concluded position can be presented.

4.6. Transition to 4G Comms Hub Forecasting and Ordering

In the current consulted programme plan 4G CHs will be in the UK with the logistics provider ready for delivery to DCC Customers on 30th June 2025, with deliveries commencing in July. Therefore, under current SEC obligations which came into effect on 29 June 2023, forecasting

for the transitional phase to 4G Comms Hubs should commence from July 2024, however DCC is proposing a change to this BAU process for the transitional period.

DCC proposes that if there is any delay to the volume manufacture date, any previous forecasts and orders of 4G Comms Hubs would shift to the right by the same number of months. Thus, if there was a two-month delay in the programme from July to September 2025, the forecasting and ordering that was made for 4G Comms Hubs would shift to be two months later. DCC proposes to add this into the regulatory rules. DCC is of the view that there would be no changes to existing forecasting and ordering other than a change to the applicable dates. DCC notes that this would mean that Energy Suppliers might be limited to their 2/3G Comms Hub order for these months. If this occurs, the flexibility options set out below could be used to offset the impact of any delays.

Current SEC obligations state that Comms Hub orders must be forecasted twelve months prior to delivery. At five months prior to delivery, Comms Hub orders must be confirmed and are afforded a 20% (+/-) tolerance on the initial forecast until point of order. DCC notes that these obligations could change in line with any BAU changes to the current forecasting and ordering process in the SEC such as through a Section D SEC modification. At the workshops, Energy Suppliers indicated a desire to have more flexibility on ordering and forecasting for both 2/3G and 4G Comms Hubs during the transition to 4G so that they could increase or decrease their orders depending on the progress of testing, IPV and deployment of 4G.

DCC proposed a transitional variation to these BAU rules at the workshop by proposing a 10month forecasting period to the delivery model for 4G CHs. For the July 2025 deliveries, there will be a three-month order window and a four-month order window for the August delivery. Subsequently there will be a month five order volume. All of these are bound with a 20% (+/-) tolerance, and this is approximately the final volume that will be delivered to Energy Suppliers as per current BAU processes. This ten-month forecasting to delivery model offers more flexibility to DCC Customers during the transition period so is deemed to be more desirable. This is subject to commercial agreement and DCC will share further details once there is clarity on potential commercial options.

								40	s (2/36	Programme)	Go Live!			Subj	ect To	Contra	ict
May'24	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan'25	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					First 4G Forecast						Firs	t orders plac & S	ed for Jul, Au ep	в		- •			
				This f Jul	forecast will be & Aug deliveri	e for es.								First D (Airfi	eliveries reight)	BAU Deliveries			
12 Month	,	、					Order												
Forecast	No Fo Transitio mor	recast on to 10 nths	10 Month Forecast					Order	10				•		1				
									Month Forecast		1			Order					•
OMS & Logistics Exit SIT					(OMS & Logistics Go Live	IPV		→		Mass Manuf.)							

Figure 3 – Transition to 4G & ending 2/3G supply

In terms of the DCC LC13B plan, DCC will receive its first 4G Comms Hub deliveries at the end of June 2025 following the LSC2 decision in April 2025.

Subject to commercial agreement, the first two months of deliveries will be sent to the DCC via airfreight which will allow for a shortening of the normal five-month period from ordering to delivery for Energy Suppliers. This means that orders for July, August & September will be made

at the end of April 2025. The order window will then return to BAU from May 2025 for deliveries in October 2025.

The first forecasts for 4G will be placed in October 2024 and cover July & August 2025 deliveries. A November 2024 forecast will then be placed to cover deliveries for September 2025. Forecasting and ordering will return to the twelve-month forecasting as per the obligations in the SEC so in December 2024 customers will place forecasts for deliveries in October, November & December 2025. This approach was supported by customers after it was discussed in the workshops. This captures the position discussed to date and will be finalised for inclusion into the regulations after the supporting commercial engagement has completed.

4.7. Mechanisms to Support Transition Management Flexibility from 2/3G to 4G

In the workshops DCC were asked to explore and develop potential and cost-effective mitigations in the ordering and forecasting process to reduce the impact of any Comms Hub stock issues that might arise as a result of delays to the mass supply date. The considerations which have been discussed in the workshops to date are set out in the subheadings in this section, however this remains an open item which DCC will continue to consider and discuss with it Service Providers until a commercial agreement can be reached.

Existing Mitigation Option: Stock Transfers

Stock transfers between Energy Suppliers have been formalised as an approach into the SEC with SEC Mod MP140 (implemented in November 2022). This modification added Section F6A to the SEC which set out the mechanism for the transfer of Comms Hubs. DCC is of the view that this could be a key tool which can be used by Energy Suppliers to support each organisation through the transition period. Stock Transfer was a key tool which supported the industry through the Supply Chain Shortages during COVID and DCC is of the view that it will be equally as important for 4G transition.

Existing Mitigation Option: Additional 2/3G Supply

As part of the engagement with key stakeholders in the workshops it was suggested that the tolerances already defined in the SEC (as amended on 29 June 2023) could be utilised if issues were discovered in testing which could result in a delay to the planned date for mass supply of 4G CHs. For example, between months twelve to five (the month the order is placed) prior to delivery (Section F5.10), Energy Suppliers could increase their 2/3G forecast by 20% in terms of Section F5.10. These tolerances would be a less powerful mechanism if defects are discovered after orders have been placed (including during IPV) as a considerable amount of time would have elapsed since the forecasts were made for 4G volume. Due to the timeframes, the existing mechanism would not facilitate a significant ramp up for ordering of 2/3G CH. However, if defects are discovered earlier, this would be a mechanism to secure more 2/3G CH orders to mitigate potential programme delays.

4.8. Environmental Considerations

A key priority expressed by DCC Customers is to ensure that the decision-making processes consider the potential impact to the environment. These environmental considerations span across the end-to-end Comms Hub supply chain, some key considerations are outlined below and DCC is of the view that these will continue to be considered and refined as part of the development of the regulations for NETMAD or the other regulations to be defined.

- Bulk Return of 2/3G Comms Hubs A significant volume of 2/3G Comms Hubs will
 potentially start to be removed shortly after the introduction of 4G, as 2/3G hubs may be
 removed to install 4G. This was raised as a discussion item as part of the engagement. It is
 likely that the return of 2/3G Comms Hubs will require an evolution of the current returns
 process to ensure that unnecessary steps are avoided and Comms Hubs continue to be
 recycled. DCC will commence separate customer engagement on this from July 2023
 onwards.
- Avoidance of Additional 2/3G Comms Hub Installation The cutover approach from 2/3G to 4G aims to reduce the volume of 2/3G Comms Hubs that are installed as these devices will have a limited lifespan in relation to the equivalent 4G Comms Hubs which will be installed. DCC Customers and all stakeholders were aligned in the workshops that as confidence is built during the CH&N programme delivery cycle that the intention was to cutover orders as quickly as practically possible to 4G only supply.
- IPV 4G Comms Hubs Manufacture IPV has a maximum of 10 pallets integrated into the approach to avoid the manufacture and associated supply chain movement of 4G Comms Hubs until mass manufacture is approved after LSC2. This approach provides environmental benefits in addition to those which are associated to product confidence building.

4.9. Residual Ordering of 2/3G Comms Hubs

Discussions in the workshops indicated that there may still be a desire to order residual 2/3G Comms Hubs on an exceptional basis. These would be managed through either residual stock in the supply chain or refurbished Comms Hubs. There is a finite capability to process the refurbishment of 2/3G Comms Hubs so if demand exceeds this refurbishment capability, then an infeed of manufactured 2/3G may still be required.

This capability is subject to the discussions in Section 2 and DCC shall engage further with Energy Suppliers to finalise whether there are requirements for residual ordering of 2/3G Comms Hubs and the regulatory position.

