SECMP0007 'Firmware updates to IHDs and PPMIDs'

Working Group Consultation responses

About this document

This document contains the full non-confidential collated responses received to the SECMP0007 Working Group Consultation.

Question 1: Will your organisation be impacted due the implementation of this modification?

Question 1			
Respondent	**Category**	**Response**	**Rationale**
E.ON	Large Supplier	Yes	The implementation of this modification will result in changes to: • IT infrastructure; • Operational Processes; and • Contractual arrangements In addition, there may be impacts to any such Devices installed prior to the implementation date should the ban for Local Updates be applied to non-upgradable Device. This however is unclear to us from the Modification and we would welcome clarity around this point.
EDF Energy	Large Supplier	Yes	As an Energy Supplier we would be impacted in 2 ways: • We would need to ensure that the relevant devices that we procure and install are able to meet the revised Technical Specifications that would be implemented as a result of this Modification. However we understand that while many of the current IHDs/PPMIDs are being built with a firmware upgrade capability, it is just that this cannot be accessed via DCC services and so is 'switched off'. • We would need to make changes to our systems and processes to manage firmware across the extended range of devices. This would include changes to our interfaces with the DCC systems in order to deploy firmware to the extended range of devices, as well as changes to processes to track and manage firmware versions. We would hope that we would be able to align the processes for managing firmware in the new devices with those that we use for other devices, and specifically meters, wherever possible.

Question 1			
Respondent	**Category**	**Response**	**Rationale**
Npower	Large Supplier	Yes	Yes, this provides a positive impact as it increases control of customer facing devices and reduces operating cost risks. Given the maturity of the SMETS and GBCS specifications, it also provides mitigation for firmware management risks.
Scottish Power	Large Supplier	Yes	The implementation of this proposal would have both positive and negative impacts on our business: i.e. it may be beneficial to have the facility to upgrade IHD / PPMID firmware using the OTA process, but we would need to implement costly new service request functionality in our IT solution. Implementation would also be an unwelcome distraction from our other rollout activities.
SSE Energy Supply	Large Supplier	Yes	Implementation of this modification will have an impact upon systems and processes within our organisation.
Utilita	Large Supplier	Yes	The ability to update IHD/PPMID firmware may reduce the number of site visits we are required to perform to fix/replace faulty devices. This also means that overall fault resolution time may be brought down. We would always prefer a scenario where we can fix an issue remotely, as opposed to going through the timely and disruptive process of organising and fulfilling a site visit.

The modification would also fundamentally change how we view our IHDs/PPMIDs that are in the field. The ability to update firmware remotely means that we could theoretically innovate in this area and improve the experience for the customer through introduction of new features.

There is likely to be minimal impact on our BAU activities. |
| **SSE Networks** | Network Party | Yes | The working group has assessed that Electricity Distributor parties will not be impacted by this modification. Whilst this may be true of the specific functionality proposed it is inevitable that overall system performance may be affected which in turn will impact SSEN. |

Question 1			
Respondent	**Category**	**Response**	**Rationale**
			It may be possible that DCC to SSEN services will be impacted by new functionality delivered by this change. These may be in terms of our ability to communicate with a meter whilst an IHD or PPMID firmware upgrade is in progress. The solution does not yet seem sufficiently developed to enable us to understand the impact of this change on the service that will be delivered to SSEN. We expect the final design of this modification to deliver a solution that has little or no impact on the level of service delivered to SSEN. SSEN may need to make minor system changes to facilitate this modification. It is possible that this modification will create issues associated with the management of data capacity on the DCC's systems. Given that users are "blind" to system component capacity constraint we require further information from the modification working group regarding how capacity and any potential conflicts/ user priorities will be managed. We will inevitably incur increased DCC charges (see Q2).
Chameleon Technology	Other Party	Yes	Our products will be expected to implement the OTA features described in this modification. We will also be expected to continue to support deployed products with firmware updates as appropriate after deployment.
TMA Data Management	Other Party	Yes	There might be some minor system changes required.

Question 2: Will your organisation incur any costs due to the implementation of this modification?

