Department of Energy & Climate Change

Smart Meters Programme
Schedule 2.1

(DCC Requirements) (CSP Central version)

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SCHEDULE 2.1

DCC REQUIREMENTS

OVERVIEW

This Schedule 2.1 sets out certain DCC Requirements. The Contractor Solution shall deliver the requirements outlined in this Schedule 2.1. This Schedule comprises the following parts:

Part	Scope
Part A	General
Part B	Smart Meter Wide Area Network (SMWAN)
Part C	Communications Hub
Part D	Service Management
Part E	Solution Security
Appendix A	DCC SMWAN Gateway Interface Specification and associated Code of Connection
Appendix B	DCC SMWAN Gateway Interface Principles
Appendix C	HAN Interface Command definitions and design assumptions

The remainder of this document describes the DCC Requirements for the Contractor under each of these headings.

PART A – GENERAL

1.1 The Contractor shall provide the Services to the DCC, including:

a) Smart Meter Wide Area Network (SMWAN) services; and

b) Communications Hub services,

to enable the DCC to provide the DCC Services defined in the DCC User Gateway Catalogue to DCC Service Users.

1.2 The Contractor shall provide the Services to Domestic and Smaller Non-Domestic Premises located within the relevant Territory. In this Agreement, the "**Territory**" is defined by reference to the boundaries, as at the Signature Date, of the following Distribution Service Areas (as that phrase is defined in the Electricity Act 1989 standard conditions of the electricity distribution licence consolidated to 5 August 2013) in relation to the following electricity Distribution Network Operators in Great Britain:

North

Distribution Service Area	Distribution Network Operator
North Scotland	Scottish Hydro Electric Power Distribution plc
South Scotland	SP Distribution Limited
North East England	Northern Powergrid (Northeast) Limited
North West England	Electricity North West Limited
Yorkshire	Northern Powergrid (Yorkshire) plc

Central

Distribution Service Area	Distribution Network Operator
East Midlands	Western Power Distribution (East Midlands) plc
West Midlands	Western Power Distribution (West Midlands) plc
Eastern England	Eastern Power Networks plc
South Wales	Western Power Distribution (South Wales) plc
North Wales, Merseyside and Cheshire	SP Manweb plc

South

Distribution Service Area	Distribution Network Operator
Southern England	Southern Electric Power Distribution plc
London	London Power Networks plc

South East England	South Eastern Power Networks plc
South West England	Western Power Distribution (South West) plc

Any discrepancies or inconsistences regarding the boundaries between, or overlaps between, the above Distribution Service Areas shall be resolved by the DCC (acting reasonably), provided that any dispute between the parties and/or the other Prime CSP regarding such matters shall be resolved in accordance with the Dispute Resolution Procedure.

1.3 The Contractor shall provide the Services to allow the installation and roll out of Smart Metering Systems to proceed in accordance with the Programme Milestones set out in Schedule 6.1 (Implementation Planning).

1.4 The Contractor shall provide the Services with sufficient capacity to meet the demand profile as defined in Profile 5 of the 'ISFT Volume Profile', as a minimum.

1.5 With reference to the Open Systems Interconnection (OSI) standard 7 layer model for characterising the functions of a communications system (ISO/IEC 7498-1), the Contractor shall provide the Services at the:

a) Physical Layer by providing the physical communications transmission media;

b) Link Layer, providing point-to-point transmission of data packets;

c) Network Layer, providing device addressing and routing of messages; and

d) Transport Layer, by providing end-to-end message flow control and error control.

1.6 The Contractor Solution shall as a minimum comply with International Commission on Non-Ionizing Radiation (ICNIRP) guidelines and European Council Recommendation EC 519/ 1999 regarding public exposure to electromagnetic fields, and the Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 (SI 2000/730), including with the essential requirements for equipment relating to the protection against radiation contained in those regulations.

1.7 The Contractor Solution shall be operated in accordance with the description of the proposed solution set out in Schedule 4.1 (Contractor Solution).

1.8 The Contractor shall ensure the Services are provided at all times in accordance with each of the Contractor Solution Design Documents and each document forming a part of the Service Management Framework.

Unless expressly stated otherwise any statement that a given circumstance shall occur (and/or an agreement be reached) during the Design Stage (or any similar expression) shall be deemed to be a requirement on the Contractor that such circumstance shall occur (and/or such agreement shall be reached) by the Milestone Date given for Shared Milestone Reference S2 (All Solution Designs Agreed).

PART B - SMART METER WIDE AREA NETWORK (SMWAN)

1.1 This part presents the requirements for the SMWAN, covering:

a) SMWAN functionality;

b) power outage management;

c) the DCC WAN Gateway and the DCC WAN Gateway Interface Specification;

d) coverage requirements.

2. SMWAN FUNCTIONALITY

2.1 The Contractor Solution shall conform with the principles for the management of the services between the DSP and the CSP, and support the different message types defined in Appendix B: DCC SMWAN Gateway Interface Principles.

2.2 The Contractor shall utilise an interface specification for the DCC SMWAN Gateway Interface between the Contractor and DSP Solutions that:

a) is agreed between the CSP and DSP in accordance with the process defined in Schedule 6.3 (Development Process) in connection with the SD4 Interface Specifications; and

b) conforms to the principles included in Appendix B: DCC SMWAN Gateway Interface Principles.

2.3 The Contractor Solution shall provide Link Layer functionality that transfers data between all adjacent nodes of the SMWAN.

2.4 The Contractor Solution shall provide Network Layer functionality to enable correct routing of Smart Meter messages to and from the DCC WAN Gateway to the relevant Communications Hub(s) located in the Consumer Premises. Such Smart Meter messages shall support meters that utilise the versions of both Zigbee SEP and DLMS application layer protocols as defined in the GB Companion Specification documents. The Network Layer shall:

a) forward all messages in the format specified by the 'GB Companion Specification' from the SMWAN Gateway Interface to Communications Hubs in Consumer Premises; and

b) forward all messages in the format specified by the 'GB Companion Specification' from Communications Hubs in Consumer Premises to the SMWAN Gateway Interface.

2.5 The Contractor Solution shall provide a Network Layer addressing scheme of sufficient scale to allow each Communications Hub within the Territory to be uniquely identified for the purposes of routing Smart Meter messages across the SMWAN.

2.6 The Contractor Solution shall provide a function for the management of a Network Layer addressing scheme that:

a) updates the Contractor Configuration Management Database (Contractor CMDB) so that the Contractor CMDB maintains an accurate record of all Communications Hub assets that have a valid SMWAN Network Layer address;

b) provides the DSP with a reliable means to address Smart Meter messages to individual Communications Hubs via the DCC SMWAN Gateway Interface;

c) allows authorised users to automatically assign new Network Layer addresses to Communications Hubs as part of the installation process; and

d) allows authorised users to request removal or disablement of Network Layer addresses as part of the Communications Hub decommissioning process.

2.7 The Contractor Solution shall provide DCC Service Users with the ability to interrogate and verify Network Layer connectivity and other diagnostic information by initiating a request to read Communications Hub operational data. Only DCC Service Users authorised under the access controls defined in Annex D: Communication Hub Interface Commands to Appendix 2.1 of Schedule 11 shall be authorised to gain access to this diagnostic information.

2.8 The Contractor solution shall provide a function for the addressing of groups of Communications Hubs that may be used to support Smart Meter messages included in the 'bulk message' category in Appendix B: DCC SMWAN Gateway Interface Principles.

2.9 The Contractor Solution for addressing groups of Communications Hubs shall support the creation of groups of Communications Hubs constituted according criteria which shall at least include:

a) geography – it may be required to communicate load control messages within a short timeframe to all meters within a specific geographic location;

b) meter type or model – it may be required to deliver Firmware updates to a specific meter type;

c) meter Firmware version – it may be required to deliver Firmware updates to meters with a specific Firmware version; and / or

d) Energy Supplier– it may be required to deliver messages to some or all of the Communications Hubs where associated Smart Meter devices relate to customers of a particular Energy Supplier.

2.10 The Contractor Solution shall provide Transport Layer functionality between the Communications Hub and the DCC SMWAN Gateway Interface.

3. POWER OUTAGE MANAGEMENT

3.1 The Contractor Solution shall provide a power outage management service which provides notification, via an Alert message forwarded to the DCC SMWAN Gateway Interface, of a Power Outage Event.

3.2 The Contractor Solution shall forward power outage Alert messages to the DSP via the SMWAN Gateway, in accordance with the requirements set out Schedule 2.2 (Performance Measures and Monitoring).

3.3 In addition to the requirements set out Schedule 2.2 (Performance Measures and Monitoring), for related Power Outage Events detected at more than 5,000 Communications Hubs, the Contractor shall agree with the DSP in accordance with the process set out in Schedule 6.3 (Development Process) the maximum number of Alert messages to be received from the DCC SMWAN Gateway Interface and sent to DCC Service Users within a specified time interval that will be supported by the DCC SMWAN Gateway Interface Specification in connection with the SD4 Interface Specifications.

3.4 The Contractor shall specify the format of the power outage Alert messages through the DCC SMWAN Gateway Interface Specification. The message format shall identify:

a) the Network Layer address for each Communications Hub for which an Alert is sent, such that the DSP can determine the correct registered Energy Supplier and registered Distribution Network Operator of the Communications Hub using the Industry Registration Data within the DCC Data Systems; and

b) the time at which the loss of power was detected.

3.5 The Contractor Solution shall provide notification to DCC Service Users of a Power Restore Event.

3.6 The Contractor Solution shall deliver power restore Alert messages to the DSP via the SMWAN Gateway, such that, for related Power Restore Events an Alert message shall be sent to the DCC SMWAN Gateway Interface for 100% of the Communications Hubs for which a Power Outage Event has been detected.

3.7 The Contractor shall agree with the DSP the maximum number of Alert messages to be received from the DCC SMWAN Gateway Interface and sent to DCC Service Users within a specified time interval that will be supported by the DCC SMWAN Gateway Interface Specification, to be agreed in accordance with the process set out in Schedule 6.3 (Development Process) in connection with the SD4 Interface Specifications. The Contractor Solution shall ensure that this maximum Alert message rate is not exceeded during a power outage recovery.

3.8 The Contractor Solution shall deliver power restore Alert messages over a time period agreed with the DSP through the DCC SMWAN Gateway Interface Specification, to be agreed in accordance with the process set out in Schedule

6.3 (Development Process) in connection with the SD4 Interface Specifications.

3.9 The Contractor shall specify the format of the power restore Alert message through the DCC SMWAN Gateway Interface Specification, to be agreed in accordance with the process set out in Schedule 6.3 (Development Process) in connection with the SD4 Interface Specifications. The message format shall identify:

a) the Network Layer address for each Communications Hub for which an Alert is sent, such that the DSP can determine the correct registered Energy Supplier and registered Distribution Network Operator of the Communications Hub using the Industry Registration Data within the DCC Data Systems:

b) the time at which power was restored; and

c) the duration of the most recent Power Outage Event detected.