5. IPV

5.1. Background to IPV

DCC set out its initial delivery plan for CH&N on 11 June 2021, which included details of an IPV period which would be a pilot phase following an initial eight-week period of User Interface Testing (UIT). The purpose of the UIT phase is to provide an opportunity for Energy Suppliers and other Test Participants to test the 4G service and gain confidence prior to an LSC1 decision, following which IPV will start. IPV will precede LSC2 submissions which will provide an externally assured go-live governance point that signals when 4G Comms Hubs can be manufactured at volume.

The adoption of the IPV period reflects lessons learnt from the delivery of previous Comms Hubs and changes associated with firmware upgrades. IPV provides Energy Suppliers with the opportunity to install a limited number of Comms Hubs in consumers' premises which would allow Energy Suppliers and DCC to gain a final level of confidence (over and above the rigorous testing) in the functionality that is being introduced. In the revised delivery plan¹, DCC set out that the approval of the first Live Services Criteria Submission prior to technical and operational go-live enables IPV to start. Sufficient Participation in IPV within a 9-week window would allow the second Live Services Criteria Submission which evidences readiness for volume manufacture of 4G CHs.

The consultation further envisaged the following process at paragraph 40 to 43:

"40. CH orders for IPV will be placed by customers at the end of the SIT phase in June 2024. It will take approximately six months for initial pallets to be delivered. We expect customers to then take receipt of hubs ordered for IPV three weeks in advance of IPV start (as opposed to the one month initially planned).

41. IPV will formally start 2 weeks after the Initial Pallet Supply milestone has been achieved, with an anticipated duration of 9 weeks, which will include the Christmas 2024 period. The period between IPV supply and IPV start is shorter than the initially planned 1 month.

42. In our initial CH&N plan DCC proposed not to introduce an obligation for Large Supplier Parties to participate in IPV and that instead we will use the second Control Point we added into the plan, at the completion of low-level design, to assess whether mandatory participation would be necessary. Whilst our plan currently assumes that customer participation will take place, a consultation is planned in due course on regulatory powers which would allow participation to be mandated if it was felt necessary. Introducing a back-stop obligation like this would guarantee that DCC, and industry as a whole, will have the best opportunity to assess the performance of CHs in the live environment in a timely manner, and will minimise the risk of incidents related to CHs not being picked up until after mass manufacture.

43. Upon completion of IPV in February 2025, the LSC 2 governance process will commence. The manufacture of 4G CHs at volume will commence as soon as the LSC 2 criteria have been reviewed and agreed with DESNZ. Ultimately, this will mean that 4G CHs will be supplied from June 2025. It is currently DCC's expectation that all orders will be satisfied by 4G CHs from this point, this expectation will be further validated through the DCC's transition strategy work due for consultation in June 2023 (we describe this approach in further detail in Section 4.8)."

DCC asked a question in which it sought views on its approach to IPV as well as the rationale for the views.

DCC received the following comments:

"51. The majority of respondents expressed concerns with regards to the proposed duration for IPV, highlighting that 9 weeks would provide insufficient time to undertake piloting and resolve identified issues especially due to the phase spanning the festive period (2024). Respondents noted that Energy Suppliers will be unable to undertake pilot activities around the festive period due to the difficulty with booking appointments with consumers. Furthermore, piloting new hardware or firmware during the winter months is not favourable given the length of time consumers may be without energy during the installation and longer if issues arise.

¹ <u>A consultation on the revised delivery plan for the Communications Hubs and Network Programme | Smart DCC</u>

52. Respondents recommended that the DCC bring the pilot period forward with suggestions that the window should start in the Summer or Autumn and no later than October or November 2024. It was emphasised that the IPV window should not be pushed back to after the festive period. It was also recommended that the length of the phase be reviewed with one respondent suggesting DCC revert to the original plan of three months. They noted that this will allow for installers to feedback observations of exchanging the new CH (if already smart) and for consumers to notice any issues which will take longer than performance statistics.

54. One respondent also requested that the DCC provide a view on IPV being used to validate 4G CH I&C and Over-the-Air (OTA) firmware update capability, and that this should be a condition of. They stressed that consumption data must be able to be presented accurately to consumers and Energy Suppliers prior to sign off. It was also noted that Energy Suppliers will be taking a risk-based judgement on the probability of IPV success, given that orders are proposed as 6 months before IPV."

DCC's response to the comments were as follows:

"55. DCC acknowledges the broadly consistent feedback on the timing and duration of IPV. On its start date, we are investigating ways in which we can bring forward the start of the phase. This is dependent on discussions taking place around starting UIT earlier than currently planned.

56. On the duration, we acknowledge the concerns raised by energy suppliers regarding the impacts of a pilot phase during December, where many set out the risks of installing new hardware in consumers' premises for the first time. Our rationale for a 9-week date was based on the fact that pilot windows such as IPV have typically been up to 6-weeks in duration. Working on this as a basis for IPV, DCC opted for a 9-week window that would take into account the Christmas holiday period.

57. It is important that we work closely with energy suppliers to understand options for IPV, both in terms of the requirements and Exit Criteria for the phase, and in terms of the timetable needed by them to meet these requirements. We will be looking to use our series of customer workshops starting in February 2023 to explore a more detailed view of the approach for IPV.

58. It is also important that we balance the strong views on the duration and timing of IPV, with the strong views on the need to make 4G CHs available at scale, as quickly as possible. Based on the need for these competing requirements, we have kept the duration of 9 weeks as per our consulted-on plan for now – but do commit to reviewing this with stakeholders as described above."

DCC has been running workshops on the content and duration of IPV since 15 February 2023 as well as previous workshops during 2022 and the LC13B consultations to develop the proposed approach. This document sets out the views that have been expressed in the workshops as well as the views of DCC.

5.2. Role of IPV

The IPV process involves testing a small number of Comms Hubs, agreed with DCC Customers to be 8960 from 10 pallets, in the live environment. This enables DCC to ensure that 4G Comms Hubs work correctly on the DCC Systems in the production environment and will not cause

issues with the DCC Total Systems or impact DCC network performance. This will also provide confidence to Energy Suppliers.

Energy Suppliers will be able to test their own systems in a live environment and gain confidence that the 4G Comms Hubs operate as expected.

In order for IPV to begin, there will be defined entry criteria that have to be met. The IPV period will have certain targets that need to be met, which DCC initially referred to as the critical success factors, and successfully meeting the critical success factors will comprise part of the Exit Criteria. Through the process of the workshops, and the discussions on proposed governance process, the critical success factors have been incorporated into the Exit Criteria and they will therefore only be referred to as the Exit Criteria in this document. Once the IPV period has ended, there will then be a governance process to determine whether the Exit Criteria have been met and therefore the IPV phase has completed successfully. One of the criteria for LSC2 will be that this process has completed successfully. The process to agree the entry and Exit Criteria is set out in the section on governance.

The purpose of IPV is not to repeat testing, but primarily for DCC and Suppliers to gain confidence in scenarios which can only be gained in production (e.g. real world device installation) and to provide invaluable operational insight. IPV will provide the following for DCC and Service Users:

Service Users

- The opportunity for residual risk reduction for Service Users that the 4G Comms Hubs, other 4G services, and new processes are ready to be used for live production installations; and
- The opportunity for Energy Suppliers to prove devices and processes in the field with initial small volumes.

DCC

- DCC Operations insight into the performance of 4G Comms Hubs by tracking against proven operational performance metrics in the production environment;
- Residual risk reduction to volume manufacture by building confidence through an initial manufacturing run to prove that manufacturing and end to end processes deliver operationally fit Comms Hub units; and
- Confidence for DCC that the 4G Comms Hubs as well as the new and existing processes are ready to be used for live production installations.

5.3. Key Themes Arising from Engagement

DCC notes some concerns over the length and timing of IPV, as it takes place over Christmas 2024. In the workshop of 19 April 2023, some suppliers indicated that they thought that it would be more appropriate to have an IPV length of 13 weeks or longer, as this is the length of the proposed IPV period for GBCS 4.1 but that would need to increase to 15 weeks if this was over the Christmas period. Further discussions on IPV duration took place where extension to the IPV period was not agreed upon and this is reflected later in this section.