Question 2			
Respondent	**Category**	**Response**	**Rationale**
E.ON	Large Supplier	Yes	The implementation of this modification will incur costs; such costs are not quantifiable until more is known with regard to a) the solution proposed here, and b) the management process adopted by Industry for Firmware changes, specifically in CoS situations.
EDF Energy	Large Supplier	Yes	We would definitely incur costs as a result of the changes detailed in our response to Question 1 but at this stage is not possible to give any indication as to what those costs would be. It is likely that any changes required to devices and/or the DCC systems as a result of this Modification would form part of a wider release which would include other changes – providing costs that are specific to this Modification as if it were to be implemented in isolation from other changes would be very difficult and would provide unrealistic costs. On that note, we believe that the DCC's costs are probably not realistic on that same basis, and are far higher than they would actually be if this Modification were to be implemented as part of a wider package of changes.
Npower	Large Supplier	Yes	Yes, circa £500k. this will involve changes to our DCC gateway, asset management and front end-systems, as well as testing/assurance activities.
Scottish Power	Large Supplier	Yes	As indicated in our response to Q1, we would expect the costs impacts from implementing the SECMP0007 solution in our IT systems to be of a material nature.
SSE Energy Supply	Large Supplier	Yes	Following implementation, we will be able to run OTA which will result in costs for us, but for every device that we are able to OTA rather than replace, we will avoid disruption or adverse consumer experience and reduce the costs of issuing replacement devices.

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Question 2			
Respondent	**Category**	**Response**	**Rationale**
Utilita	Large Supplier	No	(Excluding our share of the cost of the modification) We believe that there would be no substantial direct costs to our organisation. There may be some relatively small costs to test new functionality/train staff to utilise said functionality. These costs would likely be accounted for as BAU costs. We believe most of the risk lies with the asset owners (MAPs), but this depends on each Suppliers' contractual arrangement with their MAP.
SSE Networks	Network Party	Yes	SSEN may incur costs associated with a need to make some minor changes to its systems. SSEN do not have sufficient information at this time to determine whether this change will result in specific additional DCC charges. Should SEC parties in future be required to pay charges for individual service requests then it is possible that further additional costs will be incurred. There are potential situations associated with this modification where capacity constraint means SSEN service requests will fail leading to a need to re-issue a command. This will lead to an increase in internal administration costs and may in future be subject to individual service request charging. As a SEC party SSEN will incur higher DCC charges for functionality that will not improve our ability to deliver benefit to our customers.
Chameleon Technology	Other Party	Yes	The extra functionality requires more code space and storage space in our products, increasing the unit cost. The extra development time required to implement and test the features will also add cost. These extra costs have to be taken in the context that there is a significant benefit to having the capability to update assets once deployed. It is not expected that there would is likely to be an increase in the price of assets on a like for like basis.

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Question 2			
Respondent	**Category**	**Response**	**Rationale**
TMA Data Management	Other Party	Yes	The cost associated would be very low.

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Question 3: Please provide any views or rationale on whether the benefits of the change, outweigh the costs associated with assessing and implementing it. Noting:
questions raised in relation to how many IHDs and PPMIDs will be in use when this modification is implemented; and this will be implemented (if approved) no earlier than Spring 2019.

Question 3		
Respondent	**Category**	**Comments**
E.ON	Large Supplier	We do not understand how the costs proposed have been reached and would welcome a detailed explanation of how DCC arrived at such costs.
		In addition, the value of this modification is likely to be consumer driven and the use of these Devices across time has not yet been established at Industry. However, it is believed likely that the use of PPMIDs and AIHDs are likely to continue since their use is purpose-driven.
		At the present time we do not believe that there is sufficient information to inform such a consideration with regard to this modification. We would note however, that we fully support the progression of this modification and the benefits it will bestow upon Industry.
EDF Energy	Large Supplier	We believe that the benefits of this change are likely to outweigh the costs, but we recognise that further detailed analysis needs to be undertaken to determine whether this is the case.
		As noted in the response to Question 2 we do not believe that the estimated costs that have been provided by DCC are reasonable or realistic, especially as they are based on this being made as a standalone change. Assessing whether this change should be progressed on the basis of these costs is not appropriate.
		We believe that not being able to upgrade the firmware on additional devices, and especially on PPMIDs and potentially HCALCSs creates a significant risk in relation to those devices. We note that HCALCSs are not currently within the scope of this Modification but many of the risks that this change is looking to address would apply equally to those devices.