4. DCC SMWAN GATEWAY AND DCC SMWAN GATEWAY INTERFACE SPECIFICATION

4.1 The Contractor shall provide necessary communications links and terminating equipment between the Contractor Solution and the two designated DSP Data Centre locations.

4.2 The Contractor shall use facilities provided by the DSP in two designated DSP Data Centre locations to house equipment required to support the DCC SMWAN Gateway.

4.3 The DCC SMWAN Gateway Interface shall present LAN interface connections appropriate to the Contractor Solution design to the DSP Data Systems located in these designated locations.

4.4 The Contractor shall define, in partnership with the DSP, and provide a standard physical interface to enable the transfer of secured HAN Interface Commands between the DCC Data Systems and the Contractor Solution.

4.5 The Contractor shall agree with the DSP an interface specification - (the "DCC SMWAN Gateway Interface Specification") - that defines how HAN Interface Commands are requested and acknowledged across the boundary between the CSP and the DSP at the DCC WAN Gateway, according to the requirements set out in Appendix A: DCC SMWAN Gateway Interface Specification and associated Code of Connection. The Contractor shall agree the DCC SMWAN Gateway Interface Specification in accordance with the process set out in Schedule 6.3 (Development Process) in connection with the SD4 Interface Specifications.

4.6 The DCC SMWAN Gateway Interface Specification shall support all HAN Interface Commands required to deliver the Service Requests defined in the DCC User Gateway Catalogue.

4.7 The DCC SMWAN Gateway Interface Specification shall also support all Alerts generated by the Smart Metering System in the format set out in the GB Companion Specification.

4.8 As further set out in Appendix B: DCC SMWAN Gateway Interface Principles, the Contractor shall provide a solution capable of receiving and transmitting:

a) "Category 1" messages, relating to distribution of Smart Meter Firmware data to the Communications Hub Data Store; and

b) "Category 2", "Category 3", "Category 4" and "Category 5" messages which shall relate to HAN Interface Commands, which shall be compliant with the 'GB Companion Specification'.

4.9 The Contractor shall agree with the DSP, in accordance with the requirements of Appendix B: DCC SMWAN Gateway Interface Principles, the common format for the receipt of Service Requests relating to Category 1 messages. This common format shall be based upon the format of the Service Requests received from the DCC Service Users as defined by the DCC User Gateway Catalogue. This common format will be set out in the SD10 Codes of Connection, that the Contractor shall agree with the DSP in accordance with the process set out in Schedule 6.3 (Development Process).

4.10 On receipt of Category 1 Service Requests in this agreed format, the Contractor shall be responsible for the delivery of provided Smart Meter Firmware data to the target Communications Hub Data Store(s) in accordance with the requirements set out in Schedule 2.2 (Performance Measures and Monitoring).xxx

4.11 The Contractor shall be responsible for forwarding, in both directions, compliant HAN Interface Commands between the DCC SMWAN Gateway Interface and the Communications Hub HAN interface for all Category 2, Category 3, Category 4 and Category 5 HAN Interface Commands. The Contractor shall adhere to the principles set out in Appendix B: DCC SMWAN Gateway Interface Principles in providing a solution that meets the requirements for receiving and transmitting HAN Interface Commands.

4.12 The Contractor Solution shall use the method of transmission for each type of HAN Interface Command in the DCC WAN Gateway Interface Specification as set out in Schedule 4.1 (Contractor Solution).

4.13 The Contractor shall agree with the DSP an associated Code of Connection for the DCC SMWAN Gateway Interface as set out in Appendix A: DCC SMWAN Gateway Interface Specification and associated Code of Connection. The Contractor shall agree this in accordance with the process set out in Schedule 6.3 (Development Process) in connection with SD10 Codes of Connection.

4.14 The Contractor shall, through the SD10 Codes of Connection for DCC WAN Gateway Interface agreed with the DSP in accordance with the process set out in Schedule 6.3 (Development Process), enforce the necessary scheduling and capacity constraints required to enable efficient usage of the SMWAN in accordance with the performance requirements set out in:

a) Schedule 2.2 (Performance Measures); and

b) Profile 5 of the 'ISFT Volume Profiles'.

4.15 In accordance with the requirements set out in requirement 2.6, the Contractor shall, through the DCC SMWAN Gateway Interface Specification,

communicate the allocation of unique addresses for each Communications Hub as recorded in the Contractor CMDB.

4.16 The Contractor shall provide a Network Time Service, synchronised with a clock traceable to Coordinated Universal Time (UTC), and capable of signing timestamps for secure time synchronisation, for use by the Contractor Solution.

4.17 The Contractor Solution shall provide functionality to provide for time synchronisation between the Network Time Service and Communications Hubs with an active connection to the SMWAN.

4.18 The Contractor shall agree with the DSP in accordance with the process set out in Schedule 6.3 (Development Process) an interface specification, in connection with the SD4 Interface Specifications, such that a mechanism is provided for the transmission of Communications Hub Management Interface Commands that are classified as Critical Commands, as set out in Annex D to Appendix 2.1 of Schedule 11. The Communications Hub Management Interface Commands shall be subject to the following process:

a) the DSP shall route all Communications Hub Management Interface Commands classified as Critical Commands that are received from the Contractor through their Anomaly Detection process; and

b) any Communications Hub Management Interface Commands classified as Critical Commands that are identified as anomalous shall be quarantined, and the DSP shall raise these exceptions with the Contractor.

4.19 The Contractor shall agree with the DSP all interfaces to the Contractor Solution in the Design Stage in accordance with the process for the SD4 Interface Specifications set out in Schedule 6.3 (Development Process). The Contractor shall agree these interfaces in accordance with its obligations under the Co-operation Agreement and the principles agreed during the procurement.

4.20 The Contractor shall maintain each Code of Connection over the Service Period, including following any interface changes, in line with its obligations under the Agreement.

4.21 All Contractor interfaces to the Contractor Solution shall be agnostic with respect to the underlying communications technology deployed by the Contractor.

5. COVERAGE AND CONNECTIVITY

Provision of connectivity

5.1 The Contractor shall provide SMWAN connectivity to each Domestic and Smaller Non-Domestic Premises in the Territory.

5.2 The Contractor shall provide SMWAN connectivity to the Communications Hub Installation Point at each Consumer Premise in the Territory.

5.3 The Contractor shall:

a) meet the performance measures specified in Schedule 2.2 (Performance Measures and Monitoring) regarding the Connectivity of Communications Hubs installed in the Territory; and

b) provide Connectivity to the proportion of Communications Hubs in the Territory equal to or in excess of the Committed Connectivity Level following completion of the Mass Roll Out Phase.

Provision of coverage during roll out

5.4 The Contractor shall define the Coverage Area during the Mass Roll Out Phase to be the geographical area within the Territory where the Contractor commits to providing SMWAN Connectivity such that the Service meets the performance measures set out in Schedule 2.2 (Performance Measures and Monitoring).

5.5 The Coverage Area during the Mass Roll Out Phase shall include at least the proportion of Domestic and Smaller Non-Domestic Premises in the Territory specified in the Coverage Milestone table set out in Appendix 1 of Schedule 6.1 (Implementation Planning). The proportion of Consumer Premises in the Coverage Area shall be:

a) at the Commencement of Initial Mass Roll Out Phase, at least 80% of all Domestic and Smaller Non-Domestic Premises in the Territory;

b) at the end of 2016 the percentage of Domestic and Smaller Non-Domestic Premises in the Territory at least equal to the Committed Connectivity Level minus 1.5%;

5.6 At the End of Roll Out Programme Milestone (P8), the Coverage Area shall include, as a minimum, the proportion of Domestic and Non-Domestic Premises in the Territory equal to the Committed Connectivity Level.

5.7 Prior to the Commencement of Initial Mass Roll Out Phase, the Contractor shall provide evidence to the DCC that shows it will be able to reach the level of Committed Coverage specified in the Coverage Milestone table set out in Appendix 1 of Schedule 6.1 (Implementation Planning). The Contractor shall continue to present sufficient information to the DCC to allow the DCC to determine that the Services are available within the Coverage Area during the Mass Roll Out Phase. This information may include but not be limited to:

a) coverage modelling of the territory to show the percentage of premises where the Services are believed to be available; and

b) tests carried out by the Contractor to determine, for example, the signal strength available in the Coverage Area, or the level of connectivity available in Coverage Area.

Changes in the number and distribution of Consumer Premises

5.8 The Contractor Solution shall be flexible in response to changes in the number and location of Domestic and Smaller Non-Domestic Premises in the Territory such that the Contractor can continue to:

a) provide the Services to any existing Consumer Premises where a Smart Metering System is installed in any part of the Territory;

b) provide the Services to any new or additional Consumer Premises where a Smart Metering System is installed in any part of the Territory;

c) remove the Services from any Consumer Premises where a Smart Metering System is decommissioned in any part of the Territory;

d) meet the Committed Coverage levels as set out in Schedule 6.1 (Implementation Planning);

e) meet the performance measures included in Schedule 2.2 (Performance Measures and Monitoring); and

f) meet the Committed Connectivity Level as set out in the Main Agreement following the end of the Mass Roll Out Phase.

Coverage database

5.9 The Contractor shall create and maintain a Coverage Database regarding availability of the Services at the Communications Hub Installation Point in Consumer Premises in each postcode unit in the Territory. The Coverage Database shall:

a) provide Energy Suppliers carrying out strategic planning activities regarding the roll out of Smart Metering Systems with information about Service availability;

b) capture information from Energy Suppliers regarding their plans for roll out of Smart Metering Systems that the Contractor may need as an input into the roll out of the Services;

c) record unsuccessful attempts to connect to the SMWAN following installation at a Communications Hub Installation Point at a Consumer Premises;

d) provide installers carrying out the Communications Hub installation process with information regarding:

(i) the availability of the Service at a Consumer Premise;

(ii) the date the Service will be available at the Consumer Premises if the Service is not available;

(iii) the WAN Variant that should be used at the Consumer Premise;

(iv) the requirement for the installer to install auxiliary equipment to complete the Communications Hub installation process;

(v) the likelihood of successful connection to the SMWAN service following installation of the Communications Hub;

(vi) any additional information, that the Contractor should reasonably be aware of regarding the Consumer Premises that the installer may require in order to plan and carry out its installation activities;

(vii) any further information required to carry out the Communications Hub Installation Process Support Materials (CHIPSM) defined by the Contractor in Schedule 4.1 (Contractor Solution);

e) provide the DCC with such information required to support Consumer engagement such as information regarding:

(i) the availability of the Service at the Consumer Premises;

(ii) the date the Service will be available at the Consumer Premises if the Service is not available;

f) maintain a record of Communications Hubs for which, following a successful installation, Connectivity has subsequently been lost as identified by either:

(i) the Contractor Solution management systems proactively identifying a loss of Connectivity; or

(ii) Incidents raised through the service management process for which:

(A) the Incident has not been closed due to Connectivity not being successfully established with a Communications Hub; or

(B) the Incident has not been closed due to failure to demonstrate minimum Connectivity Performance Measures have been met.