The start of IPV aligns to the governance approach, at the end of the testing phases. It would not be feasible to curtail testing, so a change to the start date avoiding the Christmas Period would

push the start of IPV into 2025. This would have a consequential impact of moving back the volume manufacture date. The general consensus from Energy Suppliers is that we should move to 4G manufacture as soon as possible and delaying IPV would not meet their needs for mass supply. In order to maintain the delivery date on the LC13B plan to achieve a volume manufacture date of the end of June 2025, the IPV period will have to start at the beginning of December 2024 and run for nine weeks.

In the workshop of 25 May 2023, DCC provided its reasoning and noted that IPV duration is typically six weeks for programmes which introduce Comms Hub changes. In response to DCC's proposal, Energy Suppliers indicated that they understood the reasoning why the IPV window is currently nine weeks. It was suggested that if replanning for the programme is required at any point before LSC1 at go live that the duration of IPV should be reconsidered as each week that is allocated for IPV has a time and cost impact related to the wider SMIP objectives. For example, it was suggested that if the IPV period didn't cross the holiday period over Christmas and New Year then DCC Customers could potentially consider a return to a six-week IPV period. A view was also expressed that any such replan should also consider whether all IPV objectives could be met if the IPV period was reduced.

DCC therefore do not propose to change the duration and length of IPV from 9 weeks starting on 2 December 202. However, if there is any proposed replan that will impact IPV, DCC will consider whether it is viable to change the length of IPV and engage with Energy Suppliers via the appropriate bodies and channels.

Suppliers also noted that it would be ideal to have a monitoring period after installation to ensure sufficient time for issues to arise, this is mentioned as part of the mass rollout confidence section below.

In the workshops it was noted that there could be an acceleration framework that would allow an acceleration of confidence which could shorten the IPV period and consequently that this could bring forward the mass manufacture decision. In the workshop of 11 May 2023, DCC raised the question of the acceleration framework. Some Energy Suppliers indicated a preference for extending IPV for as long as possible, potentially longer than nine weeks, to allow for sufficient time to test devices in the live environment and carry out soak testing. Other views were that IPV should be as short as possible. There was also a view expressed that any shortening of the IPV period would negatively impact their testing. DCC is of the view that an acceleration of Volume Manufacture would also not be viable due to the nature of the contracts in place relating to ordering, as there are fixed periods required for the manufacturing of Comms Hubs and these could not be brought forward with minimal notice to DCC's suppliers.

There was a request for further details on the role of the DCC Operations Hypercare team as part of 4G Comms Hub IPV. DCC will provide these in line with the approaches taken for other similar-sized programmes through DCC's engagement with DCC Customers and SEC subcommittees as it is a vital part of the plan when 4G Comms Hubs go live. However, DCC is of the view that details of hypercare are not required for NETMAD development.

In the workshops it was suggested that Meter Firmware Upgrade should be included as one of the minimum customer journeys to complete in IPV. At the workshop of 11 May 2023 DCC discussed this with Energy Suppliers and it was agreed that it would be added as an Exit Criterion.

In the workshops it was suggested by participants that there could be a 4G Early Deployment Group that would be able to share information and provide benefits to all Energy Suppliers,

whether they engage with activity in the IPV phase or not. DCC raised the question of an Early Deployment Group at the workshop on 11 May 2023, pointing out that DCC already convenes smaller weekly meetings for firmware delivery. DCC is of the view that the potential 4G Early Deployment Group would be larger, more focussed to 4G transition and in time would close down, with updates merging back into the current firmware delivery meetings. When this was discussed, there was support for such a group and it was noted by customers that it was important for industry to cooperate and discuss challenges. DCC will work with SEC Sub Committees (e.g. SEC Ops, CTG) to ensure the success of any such group.

DCC will therefore arrange meetings to which all Energy Suppliers will be invited to discuss the challenges. As this currently occurs for other programmes without any regulatory obligations, DCC proposes not to include any regulatory obligation in the NETMAD. DCC would nevertheless be in a position to provide reporting to all parties and further details relating to this are outlined in the Reporting section of this document.

It was suggested by an Energy Supplier that as part of the IPV period or in the subsequent monitoring phase that an area of cell coverage could be switched off to monitor the recovery of the Comms Hubs. DCC notes that this might be a good idea, but it is DCC's view that in practice it would not be viable to switch off an entire area's cell phone coverage as this would have a significant impact to services which are much wider than Smart Metering. DCC notes that if a network coverage drop occurs during the IPV period for an installed 4G Comms Hub, any issues that occur due to the subsequent reconnecting would be reported as part of IPV.

It was suggested that as part of the IPV period Comms Hub over the air upgrade capability should also be proven as this is considered to be a vital mechanism to support and maintain the early devices deployed onto the 4G network. As the Comms Hub firmware version approved for manufacture will be the first 4G version, N (GBCS 4.1), to be added to the Central Products List (CPL) there will not be a natural successor, N+1 firmware version ready to be deployed via OTA. The firmware upgrade process is discussed as one of the Exit Criteria below.

Energy Suppliers expressed the view that it is vital to brief the Smart Metering impact of the 2/3G Switch off so that consumers are aware of the reason Smart Metering devices are being replaced. Energy Suppliers were of the view that the messaging had to be carefully considered to ensure that consumers are supportive of the 4G rollout once it commences. DCC does not propose to include any detail in the NETMAD, but DCC will work closely with CTG and other responsible parties on this to ensure a coordinated approach.

DCC notes that the IPV period is for Energy Suppliers to do their own due diligence and that DCC has a limited ability to direct the activity that Energy Suppliers undertake during IPV. Examples are the inclusion of all adapters or single fuel gas installations. In alignment with DCC's approach to all Comms Hub pilot phases, DCC is supportive of undertaking any activity or providing additional information that supports the activity Energy Suppliers wish to undertake.

Incident management was raised in the workshops. The BAU incident management process will apply to IPV, this also applies to change and problem management. Once the 4G service goes live any defects which require resolution will be managed into service via the appropriate DCC Operations governance. During IPV and the initial deployment of 4G Comms Hubs, dedicated SMEs will be assigned to investigate any defects and/or production incidents that arise. DCC will therefore not propose any changes to the NETMAD related to incident management, further details in relation to this are set out in Section 5.9.

Whether SMETS1 Replacements or swap outs should form part of the Exit Criteria was raised as part of the discussions in the workshops. In the workshop on 1 June 2023, it was determined that there should be no Exit Criteria that are directly linked to SMETS1. The reasoning provided was that a 4G Installation replacing a SMETS1 would be in essence a new Installation and there are no aspects which are unique relating to SMETS1.

Mesh Comms Hubs are currently installed to provide Wide Area Network (WAN) connectivity to premises that do not have connectivity. A Mesh network is built upon Mesh gateway Comms Hubs which are directly connected to the WAN. Mesh Leaf Node Comms Hubs are unable to connect to the WAN, these are able to connect via Mesh Gateway nodes which mesh to share their connection. DCC is of the view that no Mesh Gateway Comms Hubs should be replaced during the IPV period. It is noted that in the workshop Energy Suppliers indicated that they might replace leaf nodes of a Mesh cluster. In the workshop of 15 June 2023, DCC discussed its approach to the replaced during IPV as this could leave a leaf node without the ability to communicate. DCC will set out in the NETMAD that no Mesh gateways should be replaced during IPV. DCC notes that the replacement of Mesh Comms Hubs with 4G Comms Hubs is an issue that is not transitional in nature and DCC will work with Energy Suppliers to establish a process whereby Mesh Comms Hubs can be replaced by 4G Comms Hub, whilst minimising any potential impacts to service for any consumers.

5.4. Governance

At the workshop on 25 May 2023, DCC proposed two options that could be used for governance of the Entry and Exit criteria for IPV. These options were that DCC or the SEC Panel (or their nominated subcommittee) could decide the Entry and Exit criteria (and determine whether these have been met.