Question 3		
Respondent	**Category**	**Comments**
		It should also be noted that in many if not most cases Suppliers are deploying devices that deliver IHD and PPMID functionality within the same device, which for DCC purposes would be registered as a PPMID on the DCC's Inventory. It is not clear how many devices that are purely IHDs will actually be installed – this would need to be understood further. Where it is not possible to upgrade the firmware on a device there is a risk that device may no longer be able to perform its mandated function, or it may not be possible to upgrade that device to include additional functionality which may be required to support the consumer. In the absence of an ability to fix or upgrade a device via a firmware update devices will need to be replaced, which invoices unnecessary cost to consumers, especially should that replacement require a site visit. This is less likely to be the case for IHDs which have limited maintenance requirements, but as noted above in many or most cases Suppliers will be deploying PPMIDs rather than IHDs, with the anticipation that these devices will be more permanent than IHDs – especially where the customer is in prepayment mode. Suppliers will have an ongoing obligation to keep these devices operational that extends beyond the 12 month minimum for IHDs. As noted previously we understand that many of the current IHDs/PPMIDs are being built with a firmware upgrade capability, it is just that this cannot be accessed via DCC services and so is 'switched off'. This would mean that these devices which are provided before 2019 might be capable of receiving a firmware upgrade even if this change is not approved until 2019 – depending on whether this functionality needs to be 'switched on' – if so and this is not possible then these devices would remain incapable Of receiving a firmware update even if the DCC functionality is introduced in 2019 While some of the risks that would cause a device to be replaced might be able to be mitigated through other actions (such as pre-deployment testing) there will always be a residual risk that devices will be stranded and will need to be replaced. We believe that the working group should undertake further analysis which considers what device types are actually being rolled out by Suppliers, what the risks associated with those devices are, and how they might be mitigated. The level of residual risk once these mitigating actions have

Question 3		
Respondent	**Category**	**Comments**
		been taken will indicate whether the costs of progressing this Modification will outweigh the costs – our initial view is that this is likely to be the case.
Npower	Large Supplier	We believe the benefits far outweigh the costs.
		If we assume that at circa £20 a unit for a PPMID and that by early 2019 we would be a ¼ of the way through the rollout and therefore ¾ of the PPMID population could be upgraded and that ½ the PPMIDs suffer an issue that could be fixed by an OTA firmware upgrade then 54m meters = 27m installed PPMIDS x ¾ x ½ = 10.125m potential PPMIDS that may need an upgrade.
		If we had to replace those PPMIDS then the benefits would become £202.5m!
		Also, if a visit is required to replace any of these PPMIDs then the benefits become even greater.
Scottish Power	Large Supplier	The implementation of SECMP0007 is not now expected until Spring 2019 at the earliest; by which time a significant proportion of households can already be expected to have IHD / PPMID units or equivalent deployed. We are concerned, therefore, that the benefits of being able to deliver OTA firmware to these devices are significantly reduced, as this late delivery would mean site visits are not avoided in the interim. Moreover, if the implementation of SECMP0007 was to be pushed out towards 2020, it is likely that only a minimal number of units would ever require this OTA facility during the Relevant Period outlined in the supply licence.
		In our view, the proposed 2019 implementation date is a consequence of the DCC being unable to divert resources away from its main implementation programme and onto SEC Mods. In our view, then, delaying a decision on SECMP0007 at this time would have no material impact on its subsequent delivery, should we later decide to proceed.
		We would, therefore, suggest placing this Mod on hold until, say, the second half of 2018, when it could be revisited and a final decision made. We believe, this would require the Proposer to Withdraw the Mod, as the Suspension process only appears to be available to the Panel in very limited circumstances that do not apply in this case.