5.10 The Contractor shall make the Coverage Database available electronically to the DCC.

5.11 The Contractor shall update the Coverage Database at least on a daily basis.

Non-standard installations

5.12 The installation of the Communications Hub will be undertaken by the Energy Suppliers. Energy Suppliers will identify buildings where connectivity to the SMWAN is not possible at the Communications Hub Installation Point if the installer follows the CHIPSM set out in Schedule 4.1 (Contractor Solution).

5.13 Energy Suppliers will also attempt to identify the landlord or owner of the building where connectivity to the Communications Hub Installation Point is not possible.

5.14 When the Contractor becomes aware of any buildings where the SMWAN signal is not available at the Communications Hub Installation Point (including as a result of notification by the Energy Supplier following execution of the Communications Hub installation process), the Contractor shall promptly update the Coverage Database with information that allows Energy Suppliers to:

a) identify the postcode, unit and building affected by the lack of a SMWAN signal at the Communications Hub Installation Point; and

b) understand when the SMWAN signal will be available at the Communications Hub Installation Point in the relevant building and postcode unit.

5.15 The Contractor shall promptly:

a) identify the landlord or owner of the building if the Energy Supplier has not been able to collect this information at the time of installation;

b) contact the landlord or owner of the building and arrange when and how its installation team will gain access to the building;

c) obtain the consent of the landlord or owner of the building to carry out the scope of work required to enable the SMWAN signal to reach the Communications Hub Installation Point;

d) install equipment within the building that enables the SMWAN signal to reach the Communications Hub Installation Point (such equipment to be installed at the latest within xxx months of the necessary access rights being agreed by the landlord); and

e) notify the DCC when the work is complete, and update the Coverage Database to inform Energy Suppliers that connectivity is available at the Communications Hub Installation Point.

This paragraph 5.15 is without prejudice to the Contractor's obligations to achieve coverage and perform any other obligations in accordance with this Agreement.

PART C – COMMUNICATIONS HUB

1. COMMUNICATIONS HUB INSTALLATION REQUIREMENTS

1.1 The Contractor shall develop and maintain a standardised Communications Hub installation process, and associated documentation, through consultation with the DCC. Any subsequent changes shall be agreed with the DCC in line with the change control procedure in Schedule 8.2 (Change Control).

1.2 The documentation described in paragraph 1.1 above, for use by Energy Suppliers acting as installers as part of the Communications Hub installation process, shall include (but not be limited to):

a) the installation steps required to install a Communications Hub and connect it to the SMWAN, subject to that coverage being available;

b) where the Contractor is supplying more than one variant of Communications Hub or using more than one SMWAN technology, sufficient instructions to allow the installer to make the most appropriate choice of Communications Hub Variant or SMWAN technology;

c) the processes for pairing the Communications Hub with the Smart Meter(s) and IHD;

d) instructions regarding the use of required tools, diagnostic and test equipment;

e) instructions regarding fault finding and resolution for installation problems;

f) instructions for the installation of any auxiliary equipment associated with the Communications Hub that the Contractor makes available, and when it should be utilised;

g) details of the use of any web, telephone or other services required to commission the Communications Hub;

h) the process for registering a Communications Hub as active and installed on the SMWAN and recorded in the Contractor's asset management system; and

i) the procedures for reporting Incidents related to the installation process.

1.3 The Contractor shall provide Energy Supplier installers with all equipment required for installation, testing, commissioning and fault diagnostics of a Communication Hub, including equipment to allow the installed Communications Hub to identify its own geographic location, where this is required to support the Communications Hub installation process, subject to the constraints set out in Part C, paragraph 1.9.

1.4 The Contractor shall develop and make available to Energy Supplier installers any services required to commission or activate a Communications Hub installation, including:

a) post-installation activation message; and

b) confirmation of activation message.

1.5 The Communications Hub installation process shall be capable of supporting remote or automatic activation of the SMWAN service. The Contractor Solution shall enable the Communications Hub to connect to the SMWAN and complete activation without further intervention by Energy Supplier installers, in the event that SMWAN connectivity is unavailable at the time of installation at a particular Consumer Premises, subject to SMWAN connectivity being made available at the Communications Hub Installation Point at a later point in time.

1.6 Where the Contractor is supplying more than one variant of Communications Hub or using more than one SMWAN technology, the Contractor shall supply sufficient information in the CHIPSM in accordance with 1.2 (b) above to allow the installer to select the most appropriate Communications Hub and SMWAN service combination for a particular Consumer Premises.

1.7 The Contractor shall provide, as part of CH4 CHIPSM, the following measurable metrics for each SMWAN service as a confirmation of coverage being available and sufficient for a successful installation of the SMWAN service:

a) Signal strength x%;

b) Signal quality y%; and

c) Packet loss z%.

1.8 The Contractor shall supply to the Energy Suppliers any auxiliary equipment associated with the Communications Hub required to carry out the standard Communications Hub installation process described in the CHIPSM.

1.9 The Contractor shall provide any additional equipment that is required for the Contractor to complete the non-standard installation process described in the CHIPSM, for example any aerials installed external to the Consumer Premises (an "**External Aerial**") in order to connect the Communications Hub to the SMWAN.

1.10 The Contractor's Solution shall track and record the percentage of Consumer Premises in the Coverage Area that require an External Aerial in order to connect the Communications Hub to the SMWAN.

1.11 The Contractor shall:

a) at all times, use reasonable endeavours to ensure that the proportion of Communications Hubs installed in the Coverage Area that require an External Aerial installed to connect the Communications Hub to the SMWAN does not exceed 0.25% of all Communications Hubs installed in the Coverage Area; and

b) at all times following the completion of the Mass Roll Out Phase, ensure that the proportion of Communications Hubs installed in the Coverage Area that require an External Aerial installed to connect the Communications Hub to the SMWAN does not exceed 0.50% of all Communications Hubs installed in the Coverage Area.

1.12 The Communications Hub installation process shall not mandate the use of Contractor-provided field service devices to support installation that provide the following functionality:

a) installer workflow management recording;

b) smart meter asset management systems (e.g. barcode readers);

c) connectivity to Energy Supplier back-office systems; and

d) provision of HAN device pairing capability.

This functionality is outside the scope of the Contractor Solution.

1.13 The Communications Hub installation process may mandate the use of Contractor-provided field service devices, to support the installation process, that provide the following functionality:

a) SMWAN coverage checking or signal strength indication;

b) Communications Hub provisioning or activation that interfaces solely within the Contractor Solution and which does not require access to Supplier or DCC systems;

c) location recording, that interfaces solely within the Contractor Solution and which does not require access to Supplier or DCC systems; and

d) other Communications that interface solely within the Contractor Solution and which do not require access to Energy Supplier or DCC systems.

1.14 Where the Energy Supplier installing a Communications Hub has not successfully connected to the SMWAN after application of the Communications Hub installation process and any associated remedial processes identified by the DCC, the Contractor shall (without limitation to any other rights or remedies of the DCC) provide support to the Energy Supplier to resolve the Incident, including:

a) optimisation of the network to ensure that the SMWAN signal reaches the Communications Hub Installation Point; and

b) additional instructions and documentation.

1.15 The Contractor shall (without limitation to any other rights or remedies of the DCC) support the resolution of Incidents relating to a failure of installation and commissioning of a Communications Hub in accordance with the service management requirements detailed in Part D of this Schedule.

1.16 The above requirements shall apply to all WAN Variants in the same manner.

2. COMMUNICATIONS HUB MAINTENANCE REQUIREMENTS

2.1 The Contractor shall undertake remote maintenance of the Communications Hub equipment. The Contractor shall ensure that operational management of the Communications Hub, including updating Communications Hub software, does not restrict the use of or adversely affect the performance of:

a) the Services or any DCC Service; or

b) Smart Meter equipment connected to the Communications Hub.

2.2 Onsite maintenance of the Communications Hub equipment will be undertaken by the Energy Supplier. The Contractor shall develop and maintain a standardised Communications Hub maintenance procedure through consultation and agreement with the Energy Suppliers and the DCC support materials to support this process. Any subsequent changes shall be agreed with the DCC in line with the change control procedure in Schedule 8.2 (Change Control), in connection with CH 5 Communications Hub Maintenance Support Materials.

2.3 The Contractor shall develop and deliver maintenance documentation for Energy Supplier installers as part of the Communications Hub Maintenance Support Materials. Such documentation shall cover but not be limited to:

a) the use of required tools, diagnostic and test equipment;

b) fault finding and resolution for operational problems;

c) known issues regarding the Communications Hub and associated auxiliary equipment;

d) processes outlining the appropriate action to take including when to replace the Communications Hub by installing a new Communications Hub;

e) the labelling and packaging of Communications Hubs for return to the Contractor;

f) the process for returning Communications Hubs to the Contractor; and

g) the procedures for reporting Incidents related to the maintenance process.

2.4 The Contractor shall (without limitation to any other rights or remedies of the DCC) support the resolution of Incidents related to maintenance raised during the operation of a Communications Hub in accordance with the service management requirements detailed in Part D of this Schedule.

2.5 The above requirements shall apply to all WAN Variants in the same manner.

3. TRAINING

3.1 Before being permitted to install Smart Metering Systems, installers will have received training and assessment at a level appropriate to the installation (taking into account the knowledge and skills necessary to fulfil the role) including, in the case of Domestic Premises installations, training from a National Skills Academy for Power (NSAP)-accredited provider or equivalent training.

3.2 Each installer that completes the NSAP-accredited training programme successfully will be added to a national database of accredited installers. Energy Suppliers shall employ only installers that have received training from a NSAP-accredited provider or equivalent training to carry out installation and maintenance of smart metering equipment, including Communications Hubs.

3.3 NSAP-accredited training providers shall incorporate content into NSAP-accredited training programmes provided to installers that reflects the activities set out in the CHIPSM and Communications Hub Maintenance Support Materials (CHMSM) regarding the installation and maintenance of Communications Hubs.

3.4 The Contractor acknowledges that effective training in the activities set out in the CHIPSM and CHMSM will be critical to the successful installation and maintenance of Communications Hubs and other Smart Metering System devices, and successful provision of the Services. The Contractor shall work closely with the DCC, NSAP and with NSAP-accredited training providers to provide training to Communications Hub installers as needed.