The first option, where DCC is the decision body, it would be DCC who decides the entry and Exit Criteria and determines whether these criteria had been met to enable entry and exit of IPV. If this were the route that is taken, the criteria and DCC role would all be set out in the NETMAD.

The second option, where the SEC Panel (or their nominated subcommittee) is the decisionmaking body, the approach for CH&N testing that is set out in the SVTAD (SEC Appendix AQ) would be used as the basis for the decision. In practice this would result in a IPV Approach Document (IPVAD) being created which would have to be approved by the appropriate subcommittee with an option that where either DCC or the subcommittee are unable to reach agreement the matter could be referred to the Secretary of State for determination.

This governance would be set out in the NETMAD which would provide for the following:

- specify that the decision-making role for entry and exit decisions falls to the Panel (or their nominated subcommittee) with referral of disagreements to the Secretary of State; and
- would provide for a separate IPV approach document to be produced by DCC and approved by the Panel/a Panel Subcommittee which sets out entry and Exit Criteria, with referral of disagreements to the Secretary of State.

In the workshop, the following questions were considered:

• Who decides the entry criteria for IPV;

- Who decides whether the entry criteria have been met;
- Who decides the Exit Criteria for IPV including Exit Criteria; and
- Who decides whether the Exit Criteria have been met.

Attendees at the workshop agreed that the correct approach to be taken for all these questions was that it should be the SEC Panel (or their nominated subcommittee) who should decide on all aspects.

The IPVAD will have to be agreed before the start of IPV, but like the SVTAD document, DCC does not anticipate including timeframes in the NETMAD, however, DCC intends that this document will be submitted for approval at approximately the same time as the NETMAD being designated into the SEC and coming into effect.

During the workshop of 8 June 2023 DCC provided details of the proposed governance arrangements. DCC proposed that it would produce the IPV Approach Document, which will include the following approach to IPV:

- the principles to apply to IPV;
- the entry criteria to begin IPV;
- the process for resolving Incidents and the applicable Incident Thresholds;
- the Exit Criteria, including Exit Criteria, for IPV to complete successfully; and
- the matters to be included in any Completion Reports for IPV.

DCC will submit a draft IPV Approach Document to the nominated SEC Panel subcommittee for review and seek to reach agreement on the content of the document. Where agreement is reached, the draft IPV Approach Document will be updated to reflect that agreement (if required) and then can be approved.

Where the SEC Panel subcommittee and DCC cannot reach an agreement, the disagreement will be referred by DCC to the Secretary of State for determination.

DCC will therefore provide draft text in the NETMAD that will set out this governance route.

DCC envisages the actual governance of the IPV period to follow the following route:

Proposed IPV Governance timeline and activities



Figure 4 – Proposed IPV Governance Timeline and Activities

During the IPV period, DCC will engage with the Early Deployment Group to review the journeys, discuss any defects that have raised, and discuss defect categorisations. This will enable continued discussions on the progress of IPV.

Once IPV has completed, DCC will prepare a completion report setting out its views on whether the Exit Criteria have been met including the install volumes, completed journeys, a view on defects, and the success of firmware upgrades.

DCC will submit the completion report to the nominated SEC Panel Subcommittee. DCC is of the view that this will happen at the same time as the LSC being submitted to the SEC Panel for their review.

In the subsequent sections of this document, DCC sets out its proposed entry criteria and Exit Criteria as well as rationale for these proposals. This will not be written into the NETMAD, however, DCC will use the content in this document as the basis for the IPVAD that it will submit as required by the NETMAD.

During the discussion on governance, the question of UIT and defects were discussed. DCC notes that UIT will have been completed by the start of IPV and that the LSC1 decision will have taken into account the TAG assessment of defects arising out of UIT. Any UIT defects that arise post LSC1 and prior to the LSC2 decision being taken will need to be considered as part of the LSC2 decision.

5.5. Entry Criteria

5.5.1. Overview

As a result of lessons learnt from previous IPV periods DCC is of the view that for the IPV phase of the plan to begin, certain entry criteria should be met. DCC believes that these Entry Criteria should be the criteria set out in Table 1 below. DCC will use this table as the basis for its IPVAD submission to the Panel.

5.5.2. Entry Criteria Details

Entry Criteria	Entry Criteria Description
LSC1 Met	The DESNZ decision will be informed by a set of Live Service Criteria, LSC1. DCC will not go live and operational service for the associated technical systems e.g. DSP uplift will not commence until those criteria have been met. The LSC1 is expected to include a criterion that the allocated 9-week User Testing Window has completed without, as a minimum, any Severity 1 or 2 defects identified. If this is not part of LSC1, then it will be captured as a separate criterion for IPV entry.
E2E Operational Service Confidence	All processes and services monitored under end-to-end operational service confidence must perform and deliver the expected outcomes from the decision in LSC1 to the beginning of IPV. Any defects or issues reported in this phase are likely to require fixes and proving activity before IPV can commence. Where DCC deems that IPV can commence prior to required resolutions being developed and delivered it will have

	to be validated by DCC. DCC will consider all operational impacts in its statement that it is ready to support IPV.
CHs Ordered and Delivered	Suppliers have been able to place their Comms Hub IPV orders and any Comms Hubs ordered for the start of IPV (per the rules for doing so in the NETMAD), have been delivered.

Table 3 - Entry Criteria Details

5.6. IPV Exit Criteria

5.6.1. Overview

Based on customer engagement, feedback from DCC Customers and the operational experience of releasing Comms Hub change for production use, DCC believes that having detailed Exit Criteria is vital. DCC has compiled a proposed list of Exit Criteria that should be met which it has set out in Table 4 and provided further details in the subsequent sections.

DCC will present this table in its IPV Approach Document for approval in line with the governance arrangements.

5.6.2. Exit Criteria Details

Exit Criteria	Target	Exit Criteria Details
Energy Supplier Participation	2	2 Energy Suppliers have met the Exit Criteria. Please see the comments related to placing a regulatory obligation on Suppliers to meet this objective.
Energy Supplier Journeys Comms Hubs	4	Minimum of "I want to install a Smart Metering System", "I want to exchange my 2/3G Comms Hub to a 4G Comms Hub" ran by both participating Energy Suppliers
Energy Supplier Journeys Meters	4	For both Gas and electric meter "I want to help my consumer top up a Smart Meter in prepayment" journeys to be completed. Ideally DCC would encourage Energy Suppliers to run as many customer journeys and critical commands as possible.
Energy Supplier Journeys Dual Fuel	4	Energy Suppliers will run the Dual Band equivalent of the combination of the "Energy Supplier Journeys Comms Hubs" and "Energy Supplier Journeys Meters"
Incidents (Severity 1 & 2)	0	For hardware and firmware, no high severity 1 or 2 incidents at time of IPV exit. Severity 3, 4
Incidents	Case by Case Investigation	considered.

(Severity 3, 4 & 5)		
SRV Success	Operational Baseline	Baselined against SEC defined 4G Comms Hub SMETS2 performance.
Meter Firmware Upgrades	4	Both Gas and Electric meter firmware upgraded by both participating customers
Adapter Provider	2	Included as part of workshop discussions
Prepay SRV Success	Operational Baseline	Baselined against SEC defined 4G Comms Hub SMETS2 performance.
Customer SRVs Run	4	Based on pre-engagement with key stakeholders it was recommended that in addition to the customer journeys specific SRVs are also identified which DCC Customers consider to be vital. The SRVs identified are read requests for ESME and GSME and DCC considers that it would be an SRV for both an ESME and GSME from 2 Suppliers.
Overall Minimum Install Volume	1000 installs	Overall DCC believes that 1000 installs should be completed cumulatively across all the DCC Customers participating as a minimum over the allocated IPV timeframe. DCC believes this provides the required opportunity for customers to plan, is achievable based on similar past IPV events and that it is reasonable to expect installs to be greater than this minimum. Up to 10,000 CH will be supplied to customers, and DCC would encourage industry to install as many of possible during IPV
Minimum Install Volume – New Installs	2	This forms a part of the Overall Minimum Install Volume set at 1000 installs in total. DCC understands that the must have and should have volumes will be decided as part of the IPVAD approach document development
Minimum Install Volume – Swap Out	2	This forms a part of the Overall Minimum Install Volume set at 1000 installs in total. DCC understands that the must have and should have volumes will be decided as part of the IPVAD approach document development

Table 4 - Exit Criteria Details

5.7. Details of Exit Criteria

An analysis of each of the Exit Criteria is set out below in which DCC sets out its views on the Exit Criteria and details of the discussions that have taken place in the workshops.