Question 3		
Respondent	**Category**	**Comments**
SSE Energy Supply	Large Supplier	-
Utilita	Large Supplier	-
SSE Networks	Network Party	There will be no benefit to SSEN from this proposed change. We have no information regarding whether benefits will outweigh the high cost of this change.
Chameleon Technology	Other Party	The ability to OTA update an IHD/PPMID after deployment will provide significant net benefit, by allowing bug-fixes, feature enhancements and security improvements to be applied, rather than needing to recover/replace with new units.
		The sooner that this change can be implemented the sooner the benefit can be felt. However, once the details are finalised we expect that compatible products may be able to be deployed before the implementation date (subject to suitable testing) on the expectation that the update capability will be able to be used later on.
		It is key to get the details finalised and the modification introduced at the earliest opportunity in order to realise the maximum benefit from the modification.
TMA Data Management	Other Party	Providing the astronomical cost put forward by the DCC (7.4 to 8.2 Million), no amount of benefit will outweigh that. We find ourselves in a position to reject a change we would otherwise support. This is a major gap in the original design that is unlikely to be addressed given the prohibitive cost put forward by the DCC.

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Question 4: If you are a Supplier Party, please provide examples of when you are likely to need to update firmware on IHDs and/or PPMIDs, and how often you expect to do so when this modification is implemented (earliest Spring 2019).

Question 4		
Respondent	**Category**	**Comments**
E.ON	Large Supplier	Based on today's landscape and our experience of SMETS1s, we believe that a minimum of two firmware updates per annum would be required to these Devices.
EDF Energy	Large Supplier	Based on our experience of our SMETS1 IHDS (which are capable of processing firmware updates) the key drivers for updating firmware on these devices is: • To address inaccuracy and defect propagation on devices to ensure they remain compliant with Supplier licence obligations related to these devices. • To resolve any identified risks or vulnerabilities to the HAN from IHDs or PPMIDs. • To deliver functional enhancements that improve the consumer experience and support the delivery of the consumer benefits associated with the smart metering rollout. It is almost impossible to take a view as to how frequently we might need to undertake firmware updates for any of these reasons after 2019 but our experience of our SMETS1 devices is that we have needed to undertake relatively frequent updates. While some of the root causes of this might be addressed and the number of updates reduced, it is unlikely that the need to upgrade devices can be eliminated entirely.
Npower	Large Supplier	Device defects including security Specification level defects including security Interoperability issues New application functionality

Question 4		
Respondent	**Category**	**Comments**
		New service functionality
Scottish Power	Large Supplier	Firmware upgrades would most likely be needed in the event that a corresponding upgrade to other Devices (e.g. Comms. Hub or ESME / GSME) led to a loss of IHD/ PPMID functionality. An indication of such incidence would be a function of testing.
SSE Energy Supply	Large Supplier	-
Utilita	Large Supplier	See Q3.
SSE Networks	Network Party	N/A
Chameleon Technology	Other Party	N/A
TMA Data Management	Other Party	N/A

Question 5: Please provide your organisations views on:

responsibilities for Suppliers that send firmware images to rectify any interoperability issues that may occur; and
liabilities for damaged Devices because of firmware updates; and
responsibilities for ensuring that damaged Devices are un-joined and decommissioned, and new devices are whitelisted, joined and commissioned.

Question 5		
Respondent	**Category**	**Comments**
E.ON	Large Supplier	We believe that there is a fundamental requirement to resolve such issues at Industry, but we believe that this needs to be done in a single space and to be made applicable to all Devices requiring Firmware Updates. We would highlight that this modification can be accepted on a good faith basis with regard to the requirement to have a Firmware Management Process.
EDF Energy	Large Supplier	Where a device is 'shared' by multiple Suppliers it should be possible for either of those Suppliers to send updated firmware to that device – the concept of a 'lead' or 'responsible' Supplier would not be appropriate. Where a Supplier sends a firmware update that means a device ceases to work of deliver the functionality required by the other Supplier then it is reasonable to expect that Supplier to be responsible for rectifying that issue, and where required replacing that device. The actions undertaken by one Supplier in deploying firmware should never leave the consumer in a worse position than they were before that update was undertaken.
Npower	Large Supplier	Given suitable levels of assurance from device manufacturer that the firmware has been thoroughly tested and suppliers own assurance processes that they may choose to carry out, then these risks can be minimised anyway. Npower does not think you can lay responsibility on one party in a shared HAN situation for interoperability where the Installing Supplier is no longer a Responsible Supplier, especially when dealing with firmware upgrades as it may be a particular device that is causing an interoperability issue and may be