3.5 The initial outcome of this process shall be the preparation of the CH6: Installer Training Plan by the Contractor for discussion during the Design Stage. This shall define:

a) the distinct and specific training needs of installers;

b) the recommended configuration and duration of training;

c) the resources required for delivery of the training; and

d) the training that installers will be provided as part of an NSAP-accredited training programme that covers the activities set out in the CHIPSM and CHMSM regarding the installation and maintenance of Communications Hubs.

3.6 The Contractor shall agree the training plan with the DCC. The DCC shall consult with NSAP and NSAP-accredited training providers to ensure that the training plan aligns with the requirement for training of Communications Hub installers in connection with the CH6 Installer Training Plan.

3.7 The Contractor shall provide training for groups of NSAP-accredited training provider staff, to be selected by each NSAP-accredited training provider, to gain the expertise and knowledge to allow them to independently train installers to pass NSAP-accredited training programmes and become certified installers.

3.8 The Contractor shall provide content to NSAP and NSAP-accredited training providers to enable training of installers in the CHIPSM and CHHSM that will form part of an accredited training programme. The Contractor shall provide:

a) all required training materials for the operation of NSAP-accredited courses;

b) additional training material that will be available to all users as reference material;

c) instructions regarding the delivery method; and

d) a training system and database that can be used for all training purposes and refreshed as required.

The Contractor shall make this content available electronically.

3.9 The Contractor shall ensure that an assessment and evaluation process is in place to measure the effectiveness of training sessions and the need for further or repeat training for installer groups.

3.10 The Contractor shall update the training materials and certification process in response to the changing requirements placed on installers or learning as a consequence of:

a) the assessment and evaluation of the training programme; and/or

b) changes to the CHIPSM and CHMSM provided by the Contractor.

3.11 The above requirements shall apply to all WAN Variants in the same manner.

PART D – SERVICE MANAGEMENT

1.1 The DCC is responsible for the interface and operational interfaces with DCC Service Users and the overall service management for the DCC Service.

1.2 The Contractor shall be responsible for the service management related to the Services:

a) the operation of the SMWAN and the Communications Hub; and

b) the ordering, delivery and logistics of the Communications Hub.

Service Management Framework

2. The Contractor shall develop a Service Management Framework for the Operational Service that complies with the Contractor's obligations under this Agreement and is consistent with:

a) the Implementation Plan as set out in Schedule 6.1 (Implementation Planning); and

b) the requirements documented in this Schedule 2.1 (DCC Requirements).

2.1 The Contractor's Service Management Framework shall align with and interoperate with the DCC's Service Management Framework (being the service management framework adopted by the DCC (as the same may be amended from time to time)).

2.1 The Contractor's Service Management Framework for the Operational Service shall consist of, but not be limited to, the documents referred to as the Contractor's Service Management Framework in Schedule 6.3 (Development Process).

2.2 The Contractor's Service Management Framework shall be produced in accordance with the processes defined in Schedule 6.3 (Development Process).

2.3 The Contractor shall develop each of the Relevant Documents forming part of the Service Management Framework in accordance with its obligations under this Agreement and provide the DCC with the initial Document Iteration of each such document within twenty (20) Working Days of the Signature Date.

2.4 The Contractor shall comply with its obligations in Schedule 6.3 (Development Process) in connection with the development and agreement of the Service Management Framework documents.

2.5 This Requirement Intentionally removed.

2.6 The Contractor shall work with the DCC and the DSP, to define and implement the Service Management Framework and interfaces (in accordance with Schedule 6.3 (Development Process)). The Contractor shall ensure the Service Management Framework remains up-to-date (and

consistent with the Operational Service) at all times throughout the Service Period.

a) Any changes to the Service Management Framework or any documentation related to the Operational Services shall be agreed in accordance with Schedule 8.2 (Change Control).

2.7 The Contractor shall review, on an annual basis, all applicable changes to industry best practices to validate the applicability of those changes to the Contractor's Service Management Framework.

2.8 The Contractor shall design, implement and document the Contractor's service management systems and processes to ensure they comply with the requirements in this Schedule 2.1 (DCC Requirements).

2.9 The Contractor shall create, during the Design Stage, a Service Management System Design Specification (in accordance with Schedule 6.3 (Development Process) detailing the design of the Contactor's service management systems and processes.

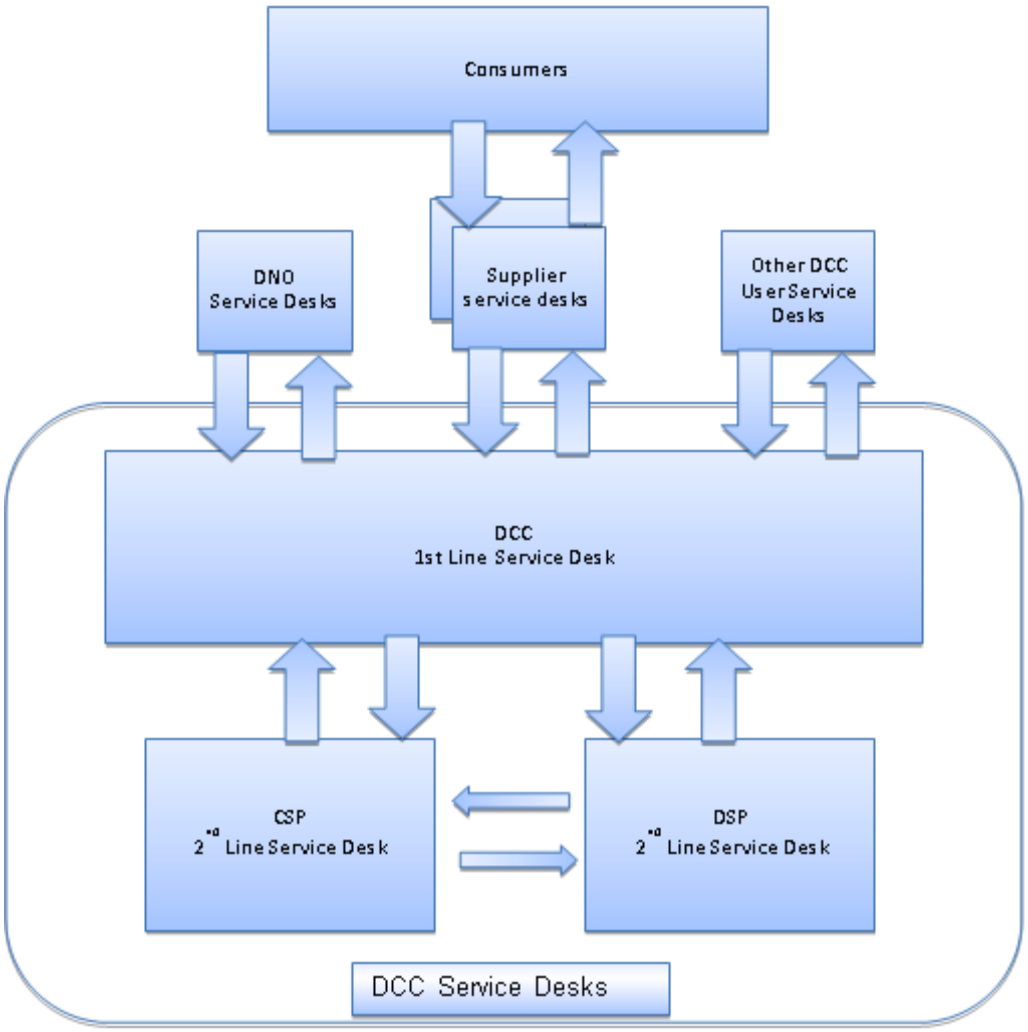
2.10 The Contractor shall use the initial version of its Service Management Framework documents as input to creating the Service Management System Design Specifications. The Final Document Iteration (as defined in Schedule 6.1 (Implementation Planning) of the Contractor's Service Management Design Specifications shall be provided to the DCC by the end of the Design Stage (and in time to achieve Milestone D10 by its Milestone Date).

2.11 The Contractor shall agree the Service Management System Design Specifications in accordance with Schedule 6.3 (Development Process).

Service Desk Structure

Overview

The figure below shows an overview of the Service Desk hierarchy.



2.12 Energy Supplier Service Desks will act as the point of contact for the Consumers.

2.13 DCC Service Users will raise Incidents and Problems related to DCC Services with the DCC's Service Desk ("DCC Service Desk") for investigation by the DCC that have been:

a) reported by Consumers; or

b) detected by DCC Service Users.

2.14 DCC will provide the DCC Service Desk, to carry out first line support for the DCC Services. The DCC Service Desk will perform triage on Incidents and Problems that have been detected by:

a) DCC Service Users ; or

b) the DCC Service Desk.

2.15 The DCC Service Desk will allocate potential Incidents and Problems to second line Service Desks operated by the Contractor the other CSPs and the DSP.

Contractor Service Desk

3. The Contractor shall provide a Service Desk (the "**Contractor Service Desk**"). The Contractor Service Desk shall interface with, and receive contacts from, the DCC Service Desk, other CSP Service Desks and the DSP Service Desk.

3.1 The Contractor shall provide a single point of contact for all communications initiated by the DCC to the Contractor Service Desk.

3.2 The Contractor shall provide a single point of contact for all communications raised by the DSP and other CSP(s) to the Contractor Service Desk.

3.3 The Contractor's Service Desk and the DSP Service Desk shall interact with each other as necessary to aid Incident, Event and Problem resolution.

3.4 The Contractor shall process communications made to the Contractor Service Desk via communications including, but not limited to, telephone and email.

3.5 The Contractor Service Desk shall provide continuous monitoring of Contractor Service Desk 'queues'; logging, prioritising, collating, managing, escalating and distributing operational changes and Incidents.

3.6 The Contactor Service Desk shall use the DCC Service Management System as the definitive record for all service management queries and the current status of all service management queries.

3.7 The Contractor Service Desk shall investigate potential Incidents and Problems and update the DCC Service Management System on Resolution.

3.8 The Contractor shall, when requested by the DCC, provide authorised DCC Service Desk operators with access, to a level to be agreed with the DCC during the Design Stage, to the Contractor Service Desk systems and tools.

3.9 The Contractor's Event Management process shall detect Incidents within the Operational Service and generate automated Incidentxxxnotifications for the attention of the DCC or DSP as appropriate.

3.10 The Contractor shall provide scripts and tools to ensure a high degree of automated diagnosis and resolution of Incidents.

3.11 The Contractor's Service Desk shall be available 24 hours a day, 365 days a year (366 days in a leap year).

4. SERVICE MANAGEMENT SYSTEM INTERFACE

4.1 The DCC Service Management System is the service management platform that the DCC operates to manage the end-to-end DCC Services.