During the workshops it was noted that the Exit Criteria for IPV, where applicable, should be considered with targets which are the minimum or "Must Have" and a stretching target which DCC Customers will aim to achieve as "Should Have" if their IPV activity allows. In the Exit Criteria, DCC is setting out the "must have" elements that are required which are the focus of the content of this section as they are considered critical to IPV exit. The reason for this approach, is that it might be difficult to achieve the "should have" as there is a significant element of Supplier Participation which falls outside of DCC control and could therefore be difficult to achieve. An example is single fuel GSME installations. As these are not common, there might not be an opportunity during the IPV period to undertake this activity.

5.7.1. DCC Customer Participation

DCC's proposal of a minimum of two participants (must have) is based on its experience of supportive participants in previous IPV events, DCC believes that ultimately there will be significant Energy Supplier participation in support the IPV period and this coverage will give DCC and Energy Suppliers confidence that 4G Comms Hubs are ready to replace 2/3G Comms Hubs and volume manufacture can begin.

In the workshops the question of an obligation on Suppliers to participate in IPV arose. In its LC13B consultations, DCC set out its view that it was not seeking a regulatory obligation on Suppliers to participate in IPV but would engage with Suppliers to determine whether it is necessary to place a mandate on Suppliers. DCC subsequently engaged on this topic in the transition workshops.

Energy Supplier views from the workshop were that all Energy Suppliers that have a significant portfolio would seek to participate in IPV as it would be in their interests to monitor the installation and operation of 4G Comms Hubs. The Comms Hub is a critical device for DCC Customers to enable Smart Metering installations at consumer premises and it was felt that DCC Customers would wish to gain confidence with a change as significant as this prior to it being approved for volume deployment.

It was further noted by a workshop participant that there is potentially limited benefit in placing an obligation on Suppliers to participate in IPV as they would participate irrespective of any obligation as well as there being limited capability to enforce participation in IPV.

Based on its experience of running such activities in the past DCC would accept the evidence of additional DCC Customer IPV activity being used to make up the overall 100% for 2 DCC Energy Suppliers (i.e. the combined input of a number of Energy Suppliers could be used to make up the overall 100%). For example, where a defect is attributed to a device that is not the Comms Hub. Should this Exit Criteria be satisfied in this manner DCC would make this clear in the IPV exit report submission and present the appropriate related evidence.

DCC also requires a certain amount of activity in order for it to be satisfied that IPV is a success. Successful completion/exit of the IPV window will be a requirement of LSC2 which will be the decision point for volume manufacture.

From the engagement in the workshops and its experience in previous IPV phases, DCC is of the view that there will be sufficient participation in IPV to enable the Exit Criteria to be met without

requiring a mandate. DCC will continue to engage with Energy Suppliers to ensure that there is participation in IPV. The feedback has not indicated that there is any desire to have a mandate on Suppliers and DCC is therefore of the view that there is no reason to deviate from the position that was consulted on in the LC13B consultation. DCC will therefore not be recommending a mandate on Energy Suppliers to participate in IPV.

5.7.2. Customer Journeys - Comms Hubs

DCC's proposals on Customer Journeys are based on journeys that have been suggested and carried out for previous IPV events. DCC believes that if installation and replacement (Comms Hub Swap Outs) are not proven as a bare minimum, then there is significant risk to switching manufacturing to a Comms Hub which is unproven in production. Prepayment is a key customer journey which has been added after feedback from customers. DCC believes that additional customer journeys beyond the four that are proposed are likely to be proven in the timeframe by Energy Suppliers which will provide additional confidence. DCC is of the view that there should be two customer journeys for new installs and two customer journeys for replacement Comms Hubs that have been carried out by different Energy Suppliers.

In the workshop of 11 May 2023, it was discussed that there should be dual fuel installations as well as single fuel (ESME) as success criteria. DCC therefore, has included them as an Exit Criteria.

In the workshop of 25 May 2023, DCC raised the question of whether GSME single fuel installations will be an Exit Criteria. Suppliers acknowledged that this is dependent on the availability of GSME single fuel sites and were of the view that this should not be an Exit Criteria. Accordingly, DCC does not propose to have a GSME single fuel as an Exit Criteria as this may be practically difficult to achieve.

The introduction of an exit criteria for IPV was discussed at the workshops and it was agreed that the proving of different adapter providers should be introduced as an additional Exit Criteria. The reasoning for the inclusion of adapter providers was that the various adapter providers can sequence service requests differently and the timings can be different, which could be influenced by the 4G Comms Hubs. The number of adapter providers that are used during IPV was discussed and it was concluded that a minimum of two adapter provider solutions should be proven but that it would be advantageous for as many adapter providers as possible to be proven.

DCC has therefore added this as an Exit Criteria.

5.7.3. Customer Journeys - Meters

Ideally DCC would encourage Energy Suppliers to run as many customer journeys and critical commands as possible.

The 7 key Customer Journeys outlined below would normally be suggested by DCC Operations for verification activity similar to IPV in other projects and programmes. These are aligned to those customer journeys which would also be recommended to Energy Suppliers as part of the User Testing Window part of the programme. DCC notes that there are additional journeys that Suppliers would undertake as part of their testing and production proving.

- CJ1 I want to install a Smart Metering System
- CJ2 I want to move my consumer from credit to prepay

- CJ3 I want to action a Change of Tenancy (CoT) with an existing Smart Meter
- CJ4 I want to change an existing Smart Meter consumer tariff
- CJ5 I want to gain a consumer with an existing Smart Meter (CoS)
- CJ6 I want to help my consumer top up a Smart Meter in prepayment
- CJ7 I want to exchange my 2/3G Comms Hub to a 4G Comms Hub

No concerns were raised in the workshops.

5.7.4. Incidents (Severity 1 and 2)

No Severity 1 and 2 Incidents is a proven position for changes to production CHs. In DCC's experience this is the bare minimum that DCC, Energy Suppliers, and key stakeholders will accept for a significant Comms Hubs change such as the introduction of 4G Comms Hubs. The incidents KPI aligns to the approach that has been adopted by DCC to introduce Comms Hub changes into the production environment, moving from any proven position to the new position being tested prior to deployment. Key stakeholder processes such as DCC Customers, Industry Governance Panels and DESNZ are aligned to delivery following this approach.

If any Severity 1 and 2 Incidents are encountered in UIT or Production whilst IPV governance is taking place the investigation of these must be concluded before LSC2 is granted.

5.7.5. Incidents (Severity 3, 4 & 5)

The severity ratings of incidents were discussed in the workshop of 25 May 2023. It was noted that there should be careful consideration of these ratings and the number of defects that occur during IPV. It was noted that the cumulative effect of the combination of a number of lower severity defects on a single area, e.g. reads, could result in the same effect as a high severity defect. If an example such as this was to occur the release would not be allowed to proceed and fixes would be required to resolve.

Incidents and their severity ratings would be presented to the nominated SEC Panel subcommittee for determination and would form part of the decision to exit IPV. Based on the discussions at the workshops DCC is of the understanding that incident thresholds would be agreed as part of the IPVAD development to ensure that the final position taken is reflective of managing challenges should they arise during the IPV proving activity.

DCC is of the opinion that any threshold of incidents that arise during the IPV period need to be achievable and measurable and allow for a reasonable opportunity for IPV to complete with a reasonable number of incidents that will not significantly impact the operational service.