Respondent	Category	Comments
		due to a device that hasn't been upgraded. Suppliers have a shared responsibility for the HAN and that should endure. We would expect some level of collaboration between parties in this scenario. Where the installing supplier is the responsible supplier then they should perform the firmware update. Where devices are damaged then responsibility for decommissioning (if possible) the old device and commissioning the new device can only be with the Responsible Supplier or the upgrading party for a shared device.
Scottish Power	Large Supplier	As a supplier committed to delivering an excellent customer experience, we would expect to resolve any issues with IHDs/PMIDs in our customers' premises; though we realise it might not be to the customer's convenience if a site visit is required. Given that alternatives to IHDs and PPMIDs are likely to emerge (e.g. as a feature of a product), a better customer experience might be delivered by providing access to such alternatives, and might also serve to obviate the need for such site visits.
SSE Energy Supply	Large Supplier	We believe that the Responsible Supplier should rectify any interoperability issues and ensure that damaged Devices are exchanged, following the relevant processes. In terms of damaged devices, it is our view that it would be the responsibility of the Responsible Supplier to rectify these situations as and when they become aware. That being said, the answers for the question on liabilities may depend upon the scenario, such as if they were the installing or gaining supplier, and each supplier's commercial arrangements. A particular concern around this is that it could be difficult to determine what has happened at a dual supplier site that has been damaged. This is a complex matter that we believe should be further assessed by the Working Group based upon the consultation responses, and take into consideration the existing SEC provisions for liabilities.
Utilita	Large Supplier	We agree that the Supplier responsible for the damage should be responsible for the replacement. We do not believe that any new obligations should be introduced with regards to joining and commissioning of new Devices. Existing obligations (supply licence conditions) relating to supply and maintenance of an IHD should remain. Provision of a PPMID should remain optional.

Question 5		
Respondent	**Category**	**Comments**
		Firmware upgrades which result in damaging either device should be dealt with using existing obligations and whatever the Supplier believes to be in the best interest of the consumer. We cannot foresee a situation where a firmware upgrade would inadvertently result in a faulty Device which we not then subsequently replace, as this would obviously be in the best interests of the impacted customer(s).
SSE Networks	Network Party	N/A
Chameleon Technology	Other Party	In this topic what must be borne in mind is that at present until this modification is introduced then there is no practical means to address issues in the field with these assets should these occur. It is expected that issues were introduced as a consequence of an update then the update mechanism would have to be used again in order to correct matters.
TMA Data Management	Other Party	N/A

Question 6: Having considered the potential impacts and costs to your organisation, as well as the cost to deliver the modification, do you agree that SECMP0007 should continue to be progressed?

Question 6			
Respondent	**Category**	**Response**	**Rationale**
E.ON	Large Supplier	Yes	We believe this modification ought to progress.
EDF Energy	Large Supplier	Yes	We believe that SECMP0007 should continue to be progressed as we do not believe that evidence has been presented that would indicate that the costs of this change (which we believe are too high) outweigh the benefits. The working group should continue to refine this change to see how costs could be minimised. They should also conduct a more detailed analysis, supported by device manufacturers to understand what risks could arise in relation to maintenance these devices, what other mitigating actions could be taken to address these risks (and their associated costs) and what residual risk remains. This risk analysis should be undertaken on a collective basis rather than by individual parties.
Npower	Large Supplier	Yes	Yes, we believe the benefits far outweigh any costs.
Scottish Power	Large Supplier	No	We do not think SECMP0007 should continue, as the cost of implementation and the late delivery of the solution might well far outweigh any benefits. We also think that less costly, but equally effective, solutions are likely to emerge in the interim, which could be made available to customers in such circumstances.
SSE Energy Supply	Large Supplier	Yes	We do believe this should be progressed but we have significant concerns around interoperability that we believe should be discussed by the workgroup before progression. We recognise that this will require an effort across industry to identify potential issues, but on the basis of mitigating risks, this change is an appropriate capability to develop.