4.2 The DCC Service Management System will be the definitive/authoritative record for shared service management data for DCC Services. All shared data contained within the DCC Service Management System shall be kept up to date by the DSP, the CSPs and the Contractor.

4.3 The DCC Service Management System will be the master repository for the DCC service management data transferred through the Service Management System Interface and via the DCC Service Management System user interface (as described in requirement 4.6 below).

4.4 The Contractor shall regard the DCC Service Management System as the definitive/authoritative record for service management for the Services. The Contractor shall keep all data that is provided by the Contractor to the DCC Service Management System up to date.

4.5 The Contractor shall transfer data between the Contractor service management system and the DCC Service Management System via the DCC Service Management System Interface, which will be published by the DCC.

4.6 As agreed at the Design Stage, the Contractor shall use the DCC Service Management System user interface provided by the DCC to enable authorised staff in the Contractor Service Desk to access and update data within the DCC Service Management System. The Contractor shall be responsible for providing the communication links to connect to the DCC Service Management System Interface to enable the transfer of data to and from the DCC Service Management System.

4.7 The DCC Service Management System Interface shall support, as a minimum, to be finalised and agreed during the Design Stage, in connection with the SD4 Interface Specifications the transfer of data to support the following ITIL-defined service functions:

a) Incident and Problem Management, including Case Management integration between the DCC Service Management System and the Contractor's service management system, to allow Incidents and Problems to be raised, assigned/reassigned, updated, queried and closed;

b) Event Management, including Events to be passed from the Contractor's service management system to the DCC Service Management System for agreed Event types, for example end-to-end Event correlation and visibility to DCC and the DCC Service Users;

c) Service status information, including:

(i) information from the Contractor on the status of the Operational Services including service status changes (service element up, service element down) for use by the DCC Self-Service Interface and DCC Service Desk;

(ii) information from the Contractor that supports the DCC Service Desk's ability to view geographical coverage information;

d) Service Management Service Request management and request fulfilment, including Service Management Service Requests raised by DCC to the Contractor and the ability to view, update and close Service Management Service Requests by the DCC, DSP or the Contractor, e.g. Communications Hub ordering by DCC to the Contractor.

4.8 The Contractor shall work with the DCC and DSP to develop and maintain a Code of Connection for the DCC Service Management System Interface.

System Maintenance

5. The Contractor shall inform the DCC in advance of all known, scheduled system maintenance activity that it reasonably expects will impact services as described in 5.1 and 5.2.

5.1 Where the Contractor reasonably expects system maintenance activity will have an impact to services that**:**

a) exceeds the definition of a Severity Level 5 Incident, as set out in Schedule 2.2, (Performance Measures and Monitoring) Appendix 4; or

b) is otherwise limited to activity that may result in changes to Data Link Layer connectivity to no more than 650,000 Communications Hubs, where such changes may result in a temporary increase in latency or packet loss to individual Communications Hubs but do not result in disruptive loss of Network Layer connectivity,

the Contractor agrees that all such activities shall be undertaken outside of 08:00 – 20:00 7 days a week and that the duration of any single such system maintenance activity shall not exceed 6 hours without the express consent of the DCC.

5.2 Where the Contractor reasonably expects system maintenance activity will have an impact to services that exceeds the definition of a Severity Level 4 Incident, as set out in Schedule 2.2, (Performance Measures and Monitoring) Appendix 4, the Contractor shall propose a schedule of planned maintenance activities for the Operational Service on a monthly basis for the forthcoming monthly service period. This shall be submitted to the DCC for approval no later than 20 Working Days prior to the planned maintenance period. As a minimum, the schedule of planned maintenance activities shall detail, for all activities the Contractor reasonably expects will result in an impact to Services that exceeds the definition of a Severity Level 4 Incident:

a) the proposed maintenance activity;

b) the Services impacted during maintenance activities and the expected impact on DCC Services and the DCC Service Users;

c) the time and duration of the proposed maintenance activity; and

d) any associated risk that may subsequently affect the return of normal services.

5.3 The Contractor agrees that agreed, planned maintenance as set out in 5.5.2 shall be undertaken outside of 08:00 – 20:00, 7 days a week and shall not exceed 4 hours in any monthly service period without the express consent of the DCC.

5.4 The Contractor agrees that Performance Measures relating to service availability shall be calculated net of any agreed downtime for planned maintenance as set out in 5.2.

5.5 The parties agree that the provisions of 5.4 above shall not apply in respect of Access Network availability such that Access Network availability will be calculated gross of planned maintenance. For the avoidance of doubt this has no impact on Performance Measure 6.3.

5.6 The Contractor agrees that once approved by the DCC, any planned maintenance activities, shall be considered as Agreed Service Downtime, Agreed System Downtime, and Agreed Interface Downtime as appropriate for the purposes of performance measure calculation as detailed in Schedule 2.2 (Performance Monitoring).

6. **INTERNAL AUDIT**

6.1 The Contractor shall perform regular internal audits of processes to collect and store patch/ version numbers of hardware, software and Firmware used by or supporting the End-to-end Smart Metering System. The scope of the internal audits shall be agreed in the Design Stage in connection with SM3 Service Management Processes. The Contractor shall make results of these audits available to the DCC.

ITIL Alignment & Service Management Processes

7. The Contractor shall ensure the Service Management Framework (as per requirement 2 above) aligns with the ITIL® V3 (and any subsequent versions).

7.1 The Contractor's service management processes shall align with the DCC's service management processes and support the DCC's overall DCC Service Management Framework, the Contractor's Service Management Framework shall be developed in accordance with Schedule 6.3 (Development Process).

7.2 The following sections identify the service management requirements for the Operational Framework based on an ITIL V3 structure.

Policy & Strategy

8. The Contractor shall, during the Design Stage, contribute to and comment on the service strategy and the policy roadmap of the DCC.

8.1 The Contractor shall develop the Service Management Strategy for the Operational Service, using the document development process as set out in Schedule 6.3 (Document Development Process).

8.2 The Contractor shall maintain the Service Management Strategy for the Operational Service over the Service Period.

8.3 The Contractor shall develop and maintain the Technology Roadmaps in accordance with Schedule 2.4 (Continuous Improvement).

8.4 The Contractor shall maintain and agree changes to the Technology Roadmap with the DCC on an annual basis in accordance with Schedule 2.4 (Continuous Improvement).

Service Portfolio Management

9. The Contractor shall develop and maintain a Service Portfolio for the Operational Service.

10. The Contractor's Service Portfolio shall contain, but not be limited to:

a) the Service Catalogue offered by the Contractor including associated Service commencement and end dates;

b) services provided by Sub-Contractors;

c) new Services in development; and

d) retired Services (including Services that are no longer provided)

10.1 **This requirement intentionally unused**

10.2 The Contactor shall ensure the Service Portfolio (SM2) shall include processes that:

a) define and analyse outcomes of new or changed Services, analysing the impacts on existing services in the Service Portfolio and determine the assets required to support the Operational Service;

b) approve new or changed services to the Service Portfolio via Schedule 8.2 (Change Control) and initiate the design stage for new services where approved;

c) undertake regular reviews of the Services Portfolio (to be agreed with the DCC), to ensure the Services Portfolio offers economically viable Services which are aligned with the Service Management Strategy and ensure that the Services Portfolio is up to date.

Financial Management

11. The Contractor shall provide budgeting/financial reporting, invoicing and supporting cost allocation for the Operational Services, as agreed with the DCC during the Design Stage and documented in the Service Management Framework.

11.1 The Contractor shall provide agreed financial management data to the DCC as set out in Schedule 7.1 (Charges and Payment) and Schedule 8.4 (Records and Audit Provisions) and:

a) billing information every month; and

b) financial account reviews every quarter.

Demand Management

12. The Contractor shall cooperate with the DCC to provide information regarding the Operational Service to support DCC business demand forecasting (see Schedule 7.1 (Charges and Payments)), as agreed during the Design Stage.

12.1 The Contractor shall provide sufficient capacity to ensure the Operational Service can meet demand forecasts (see Schedule 7.1 (Charges and Payments)) as agreed with the DCC within agreed contractual limits.

12.2 The Contractor shall optimise the provision of the Operational Service against demand patterns.

12.3 The Contractor shall promptly notify the DCC when agreed contractual limits, set-out in the Contractor Solution Design Documents, for Operational Service capacity are exceeded.

12.4 The Contractor shall provide impact assessments to the DCC in response to proposed changes in DCC business demand forecasts (see Schedule 7.1 (Charges and Payments)) for the Operational Service.

Service Catalogue Management

13. The Contractor shall develop a Service Catalogue and associated management processes for the Operational Service.

13.1 The Contractor shall maintain the Service Catalogue and agree any subsequent changes to the contents of the Service Catalogue with the DCC.

Service Level Management

14. The Contractor shall operate Service Level Management for the Operational Service. The Contractor shall plan and implement Performance Measures in accordance with Schedule 2.2 (Performance Measures and Monitoring) and the Target Service Levels set out therein, and Appendix 2.2 of Schedule 11 (Communications Hub).

Availability Management

15. The Contractor shall agree with the DCC how the service elements shall be grouped into categories for purposes of managing availability.

15.1 The Contractor shall produce an Availability Plan for the agreed categories of the Operational Service in accordance with Schedule 6.3 (Development Process).

15.2 The Contractor shall:

a) monitor service elements in accordance with the Contractor Solution Design Documents and its obligations under this Agreement;

b) collect, and analyse availability and trend data for the Operational Service in accordance with the Contractor Solution Design Documents and its obligations under this Agreement.

15.3 The Contractor shall monitor availability performance in accordance with Schedule 2.2 (Performance Measures and Monitoring).

15.4 The Contractor shall investigate the underlying reasons for any failure to meet the Target Service Level(s) for availability Performance Measures stated in Schedule 2.2 (Performance Measures and Monitoring).

15.5 The Contractor shall provide feedback and status reporting regarding availability and performance for the agreed elements of the Operational Service, as documented in the Service Management Framework.

15.6 The Contractor shall agree the format and frequency of reports with the DCC as part of the Service Management Strategy and Knowledge Management Strategy.

Capacity Management

16. The Contractor shall measure the performance of the Operational Service against its capacity utilisation over time.

16.1 The Contractor shall provide reports on performance of the Operational Service to the DCC. The reporting specification and frequency will be agreed with the DCC during the Design Stage.

16.2 The Contractor shall manage overall Operational Service capacity to satisfy the DCC predicted demand requirements including its associated service management capacity.

16.3 The Contractor shall agree with the DCC in accordance with Schedule 6.3 (Development Process) which Service elements should be capacity managed, as defined in the Capacity Plan.