DCC further notes that without sufficient information on a given incident, DCC will be unable to progress a resolution. This means that correct and accurate data is required to enable the correct triage of the incident to take place. Consideration of the broader context of the incident and information that is provided is necessary rather than a binary question of whether it has been resolved, as in the absence of the correct data, these incidents may not have a path to resolution. Any decision should be based on a consideration of all information.

DCC is further of the view that a decision on whether IPV should be completed based purely on the number of incidents that have been raised should not be a binary consideration. The consideration and decision should be based on the cumulative effect of all of the incidents that have been raised. The question to be answered should be whether the technical debt which remains unresolved is acceptable to take forward. IPV should complete on the basis of whether DCC and the SEC Panel can live with the total number of incidents, with an appeal route to the Secretary of State. The actual number should not play any role in this decision.

DCC accordingly proposes that there should be no defect threshold for IPV exit but Severity 3, 4 and 5 incidents should have been investigated. The consideration and decision as to whether this Exit Criteria has been met should be based on the cumulative effect of all of the incidents that have been raised. This was discussed in the workshop and participants agreed with the DCC approach.

5.7.6. SRV Success

The key team responsible for this activity within DCC Operations is the Hypercare team as well as other activities to monitor technical change into operational service. Prior to the IPV phase commencing the Hypercare team will submit a request into DCC Technical Operation Centre (TOC) to report on the overall SRV success for the current firmware over the past 6-month period. This data will take into account all SRV's and will adhere to the performance mandated in the SEC. Normally this would be like for like data for the comparison but in the instance of the CH&N programme the data requested will be for the latest equivalent 2/3G hardware and firmware combination in operational service at that time. DCC TOC will then use this figure as a baseline to measure the new 4G firmware and hardware combination against SEC defined 4G Comms Hub SMETS2 performance.

Once the IPV phase is approved to commence, the Hypercare team monitors dashboards to track performance and compare this to the baseline. As an example, the Hypercare team have expert experience and knowledge to distinguish between intermittent performance and consistent under performance. If the Hypercare team were to observe perceived underperformance the approach usually taken would be:

- minor dip over 1 day -monitor and continue to assess
- **significant dip over one day or continued minor dips over multiple days** Raise an incident for the relevant service providers to investigate

From an OA perspective DCC Operations use the insight gained by the Hypercare team to provide confidence to proceed as planned or investigate further if concerns persist.

No concerns raised in the workshops.

5.7.7. Firmware Upgrades

This is necessary to prove that SRVs are successful in the production environment. Energy Suppliers indicated that device firmware upgrades should be included as an Exit Criteria.

At the workshop of 11 May 2023, DCC discussed the potential to upgrade the firmware of Meters. Energy Suppliers noted that it would take careful planning on their part to achieve this in practice as it would require preparation to ensure that meters were available on previous versions of firmware that are capable of being upgraded.

DCC proposes that for the Exit Criteria it would be necessary to upgrade the firmware on two ESME and two GSME, but DCC would encourage Energy Suppliers to run as many upgrades as possible.

It was suggested that there should also be Comms Hub upgrades tested as part of IPV. As the Comms Hub firmware version approved for manufacture will be the first 4G version, N, to be added to the Central Products List (CPL) there will not be a natural successor, N+1 firmware version ready to be deployed OTA. Based on this comment DCC have agreed with the 4G Comms Hub manufacturer that an incremented version of the first 4G Comms Hub firmware version will also be added to the CPL to allow DCC to perform Comms Hub OTA upgrades to prove that the capability on the production environment is operationally ready.

The IPV window will have a lot of activity planned for customers to gain the confidence required from the relatively short timeframe and DCC believe that it would be disruptive for Energy Suppliers if DCC conducted Comms Hub firmware upgrades to all Comms Hubs in the early weeks of IPV. Based on the understanding from the workshops DCC proposes a staged pilot approach which would entail a micro pilot to meet the minimum Exit Criteria confidence at the start of IPV and a larger pilot at the end of IPV in which Energy Suppliers could choose to participate to obtain additional confidence.

DCC is of the view that Energy Suppliers will not be able to confirm target GUIDs until the rollout commences as no assets will have been deployed at this stage. Once the deployment of 4G Comms Hub in IPV commences DCC will work closely with Energy Suppliers to agree the GUIDs of low volume Comms Hub OTA upgrades, similar to the micro pilot approach which has been used previously for operational maintenance. DCC proposes to upgrade between 2 and 10 Comms Hubs which will also be dependent on the volume DCC Customers are willing to commit to at this stage. Once these Comms Hub upgrades to the incremented firmware version have been successfully completed DCC proposes that Comms Hub firmware upgrades to 4G Comms Hubs will be suspended to enable energy suppliers to conduct their critical activity so that the Exit Criteria can be proven. These low volume micro pilot upgrades would provide the minimum level of confidence for IPV to be completed however DCC will engage with the 4G Early Deployment Group during the IPV phase in order to monitor the impact of OTA upgrades. Prior to the final two weeks of IPV DCC would provide Energy Suppliers another opportunity to submit target GUIDs, which DCC would then use to perform the larger volume pilot. DCC believes that most energy suppliers will wish to support the large pilot once all key IPV activity has been completed but based on their own business scenarios may decide other activity is the priority and the second larger pilot may not materialise. In this case DCC would still support the IPV exit as 4G OTA capability would have been successfully proven during the micro pilot.

DCC proposed this approach during the workshops and no objections to the approach were raised.

5.7.8. Adapter Providers and Device Model Combinations

The introduction of an Exit Criteria for IPV was discussed at the workshops and it was agreed that the proving of different adapter providers should be introduced as an additional Exit Criterion. The reasoning for the inclusion of adapter providers was that the various adapter providers can sequence service requests differently and the timings can be different, which could be influenced by the 4G Comms Hubs. The number of adapter providers that are used during IPV was discussed and it was concluded that a minimum of two adapter provider solutions should be proven but that it would be advantageous for as many adapter providers as possible to be proven.

DCC has therefore added this as an Exit Criterion.

During the discussions on the addition of adapter providers as an Exit Criterion, Energy Suppliers noted that adapter providers fall into the wider category of "proving coverage" for confidence. The proving of installation device model combinations was given as another critical activity which falls into the proving coverage category. DCC agrees that extending proving coverage to as broad a coverage as possible is crucial to gaining confidence. DCC agrees that this is of importance but is of the view that it should not be considered as an Exit Criterion.

5.7.9. Prepayment SRV Success

Prepayment is a key customer journey and following engagement in the workshops, DCC added this criterion as Energy Suppliers sought to test prepay functionality during the IPV phase. DCC proposes two customer journeys.

5.7.10. Customer SRVs Run

Based on pre-engagement with key stakeholders it was recommended that in addition to the customer journeys, specific SRVs are also identified which DCC Customers consider to be vital. The SRVs identified are read requests for ESME and GSME and DCC considers that it would be an SRV for both an ESME and GSME from 2 Suppliers.

No comments or objections have been received from DCC Customers on this position during the workshop engagement. DCC will propose these SRVs as an Exit Criterion but should additional SRVs need to be added during IPVAD development then they would be introduced in this section.

5.7.11. Overall Minimum Install Volume

Minimum install volume is a crucial factor for proving any major Comms Hub product changes. Without sufficient volume there can't be confidence that the new Comms Hub product and associated infrastructure has been utilised rigorously to allow potential major incidents or defects to surface.

DCC notes that there were concerns that 1000 installs were insufficient. However, no views on an appropriate number were provided during the workshops. From experience of previous IPV phases, an overall amount of 1000 installs have been sufficient to gain confidence and prove repeatability of the 4G Comms Hubs. DCC Customers will be able to order up to 8,960 CH collectively and therefore it is feasible that a much higher number will be installed.