Question 6			
Respondent	**Category**	**Response**	**Rationale**
Utilita	Large Supplier	Yes	We do believe that this modification should be progressed, however we note that the costs seem high. This modification is in the interest of the customer and would also facilitate further innovation by facilitating future IHD/PPMID related modifications. However, it is very hard to evaluate whether this is a justifiable move from an economic standpoint. It is hard to predict whether other innovations will make IHDs/PPMIDs redundant soon. We remain uncertain of how much customers will use their IHDs, especially when considering certain prepayment demographics. Innovations in the payment space may also drastically reduce the usage of PPMIDs. Total costs (£7.3 million - £8.2 million. Rising to £10 million) seem high given that service requests already exist for ESME/GSME firmware upgrades. As DCC do not have any involvement in the creation of the firmware images, we struggle to see how adapting these messages for IHD/PPMIDs could cost up to £10million. We would like to request that the DCC to provide a full and transparent break down of costs before it progressed for voting to Change Board.
SSE Networks	Network Party	Abstain	SSEN will not derive any benefit from this change. We are therefore not able to provide a view regarding whether this modification proposal should progress.
Chameleon Technology	Other Party	Yes	This is a significant benefit that should definitely continue to be progressed.
TMA Data Management	Other Party	No	As mentioned in response to question 3, we are forced to reject the change despite the fact that it would be very beneficial. It is not the first time, we were in favour of SECMP004 and 008 but due to the cost put forward by the DCC, were left with no option but reject them.

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Question 7: Do you have any other comments on the solution?
Including any impacts not identified by the Working Group as set out in the consultation document, any alternative solutions, and/or any other comments/questions that you would like the Working Group to consider?

Question 7			
Respondent	**Category**	**Response**	**Rationale**
E.ON	Large Supplier	Yes	The diagram provided for the proposed Firmware update process for Images of 750kb or above, does not seem to match the text provided for the process: the text gives that the first Image (0x15) will "set the activation date-time as zero (i.e. 'active now').", but the diagram does not contain the associated "Activation" step in the Device column. We would be grateful if the diagram could be update in order that this step being visible.
EDF Energy	Large Supplier	Yes	If this Modification is not progressed Suppliers are likely to seek alternative solutions to maintaining devices – one example would be deploying firmware updates to these devices via an internet connection (which is not precluded by SMETS). Any such solution would not be guaranteed to be interoperable and would not be subject to the security controls that the DCC provides.
			The DCC systems were always intended to be flexible to enable additional devices to be connected and additional services associated with those devices to be supported. The estimated costs provide by DCC indicate that this flexibility does not exist, and that development of their systems to support the emerging smart energy system is likely to have a very high cost. We are concerned that the costs of this and other modifications are likely to make evolution of the DCC systems cost prohibitive, and to drive Suppliers and other industry parties to seek alternative communication solutions that undermine the case for having a DCC.
			We note that HCALCSs are not currently within the scope of this Modification but it is not clear why this is the case. These devices are likely to be prone to some of the same issues

Question 7			
Respondent	**Category**	**Response**	**Rationale**
			as IHDs and PPMIDs; they are also permanent devices that need to be maintained over the whole life of the metering system. Consideration should be given to including these devices within the scope of this Modification.
Npower	Large Supplier	No	-
Scottish Power	Large Supplier	No	-
SSE Energy Supply	Large Supplier	Yes	-
Utilita	Large Supplier	Yes	We believe that this should have been part of the fundamental design. The infrastructure should allow for this, given that we are supposed to be providing a "smart" experience to consumers. Needing to visit a property to update software on a Device seems like the opposite of a smart experience. If this modification is not implemented, we note that Suppliers deploying IHDs will be at a disadvantage compared to those who may be able to provide a richer experience via wifi enabled devices. Those deploying wifi enabled devices are still likely to be at an advantage, regardless, given the speed of the DCC network.
SSE Networks	Network Party	Yes	SSEN seek further information regarding how this modification will impact the ongoing capacity management process and its ability to deliver an E2E solution including the Communication Hubs potential constraints. SSEN remain concerned regarding the high costs associated with changes to central systems to deliver modifications. The scale of cost associated with system changes will inevitably lead to many modifications "failing" and stifle innovation. Failure to innovate will ultimately lead to reduced benefits realisation and poorer customer service.
Chameleon Technology	Other Party	Yes	A solution that used the OTA capability as described in the ZigBee specification (with no added requirements) would be the simplest to implement and deploy from our point of view

Question 7			
Respondent	**Category**	**Response**	**Rationale**
			and would be our preferred solution. At the cost of slight increase in comms hub complexity, a less bespoke solution can be provided on the IHD/PPMID devices.
TMA Data Management	Other Party	No	-