16.4 The Contractor shall recommend to the DCC where capacity upgrades or downgrades should be carried out.

16.5 The Contractor shall participate in capacity planning reviews, as agreed during the Design Stage, with the DCC and DSP as part of the wider DCC capacity management function.

16.6 The Contractor shall produce a Capacity Plan for all service elements agreed, and set out in the Service Management Framework, on a frequency basis to be agreed with the DCC during the Design stage.

16.7 The Contractor shall attend capacity management forums as agreed with DCC and documented in the Service Management Framework.

Service Continuity Management

17. The Contractor shall be responsible for maintaining the service continuity of the Operational Service in accordance with the requirements set out in Schedule 8.6 (Business Continuity and Disaster Recovery).

17.1 The Contractor shall ensure that the BCDR Plan adequately covers all aspects of service continuity for the Operational Service.

Information Security Management

17.2 The Contractor shall be responsible for maintaining the security architecture and supporting security processes of the Operational Service in compliance with the security policies and requirements as defined in Schedule 2.5 (Security Management Plan).

Audit Trail Management

18. The Contractor shall maintain a Service Management Audit Trail which logs all service activity, including:

a) **all Service Requests and Service Responses traversing the SMWAN Gateway between the Contractor and the DSP:** the Contractor shall record details to enable cross checking when required against the service audit trails maintained by the DSP;

b) **delivery of Smart Metering System firmware to Communications Hubs**: the Contractor shall record information to enable confirmation of the success or failure of the delivery of firmware to Communications Hubs within the Territory; and

c) **retrieval of scheduled read data from Communications Hubs:**the Contractor shall record information to enable the success or failure of data retrieval processes to be understood.

18.2 The Contractor shall maintain a Service Management Audit Trail which logs all service management activities associated with delivery of the Operational Service including but not limited to:

a) unique user ID of persons undertaking service management activities;

b) details of any service component changed;

c) time and date of any change made; and

d) nature of each change.

18.3 The Contractor shall maintain a Security Audit Trail as specified in Part E: Solution Security.

18.4 The Contractor shall ensure that the time-stamping records associated with the Service Audit Trail, Service Management Audit Trail and

Security Audit Trail is synchronised with the UTC Network Time Service deployed by the Contractor.

18.5 The Contractor shall ensure that there is no loss of data from the Service Audit Trail, the Service Management Audit Trail or the Security Audit Trail.

18.6 The Contractor shall make training and awareness facilities in the use of the Service Audit Trail, Service Management Audit Trail and the Security Audit Trail available to the DCC and Contractor staff.

18.7 The Contractor shall hold data from the Service Audit Trail and Service Management Audit Trail within the live operational environments for a minimum period of 3 months, and make such data available to DCC Service Users on demand without the need for any manual intervention.

18.8 The Contractor shall be able to retrieve Service Audit Trail and Service Management Audit Trail data, which has been held for a period of more than 3 months and less than 28 months, within 24 hours.

18.9 The Contractor shall be able to retrieve Service Audit Trail and Service Management Audit Trail data, which has been held for a period exceeding 28 months, within 72 hours.

18.10 The Contractor shall retain Service Audit Trail and Service Management Audit Trail data to support energy industry obligations which shall remain accessible for a minimum period of at least 7 years following the Termination Date; the means for achieving this beyond the Termination Date shall be agreed in the Exit Plan (Schedule 8.5 (Exit)).

18.11 The Contractor shall store security audit logs in accordance with Schedule 2.5 Appendix 1 – Security Management Requirements Requirement 12.20.

18.12 The Contractor shall be able to retrieve data from the Security Audit Trail within 24 hours.

18.13 The Contractor shall ensure that data from the Security Audit Trail, as outlined in requirement 18 - 18.9 is available to the DCC twenty four (24) hours per day, seven (7) days per week.

Supplier Management

19. The Contractor shall manage all Sub-contractors used to provide services under this Agreement in accordance with Schedule 8.1 (Governance) and Schedule 4.3 (Sub-contractors) and the Contractor's other obligations under this Agreement.

19.1 The Contractor shall:

a) maintain an up-to-date record of all contracts relating to the Operational Services (including transfer contracts, sub-contractor contracts, etc.);

b) manage and coordinate the activities of Sub-contractors; and

c) maintain technical support relationships with Sub-contractors.

19.2 The Contractor shall manage all Sub-contractors within the Operational Service supply chain on behalf of the DCC.

19.3 The Contractor shall manage its Sub-contractors using targets that enable the Contractor to track the Sub-contractors' performance. These targets may take the form of service level agreements, performance agreements or other form of target.

19.4 The Contractor shall proactively monitor its Sub-contractors to manage their performance against the targets referred to in Requirement 19.3 (immediately above).

19.5 The Contractor shall provide evidence for the performance of Sub-contractors in a format agreed with the DCC.

19.6 The Contractor shall provide the DCC with details of all contractual risks and issues related to the Contractor's contractual relationship with Sub-contractors.

19.7 The Contractor shall provide the DCC with details of all significant risks and issues related to the use of Sub-contractors in the Contractor's delivery of the Operational Service.

19.8 The Contractor shall provide a quarterly report containing updates to all contractual risks, issues and mitigating actions relating to Sub-contractors.

19.9 Requirements 19 to 19.8 of this Part (inclusive) shall be without prejudice to (and shall not restrict) the exercise of the DCC's rights and remedies in accordance with Schedule 8.10 (Enhanced Scrutiny and Step-in).

Transition Planning and Support

20. The Contractor shall (without prejudice nor limitation to its obligations in Schedule 8.8 (Projects)) be responsible for providing effective project initiation, project planning and coordination, project control, and project reporting and communication for all projects delivered under Schedule 8.8 (Projects).

Change Management

21. The Contractor shall provide Operational Change management processes in accordance with the provisions of Schedule 8.2 (Change Control).

21.1 without prejudice to the requirements in Schedule 8.2 (Change Control) the Contractor shall follow an appropriate process (**"Technical Change Process"**) (as set out in this Schedule 2.1) for all **"Technical Changes"**, regardless of whether these are Contract Changes or Operational Changes (as defined by Schedule 8.2).

21.2 The **"Technical Change Process"** referred to in Requirement 21.1 above shall include but not be limited to:

a) defining the scope of Technical Changes to be managed within the Contractor's responsibilities;

b) listing the scope of Technical Changes to be managed by other parties, e.g. the DCC and DSP;

c) defining the role of the Contractor in the Technical Change management processes operated by the DCC and DSP;

d) defining priorities for delivering Technical Changes e.g. speed of delivery of Change, optimising costs, minimising risk ;

e) defining periods of Technical Change freeze where (unless the DCC otherwise elects) no Technical Changes may be implemented to the Operational Service; and

f) putting procedures in place to help prevent unauthorised Relevant Operational Changes,

all of which shall be in line with the provisions of Schedule 8.2 (Change Control).

21.3 The Contractor shall align its Technical Change management processes with those of the DCC.

21.4 As part of the Technical Change process, the Contractor shall carry out impact assessments of Technical Changes.

21.5 The Contractor shall work with the DCC to identify a checklist of impact areas against which impact assessments can be made. The checklist will include but not be limited to software, hardware, process and Performance Measures.

21.6 The Contractor shall ensure that the impact assessment includes but is not limited to:

a) all Technical Changes to any part of the Operational Service;

b) the risks to the Operational Service, the DCC and DSP as a consequence of applying the Technical Change, with a description of all the mitigating actions;

c) the elements of the Operational Service that may be at risk as a consequence of applying the Technical Change;

d) the timescales and preparation required to ensure the Operational Service and the DCC will be in a position for the Technical Change to be applied;

e) the support and skills required from the DCC to complete the Technical Change.

21.7 The Contractor shall create a contingency plan for all proposed System or other Changes that may impact on the Operational Service.

21.8 The Contractor shall participate in forums and boards, as agreed with the DCC at Design Stage and documented in the Service Management Framework, such as the Operational Change, Release and Configuration Management forum, providing input to decisions on approving or rejecting Change Requests in accordance with Schedule 8.2 (Change Control).

21.9 If the DCC (acting reasonably) believes or where the Authority directs that any Technical Change needs to be dealt with on an expedited basis, it shall notify the Contractor accordingly and the parties (acting reasonably and in good faith) shall attempt to agree on an appropriate method for expediting the applicable procedures and obligations set out in paragraphs 21-21.13 (inclusive) of this Part.

21.10 The Contractor shall record all changes to assets and Configuration Items in the Contractor CMDB and Asset Register within 5 Working Days of a Change being implemented.

21.11 This Requirement intentionally removed.

21.12 The Contractor shall update all documentation resulting from a Change within 5 Working Days of the Change being made. This will include, but not be limited to, the Contractor's system and technical documents, operation manuals (as defined in Schedule 8.9 (Operation Manuals)) and Regression Test Packs (as defined in Schedule 6.2 (Testing and Acceptance)).

21.13 The Contractor shall monitor and report on Change implementation to the DCC.

Asset and Configuration Management

22. The Contractor shall provide and maintain an Asset Register. The Asset Register shall contain but not be limited to the information set out in Schedule 4.2 (Technical Infrastructure) and as further described in Schedule 6.3 (Development Process).

22.1 The Contractor shall identify, record and baseline all Configuration Items used in connection with the Operational Service in the Contractor CMDB. The scope of Configuration Items will be agreed with the DCC in the Configuration Items Catalogue (in accordance with Schedule 6.3 (Development Process) during the Design Stage.

22.2 The Contractor shall record all changes to all Operational Service Configuration Items in the Contractor CMDB.

22.3 The Contractor shall maintain Configuration Records throughout the lifecycle of the asset or Configuration Item over the Service Period.

22.4 The Contractor shall manage the recording, retrieval and consolidation of the current configuration status and the status of all preceding

configurations to confirm that information in the Contractor CMDB is at all times correct, timely, and secure.

22.5 The Contractor shall make the status of items under Configuration Management available to the DCC and ensure that appropriate access, change, build and release controls are followed for operations on such items.

22.6 The Contractor shall, upon request, provide an audited, up-to-date list of agreed configuration items and assets to the DCC.

22.7 The Contractor shall integrate as appropriate with DCC's Asset and Configuration Management processes as set out in the DCC Service Management Framework.

Release Management

23. The Contractor shall provide processes for Release Management including, but not limited to, the processes, systems and functions to package, build, test and deploy Releases into production.

23.1 The Contractor's Release Management process shall align to and support the Release Management process relating to the End-to-end Smart Metering System as specified by the DCC from time to time and in accordance with its obligations in connection with this Agreement.

23.2 The Contractor shall provide and maintain a "**Release Policy**", which sets the scope of the Contractor's Release Management process for the Operational Service, and which contributes to End-to-end Smart Metering System as specified by the DCC from time to time. The Contractor shall propose each draft of the Release Policy to the DCC for prior approval (and such draft shall not take effect as the Release Policy until approved by the DCC (approval not to be unreasonably withheld or delayed).