In the workshop of 11 May 2023, it was discussed whether there should be a minimum required install volume for each individual Energy Supplier. It was suggested that the minimum amount could be 50% of the ordered Comms Hubs. However, Energy Suppliers also noted that there may be specific reasons why an Energy Supplier did not install a specific number of Comms Hubs such as if there are errors with their internal systems. As DCC has a minimum number of installs across all participants, DCC is of the view that there is no need to have such an obligation, specifically due to the concerns raised by Energy Suppliers related to such an obligation.

DCC discussed the number of comms hubs that could be ordered for IPV in the workshop on 11 May 2023. DCC has a section below that sets out the Comms Hubs ordering during IPV. DCC does however note that the current returns policy would apply to any Comms Hubs that are unused as part of IPV and returned to DCC.

During the workshops it was established that Comms Hub exchanges in the form of swap outs would form a crucial percentage of the install volume. The IPV installation volume cannot

exclusively be made of new installations as it was the view of the Energy Suppliers that this would not sufficiently prove the Comms Hubs for all the installation locations and scenarios where they will need to be installed in the field / production environment. DCC is of the view that the volume split of the minimal installations between new installations and Comms Hub exchanges is not within the remit of DCC to determine as this is an aspect of 4G installations that is purely within the remit of Energy Suppliers. As DCC has no control over this, DCC does not propose to have a certain ratio. During the workshops, DCC proposed that the Exit Criteria for new installs and replacements should be a total of two each of the 1000 minimum installs. There was no objection to this proposal. DCC anticipates that all Energy Suppliers that take part in IPV will attempt a new install and a replacement and that these criteria will be met.

5.8. Service Management During IPV

DCC proposes that during the IPV period the new service that comprises disaggregated arrangements should be used where possible in order to demonstrate that it is fit for purpose for all BAU work items. Any issues deemed to be programme defects and not BAU items will be channelled to a team of programme SMEs for additional focus and reporting. Details are as follows:

- DCC will add an additional triage phase as a first step in any support journey which will establish whether the issue/request raised is a result of a programme defect or a BAU activity
- Any issue that is related to a programme defect will be routed directly to a team of programme SMEs for further analysis, resolution and reporting
- All BAU work items will be routed through the standard BAU support journeys
- DCC does not anticipate any regulatory changes for this approach

5.9. IPV Ordering

The maximum volume of 4G Comms Hubs that can be made available for the IPV phase across participating Energy Suppliers will be 10 pallets, which equates to 8,960 Comms Hubs. Based on previous experience from major programmes and similar proving activities, DCC believes that this will be a sufficient quantity of Comms Hub to meet the demand for installations during IPV.

It was discussed and agreed at the workshops that the volume of Comms Hubs that Energy Suppliers order should be a volume that Energy Suppliers aim to install during the 9-week IPV period. Following the successful conclusion of IPV an LSC 2 decision will be made to approve the volume manufacture of 4G Comms Hubs. There were also related discussions at the workshops that, where possible, DCC shall work with Energy Suppliers to ensure the maximum Comms Hub volume is made available for installation. The aim of this is for DCC to support Energy Suppliers to get the maximum confidence and value from the time allocated to IPV.

During the workshop of 25 May 2023, the ordering process for IPV was discussed. IPV Comms Hub Ordering will be a specific event and will be managed by a manual process to support the on-time delivery of the 4G Comms Hub units. DCC will not be using the enduring 4G Order Management System. DCC will be using an off the book system where the ordering and delivery is managed manually by DCC. The process for this will be set out in the NETMAD.

The key steps of IPV Comms Hub ordering are outlined as follows:

- DCC will provide early visibility of the associated timescales, to provide Energy Suppliers as much time as possible to assess and plan for IPV
- DCC will contact Energy Suppliers individually to support ordering of 4G Comms Hubs for IPV
- Final orders will be placed in June 2024
- DCC will deliver 4G Comms Hubs in sufficient time to allow Energy Suppliers to prepare for the 4G IPV period, which is currently 18 November 2024 according to the LC13B milestone table
- A pallet of CHs comprises 4 layers, each layer comprises 16 cartons and each carton comprises 14 Comms Hubs. Current BAU processes are that a minimum order is for one Carton. A maximum of 1 IPV pallet can be ordered by any individual Energy Supplier due to the restrictions on volume
- In line with BAU Comms Hub forecasting and ordering, DCC proposes that IPV Comms Hubs will be ordered in increments proportionate to cartons of a pallet up to the maximum of a complete pallet. Accordingly, the minimum order for IPV Comms Hubs per Energy Supplier will be one carton
- Orders not conforming to this would be rounded up or down to an amount aligned to a carton, layer or pallet of Comms Hubs
- Following the initial round of orders, if the combined orders from all Energy Suppliers are less than the 10 pallets that are available for IPV, DCC will provide an opportunity for Energy Suppliers to order additional Comms Hubs in a second round of ordering. DCC will engage with Energy Suppliers at this point to ensure a fair distribution of the second round of ordering. If after the second round of ordering the orders are in excess of 10 pallets, these orders will be pro-rated.
- As part of IPV Comms Hub Ordering DCC is of the view that for the first round of ordering if customer demand is greater than the IPV stock available orders then the orders shall be prorated in cartons based on IPV Comms Hub order volume
 - The pro rata methodology applied would reduce the total of 4G IPV Comms Hubs ordered down to 8,960 Comms Hub units and each energy supplier would receive the prorated percentage of total orders received for IPV
 - DCC proposes that the minimum any customer IPV order could be reduced to is one layer of a pallet. As IPV orders will be built up by cartons to create layers and layers to create a pallet DCC also proposes that the reduction would be managed by reducing orders by amounts equivalent to cartons
 - Reductions would be applied by removing cartons from customers with the highest volume orders who have ordered one layer or more, DCC proposes that any party that ordered one layer or less would not incur any reductions
 - Following the pro rata adjustment to all parties, if there are any remaining cartons, DCC would randomly provide these to Energy Suppliers who had their original order volumes reduced

An illustrative example of how this could occur is as follows:

• For reference: 1 pallet = 896 Comms Hubs, 1 layer = 224 Comms Hubs, 1 carton = 14 Comms Hubs

- A total of 7 Energy Suppliers order 1 Pallet each (896x7 = 6272). This would mean that these 7 Energy Suppliers would be due to receive 6272 Comms Hubs
- A total of 6 Energy Supplier order half a pallet (2 layers) each (12x224 = 2688). This would mean that these 7 Energy Suppliers would be due to receive 2688 Comms Hubs. All of the available Comms Hubs would now have been used
- A total of 2 Energy Suppliers order a quarter of a pallet each (1 layer) (2x224 = 448. These 2 Energy Suppliers would order half a pallet between them
- A total of 5 Energy Suppliers order a carton each (5x14 = 70). These are small energy suppliers who would order 5 cartons between them
- The total 4G IPV Comms Hubs Ordered is an amount of 9478 comms hubs, which is in excess of the maximum number of available 8960 4G IPV Comms Hubs
- The excess number of 4G IPV Comms Hubs Over Ordered is 9478 8960 which is 518 Comms Hubs
- The 518 Comms Hubs broken down into the number of Cartons is 518 divided by 14 which equals 37
- 15 Energy Suppliers ordered 1 layer or more and the 37 cartons have to be removed from these Energy Suppliers
- Each of those Energy Suppliers who ordered 1 layer or more will lose 2 cartons with 7 cartons remaining. The remaining 7 cartons will be randomly distributed amongst the 15 Energy Suppliers

DCC presented these options at the workshops and there were no objections to this approach.

4G IPV Comms Hubs will be subject to the SEC mandated Returns process. Accordingly, the Comms Hub manufacturer is liable for Fault Returns as per current SEC obligations, all other no-fault returns will be subject to the charges stated on the charging statement.

5.10. IPV Unhappy Path

The CH&N programme plan has shift left principles integrated which should reduce the likelihood of problems and defect being encountered during IPV. Comms Hub hardware and firmware releases have encountered critical issues in the past and DCC intends to follow similar escalated resolution paths where typically new firmware versions and in the worst-case new hardware iterations may be required.

Should these events occur the impact to the programme would be high and a replan would be required. Any fixes developed would need to return through the previous test cycles and the governance at each stage would need to reconsider the minimum retest which would be required for confidence. At this point it would be highly likely that IPV would need to be replanned and restarted once the fix arrives for proving. Due to the manufacturing lead times involved DCC does not plan to provide the opportunity to order additional IPV Comms Hubs. As described in the IPV CH Ordering section this is intended to be a single event.

DCC validated this position with DCC Customers in the workshop held on Thursday 8th June and there were no objections.

6. Mass Rollout Confidence

In the workshop of 15 February 2023, a party raised the question of Mass Roll Out confidence and how this should be obtained. DCC is of the view that mass rollout confidence is a different question to the Volume Manufacture decision which is governed by LSC2. DCC is of the view that mass rollout confidence is a decision for Energy Suppliers as to whether they are confident to start their 4G deployments.

At the workshop on 19 April 2023 DCC sought views on what Energy Suppliers require to achieve mass rollout confidence beyond the criteria outlined above for IPV.

Some Energy Suppliers indicated that they sought a period of monitoring the 4G Comms Hubs beyond the IPV period to provide confidence.

In the workshops DCC further raised whether there should be an additional mass confidence period. Energy Suppliers indicated that it was not necessary to have an additional monitoring period beyond IPV. Following discussions, there was subsequently no support for the proposed additional monitoring period which has therefore been superseded

7. Reporting

Reporting has been discussed in the 4G transitions workshops. Energy Suppliers were of the view that reporting is a crucial element to the success of the IPV activity. DCC agree and are supportive of this position and in the workshops committed that the relevant Operations team (Product & Logistics, Data Science, Hypercare) would provide support during the IPV and transition period alongside any reporting that is required. It was noted that current reporting and support provided for 2/3G supply chain might not be suitable for transition related queries so DCC will endeavour to develop all reports required that support the optimal transition.

Based on the discussions at the workshops and subsequent agreement from Energy Suppliers DCC believes that the proposed 4G Early Deployment Group will be a central vehicle where shared reporting and progress updates can be provided as well as facilitating the discussion of any issues discovered. DCC will provide this reporting to all Energy Suppliers and interested stakeholders.

In the workshop of 25 May 2023, DCC asked participants whether they were of the view that there should be any mandated reporting in the NETMAD. There was no indication from any of the participants that there should be any regulatory obligation on DCC for reporting.

DCC will therefore not place any obligation in the NETMAD on reporting but will continue to engage with DCC Customers to ensure that reporting meets their requirements.

8. Mechanisms for Disabling Transitional Provisions and Activation of Enduring Obligations

The NETMAD can also act as the vehicle for the activation and deactivation (switching on and off of transitional and enduring SEC obligations as required to support transition to the enduring 4G arrangements). For example, activating text that has already been included in the SEC by the

Department (using the Secretary of State powers to amend the SEC) that enable the forecasting and ordering of 4G communications hubs. The transition under the SEC will need to be controlled and it is suggested that the mechanism for this could be specified in the NETMAD.

Appendix A – Licence Condition 13B Milestone Table

#	Milestone	Proposed dates (Consultation Dates where different)	Description
1*	PIT Start	07/03/2023	Start of PIT phase for CH, DM, WAN, subject to earlier TAG approval of the corresponding Testing Approach Documents.
2	Transition to Operations Testing (TTOT) Phase Start	07/03/2023	Start of DCC's Transition to Operations test phase (TTOT), which includes Operational Acceptance Testing and Business Acceptance Testing stages.
3*	OMS and Logistics – initial engagement complete	15/03/2023	Initial engagement with stakeholders complete: DCC has captured SEC Party business needs relating to the OMS and Logistics capability. DCC has an understanding of the impacts on Users of the options available including its proposed approach
4*	Conclusions on scope of enduring regulatory changes for the programme	31/03/2023	Latest date by which DCC will issue a conclusions document on the scope of regulatory changes required to deliver the CH&N programme
5*	AMENDED - RF Noise Limits confirmed	10/01/2024 07/04/2023	Updated ICHIS published including RF noise limits for 4G following DCC consultation, with requisite testing environments and equipment made available.
6	Low Level Design complete	08/05/2023	Completion of Service Provider low level designs for the WAN, CH and Device Manager approved with DCC's Design Authority
*	AMENDED - Control Point 2 – Revalidation of plan following Low-Level Design completion	30/06/2023 08/05/2023	Following the completion of Low-Level Design, DCC will use a control point to evaluate its detailed plan, submitting changes to the JIP if necessary.
7*	Conclusions of engagement on 4G Transition	30/06/2023	Latest date by which DCC will issue a conclusions document on proposals for how to manage transition from 2G/3G CHs to mass supply of 4G CHs
*	NEW - Confirmation of GBCS version	30/06/2023	DCC to confirm, based on the results of testing progress on the GBCS programme, that the planning assumption to use version GBCS 4.1 Comms Hubs is valid for Customer UIT and IPV
*	NEW - Confirmation of Change of Supplier (CoS) Certificate Type	31/08/2023	DCC to confirm, based on the progress of the ECoS Programme, the planning assumption that ECoS (rather than the current TCoS) certificates are to be used for the Comms Hubs supplied for both Customer UIT and IPV
8*	Conclusions on enduring and transitional legal text regulatory changes for the programme	31/10/2023	Latest date by which DCC will issue a conclusions document on tracked changes it proposes are made to the SEC to reflect the enduring and transitional requirements for the 4G Communications Hubs & Networks Programme.

9	CH Financing, Insurance and Warranties – capability in place	29/12/2023	Point at which capability to finance, insure and warrant CHs will be put in place
10*	PIT Exit	10/01/2024	DCC gets Panel approval of Completion of PIT phase for DSP, CH, DM and WAN
11*	SIT Start	15/01/2024	Start of SIT phase after successfully meeting entry gate criteria
12*	Test CH Orders	01/04/2024	AMENDED - Test 4G CHs available for ordering by Testing Participants, which will be delivered within 12 weeks of being ordered.
13*	SIT Exit	07/06/2024	DCC gets Panel approval of Completion of SIT phase
14*	Initial Pallet Orders	07/06/2024	CHs required for IPV are available for ordering by Suppliers
15*	UIT Start	05/08/2024	Start of the UIT, including testing of changes to the Order Management and Logistics capabilities based on agreed set of entry criteria
16*	UIT Complete	07/10/2024	End of the UIT window based on an agreed set of Exit Criteria
17*	LSC: Go-Live submission	21/10/2024	Live Services Criteria submission to BEIS and SEC Panel for consideration prior to start of IPV and prior to DCC's deployment of changes to Live Systems
18	TTOT End	07/11/2024	Completion of DCC's Transition to Operations test phase (TTOT), which includes Business Acceptance Testing
19*	Initial Pallet Supply	18/11/2024	CHs ordered for IPV phase are delivered to Suppliers
20*	LSC: Go-Live decision	29/11/2024	Response from BEIS for approval prior deploying changes to Live systems, following SEC Panel recommendation
21*	OMS and Logistics – Live	02/12/2024	New OMS and logistics capabilities will be operational.
22*	Initial Pallet Validation Start	02/12/2024	Start of Initial Pallet Verification pilot window in production
23*	Initial Pallet Validation End	07/02/2025	Completion of the Initial Pallet Verification pilot window in production
24*	LSC: Volume M/f submission	17/02/2025	Live Services Criteria submission to BEIS and the SEC Panel for consideration prior to DCC's Volume Manufacturing Decision
25*	LSC: Volume M/f decision	07/04/2025	Decision from BEIS prior to Volume Manufacturing, following receipt of SEC Panel advice
26*	Start of enduring 4G CH supply	30/06/2025	AMENDED - Point at which unconstrained volumes of 4G CHs will be in the UK with logistics provider ready for delivery to DCC customers

* Milestones/Control Points are proposed for inclusion in the JIP

Table 5 - Appendix A Licence Condition 13B Milestone Table