23.3 The Contractor's Release Policy (as defined in 23.2 immediately above) shall define the rules and criteria that the Release Management process applies in performing and managing Releases.

23.4 The Contractor's Release Policy (as defined in 23.2 immediately above) shall include but not be limited to:

a) defining the scope of Releases that are the Contractor's responsibility to manage, with respect to software, hardware, Service Management and process releases;

b) listing the scope of the Releases that need to be managed by other parties, e.g. the DCC or DSP;

c) identifying what criteria will be considered to ensure that underlying service changes not specific to the Services are appropriately impacted on the DCC and the DSP;

d) the role of the Contractor in the DCC or DSP Release Management processes;

e) priorities for delivering Releases e.g. speed of delivery of the Release, optimising costs, minimising risk the categories of Releases in scope of the Contractor's responsibilities;

f) periods of "Change freeze" where no Releases may be implemented to the Operational Service; and

g) putting procedures in place help prevent unauthorised Releases.

23.5 The Contractor shall establish and implement a back-out process for each Change to its Systems, applications and/or processes in case there is a need to reverse any of the changes made as part of a Release.

23.6 The Contractor shall create and maintain a "**Release Schedule**" that includes a fifty two (52) week calendar of all Releases that the Contractor intends to make to the Operational Service.

23.7 The Release Schedule described above shall be made available to the DCC and the DSP on a weekly basis, and within 24 hours of any changes to it, or on reasonable request at any time.

23.8 The Contractor shall provide Release information and training material to the DCC four (4) weeks prior to the implementation of any Release to the Operational Service.

23.9 The Contractor shall inform the DCC and DSP of any changes it must implement that are necessary for the effective implementation and operation of the Contractor's Releases to the Operational Service, at least thirty (30) Working Days before the planned implementation date.

23.10 The Contractor shall update all documentation resulting from a Release within 5 Working Days of the Release being implemented. This will include, but not be limited to, Service Management documents related to the Operational Service, test packs and Regression Test Packs (as defined in Schedule 6.2 (Testing and Acceptance)).

23.11 This Requirement intentionally removed.

23.12 The Contractor shall provide a proof of concept for proposed changes to the Operational Service, where reasonably required by the DCC when the proposed Change reasonably requires proof that the proposal is valid.

23.13 The Contractor shall put in place systems and processes that allow for expediting emergency Releases (subject to DCC approval) in business critical situations.

23.14 The Contractor shall only implement correctly identified, authorised and tested Software and Hardware within the Operational Service.

23.15 The Contractor shall create, store and maintain a log of all systems and services that have been used in both testing and the live provision of services.

Service validation and testing

24. The Contractor shall comply with the testing and acceptance approach and activities for the Operational Service as defined in Schedule 6.2 (Testing and Acceptance).

24.1 The Contractor shall record and retain records relating to DCC Service User Tests.

24.2 The Contractor shall make available records relating to DCC Service User Tests to the DCC for publication on the DCC Self Service Interface to authorised DCC Service Users. The access rights and level of detail to be made available shall be agreed with the DCC at the Design Stage in accordance with the process defined in Schedule 6.3 (Development Process) in connection with SD4 Interface Specifications and SD11 Service Management System Design Specification.

Knowledge Management

25. The Contractor shall implement and operate proactive knowledge management processes for the Operational Service.

25.1 The Contractor shall maintain all of the Operational Service documentation including, but not limited to the operational manuals, processes, procedures and work instructions.

25.2 The Contractor shall provide and maintain a Knowledge Management Strategy to manage the information structure, currency and relationship with configuration items for the Operational Service.

25.3 The Contractor shall provide for effective knowledge transfer / training to Energy Suppliers to enable them to perform Communications Hub installations

25.4 The Contractor shall keep the DCC knowledge base current, to enable the DCC Service Desk to resolve the maximum number of incidents.

25.5 The Contractor shall record, retain and keep updated on an on-going basis a set of information related to the Operational Service to be specified during the Design Stage which shall be provided to the DCC for use by the DCC Service Desk and, where authorised by the DCC, for use by authorised DCC Service Users via the DCC Self-Service Interface.

Event Management

26. The Contractor shall provide and operate Event Management for the Operational Service that will monitor, detect, classify and record all Events from the Operational Services whether received automatically or retrieved as part of incident management and diagnostics retrieval.

26.1 The Contractor shall integrate its Event Management service with its Incident, Problem and Change management functions and the related and equivalent functions operated by the DCC and DSP.

26.2 The Contractor shall agree Event thresholds and appropriate actions in response to Events with the DCC during the Design Stage and document these in the Service Management Framework. These thresholds shall form part of the Service Management Framework, and will describe the actions to be taken in response to Event types including but not limited to:

a) Event recording;

b) alert generation;

c) pass Event to DCC for display on the DCC Self-Service Interface;

d) automatic Incident and Problem case generation;

e) Event response;

f) recovery actions; and

g) escalation processes.

26.3 The Contractor shall forward Events generated to the DCC Service Management System for correlation by the DCC according to rules agreed with the DCC.

26.4 The Contractor shall provide alerts and early warning reports, to the DCC, of impending service quality disruptions.

26.5 The Contractor shall provide alerts and early warning reports for actual service quality disruptions.

26.6 The Contractor shall provide continual access for relevant stakeholders to agreed historic event logs and evaluations.

26.7 The Contractor shall adopt a principle of maximising automation of Event Management so that the need for human intervention is minimised.

26.8 The Contractor shall investigate Events and alerts impacting on the Operational Service.

26.9 The Contractor shall produce a prioritisation matrix that defines high criticality events, to be designed at the Design Stage.

26.10 The Contractor's Event Management process shall monitor metrics for high criticality Events, as defined in the prioritisation matrix.

26.11 The Contractor shall align its Event Management processes with those equivalent processes of the DCC, DSP and any Sub-contractors as appropriate.

26.12 The Contractor shall perform event correlation for Events generated by the Operational Service.

Incident Management

27. The Contractor shall provide second line support and Incident Management for the Operational Service, including:

a) Incident detection and receipt as appropriate from DCC;

b) Incident recording, classification and prioritisation;

c) Incident investigation and diagnosis, Incident monitoring, tracking and resolution and feedback to DCC;

d) Incident escalation;

e) Incident closure (and rules for reopening); and

f) Incident ownership and related communications, when approved by the DCC.

27.2 The Contractor shall perform Incident Management for the Operational Service in accordance with the Incident classification and Resolution times defined in Schedule 2.2 (Performance Measures and Monitoring).

27.3 The Contractor shall only communicate with DCC Service Users directly affected by an Incident when agreed with the DCC Service Desk, to expedite Incident diagnosis and resolution.

27.4 The Contractor shall inform the DCC Service Desk of the progress of the Incident following direct contact with any DCC Service Users. The DCC Service Desk will retain ownership of the Incident and communication with the DCC Service User.

27.5 The Contractor shall integrate and coordinate its Incident Management process with the equivalent and related Incident management process of the DCC, the DSP and other CSPs.

27.6 The Contractor shall detect faults originating in the Contractor Solution and raise Incidents to the DCC Service Desk through the DCC Service Management System, taking ownership of the Incident through to Resolution.

27.7 The Contractor's Incident Management process shall minimise the impact of the Incident on the DCC' Services.

27.8 The Contractor shall classify and prioritise all Incidents according to the agreed severity level classifications.

27.9 The Contractor shall support and contribute to the identification and resolution of security Incidents in accordance with Schedule 2.5 (Security Management Plan) adhering to the security Incident procedures and Schedule 2.2 (Performance Measures and Monitoring) following the 'Incident' resolution route as applicable.

27.10 The Contractor shall require Sub-contractors to provide Incident closure information (including information as to how the Incident was resolved) when the Sub-contractor has Resolved (or assisted in the Resolution of) an Incident.

27.11 The Contractor shall pass on all Sub-contractor Incident closure information to the DCC in Management Information reports.

27.12 The Contractor shall agree a list of Incident closure categories with the DCC during the Design Stage.

27.13 The Contractor's Incident closure categories shall be reportable and allow for Root Cause Analysis as part of the Problem Management process and performance monitoring.

27.14 The Contractor shall record and retain Incident information, in the DCC Service Management System, as agreed with the DCC in the Design Stage.

27.15 The Contractor shall retain Incident information, in accordance with the data retention provisions in the service management section (Service Audit Trail and Service Management Audit Trail) of this Schedule 2.1 for review in future investigations.

27.16 The Contractor's Incident information shall be auditable and searchable by the DCC or any party acting on behalf of the DCC.

27.17 The Contractor shall provide updates on Known Errors to the DCC Incident Management function.

27.18 The Contractor shall ensure appropriate integration of its Incident, Problem and Change management functions consistent with a proactively managed service model for the Operational Service.

Major Incident Management

28. The Contractor shall provide a Major Incident Management Process that provides for the identification, management and resolution of Major Incidents and which interfaces with and aligns with the Major Incident Management Process(es) defined by the DCC.

28.1 The Contractor shall work with the DCC and DSP during the Design Stage to agree the Incident types that will constitute Major Incidents, where Major Incidents shall include as a minimum all Severity Level 1 Incidents as defined in Schedule 2.2 (Performance Measures and Monitoring).

28.2 The Contractor shall provide and support any collaborative tooling required to support Major Incident resolution.

28.3 The Contractor shall provide a named individual to act in the role of Major Incident Manager to manage the diagnosis, resolution, all parties involved and communications to affected parties.

28.4 The Contractor shall provide a Major Incident management communications contact list to the DCC and shall ensure that it is up to date, on a frequency to be agreed with the DCC in the Service Management Framework (in accordance with Schedule 6.3 (Development Process) during the Design stage.

28.5 Without limiting any other obligation, the Contractor shall make specialists available, including specialists provided by Sub-contractors where appropriate, to be deployed to Major Incident Resolution teams. The Contractor shall provide a Major Incident report to the DCC upon closure of a Major Incident, within 2 Working Days of the Major Incident being closed. The content of the Major Incident report shall be agreed with the DCC during the Design Stage and documented in the Service Management Framework.

Request Fulfilment

29. The Contractor shall develop and maintain, in the Service Management Framework, a Service Management Service Request process to provide:

a) logging and tracking of requests from the DCC made via the Contractor's Service Desk

b) categorising and prioritising requests according to agreed criteria and milestones within Schedule 6.1 (Implementation Plan);

c) following appropriate approval procedures (including as specified by the DCC);

d) sourcing and delivering requests;

e) notifying the DCC following completion (and reopening if necessary) via agreed Service Desk processes;

f) providing information to DCC Service Desk about services and procedures for obtaining them; and

g) assisting DCC Service Desk with general information, complaints and comments.

29.2 The Contractor shall operate a fully documented and auditable Service Management Service Request process with records available to the DCC on request.

29.3 The Contractor shall communicate with DCC Service Users regarding Service Management Service Requests only when agreed with the DCC.

Problem Management

30. The Contractor shall be responsible for Problem resolution for all Problems with the Operational Service including SMWAN and Communications Hub related problems.

30.1 The Contractor shall work with the DSP and the DCC as required to resolve Problems.

30.2 The Contractor shall provide expertise regarding the Operational Service to support resolution of wider problems (including problems relating to the DCC Services rather than the Services) managed by the DCC.

30.3 The Contractor shall put in place and operate a proactive Problem Management process for the Operational Service. The Contractor's responsibility in this area shall include, but not be limited to:

a) receiving, identifying, classifying and recording Problems;

b) investigating and diagnosing Problems and reporting back to the DCC; and

c) proactively preventing Problems, implementing measures to avoid unnecessary reoccurrence of Incidents and Problems and performing Root Cause Analysis.

30.4 The Contractor shall provide monitoring any potential service degradation.

30.5 The Contractor shall resolve any Operational Service degradation using the Incident and Problem Management processes.

30.6 The Contractor shall support, co-ordinate and integrate its Problem Management systems and processes with those related and equivalent processes of the DCC, the DSP and other CSPs.

30.7 The Contractor shall ensure its Sub-contractors contribute to investigation, diagnosis and remediation activities.

30.8 The Contractor shall document all Known Errors.

30.9 The Contractor shall provide updates on Known Errors to the DCC and DSP problem management functions.

Access management

31. The Contractor shall be responsible for access management in compliance with security policies and requirements as defined Part E (Solution Security) of this Schedule 2.1 (DCC Requirements).

Common Input Billing Data Format

32. The Contractor shall produce input billing data for the DCC in a standard and consistent format to be agreed at the Design Stage and documented in the Contractor Solution Design Documents, with a unique reference number and the dates to which the billing data pertains for each set of billing data generated - with associated breakdowns of billing data.

Continual Service Improvement

33. The Contractor shall be responsible for continual service improvement as set out in Schedule 2.4 (Continuous Improvement).

Service Measurement

34. The Contractor shall own and operate service measurement processes in order to meet and report against the measures in Schedule 2.2 (Performance Measures and Monitoring).

Service Reporting

35. The Contractor shall manage all management information relating to the Operational Service including, but not limited to, the recording, storing, and retrieval of all management information.

35.1 The Contractor shall provide the DCC with access to the management information as agreed with the DCC through an agreed method during the Design Stage and documented in the Service Management Framework.

35.2 The Contractor shall keep all management information relating to the Operational Service separate from information relating to other contracts it may hold.

35.3 The Contractor shall provide the DCC with service reporting data that can be extracted in an open format. This shall be agreed with the DCC, and documented in the Service Management Framework, during the Design Stage.

35.4 The Contractor shall record and store all Service Management records for the Operational Service.

35.5 The Contractor shall promptly retrieve and provide the DCC with the Service Management Information for the Operational Service when requested by the DCC.

35.6 The Contractor shall produce reports for the DCC's service management function to an agreed schedule. The reporting specifications including content, format, frequency and timescales for delivery of the reports will be defined during Design Stage, and documented in the Service Management Framework. At a minimum the Contractor will provide:

a) weekly reports regarding:

(i) Incident Management; and

(ii) Service Management Service Requests,

b) monthly reports regarding:

(i) Problem Management;

(ii) Operational Change Management;

(iii) this requirement has been intentionally removed;

(iv) Release Management;

(v) financial management; and

(vi) Performance Management.

35.7 The Contractor shall notify the DCC when the reports referred to in Requirement 35.6 are published and shall notify such DCC personnel as the DCC may specify from time to time.

35.8 Each report referred to in Requirement 35.6 shall be immediately available to the DCC via the DCC Service Management System 24 hours a day, and 7 days a week, excluding planned outages agreed with the DCC.

Appendix A ; DCC SMWAN Gateway Interface Specification and associated Code of Connection

1. Format of the SMWAN Gateway Interface Specification

1.1 The DCC SMWAN Gateway Interface Specification shall define the technical specification required to support interoperability between the Contractor and DSP solutions. It shall be developed in accordance with the process and Initial Product Description set out in Appendix 8 to Schedule 6.3 (Development Process). It shall include, but not be limited to, the following content.

1.2 An Interface description which defines:

a) the purpose of the Interface which shall include the requirement to support routing of messages (including HAN Interface Commands) between DSP systems and the SMWAN; and

b) a summary of the message categories exchanged over the Interface.

1.3 The technical specification, including:

a) message protocols and message format supported by the Interface;

b) alignment of these message protocols and technical standards with the GB Companion Specification (GBCS);

c) details of the Communications Hub and Smart Meter network address format and process for network address allocation and maintenance required to support routing of messages between parties;

d) a defined error handling strategy including how unfulfilled Service Requests are managed; and

e) a defined re-try strategy and rules to manage end-to-end delivery of Service Requests within SLAs.

f) A definition of the firmware distribution process, including:

(i) a business process description for firmware image distribution;

(ii) a process description for the sourcing and management of firmware image files;

(iii) a description of the use of caching in the firmware image distribution process; and

(iv) a description of relevant file transfer protocols and standards.

g) A definition of time distribution services, including:

(i) the technical protocol specifications; and

(ii) a description of the hierarchical time distribution model.

2. Format of the SMWAN Gateway Code of Connection

2.1 The Contractor shall agree with the DSP an associated Code of Connection for the DCC SMWAN Gateway Interface that defines the parameters of use that both parties must adhere to during normal operation of the DCC SMWAN Gateway Interface. It shall be developed in accordance with the process and Initial Product Description set out in Appendix 8 to Schedule 6.3 (Development Process). It shall include, but not be limited to, the following content:

a) An agreement that specifies the approach and responsibilities for the management of information and quality.

b) A description of the interface design volume profiles, relating to capacity bandwidth and message rates over periods of time measurement, including:

(i) average load, according to design volume profile;

(ii) peak load;

(iii) peak duration;

(iv) applicable throughput controls and limits; and

(v) suppression of "alert storms".

c) A definition of agreed message scheduling rules, including:

(i) the extent to which messages will be sent at an agreed rate, such as;

(ii) sending a constant "smoothed" rate of messages over an agreed time period; or

(iii) sending an aggregated group of messages at an agreed point in time.

d) The security policies that shall apply to the interface.

APPENDIX B – DCC SMWAN Gateway Interface Principles

1. GB Companion Specification, general assumptions for Category 2, 3, 4 and 5 HAN Interface Commands

1.1 The DCC SMWAN Gateway Interface Specification shall support at least two (2) categories of messages:

a) messages related to the distribution of Firmware data only; and

b) messages which support the GB Companion Specification format for HAN Interface Commands, for which a simple network-layer interface shall be provided.

1.2 For all HAN Interface Commands except those relating to Firmware image distribution, the GB Companion Specification will address any additional security architecture details and/or requirements that are not set out within the defined SMETS HAN protocol standards and necessary for the functioning of the smart meter system. With reference to the SMWAN Gateway Interface Specification process, this includes definition of how Zigbee and COSEM application-layer protocols will:

a) be implemented to ensure authentication of HAN Interface Commands between endpoints at the application-layer;

b) be implemented to ensure encryption of sensitive data between endpoints at the application-layer;

c) provide a destination Device ID for all application-layer HAN Interface Commands;

d) provide an originating Device ID for all application-layer HAN Interface Commands;

e) provide a unique transaction identifier for all application-layer message; and

f) provide a mechanism by which transaction types can be identified for all application-layer HAN Interface Commands.

1.3 For DLMS format HAN Interface Commands, the DCC SMWAN Gateway Interface Specification shall support the transport of DLMS HAN Interface Commands between the DCC SMWAN Gateway Interface and the Communications Hub SMWAN interface. The GB Companion Specification shall define the format of the HAN Interface Command payload, as illustrated in Figure 1. The Contractor and DSP shall, through the SMWAN Gateway Interface Specification process, agree the format of the Transport Layer and lower layers of the protocol stack during joint design work.

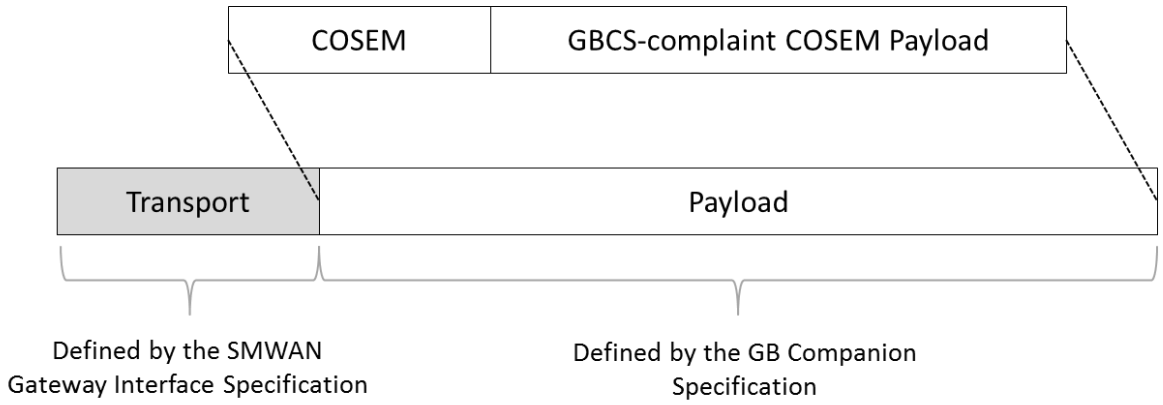


Figure 1: DLMS protocol stack illustration

1.4 In relation to the DCC SMWAN Gateway Interface, the following DLMS-specific protocol assumptions shall be made:

a) DLMS/COSEM Application Associations (sessions) will be persistent. The Contractor should assume that once established such Application Associations can remain in place for as long as a DLMS pre-established session allows; and

b) The DSP solution shall establish and maintain DLMS Application Associations.

1.5 For Zigbee SEP format HAN Interface Commands, the DCC SMWAN Gateway Interface Specification shall support the transport of Zigbee SEP HAN Interface Commands between the DCC SMWAN Gateway Interface and the Communications Hub SMWAN interface. The content of HAN Interface Commands up to and including the 'message authentication code', as illustrated in Figure 2, must not be modified by the CSP in any way. The CSP and DSP must, through the SMWAN Gateway Interface Specification process, agree the format of the Transport Layer and lower layers of the protocol stack.

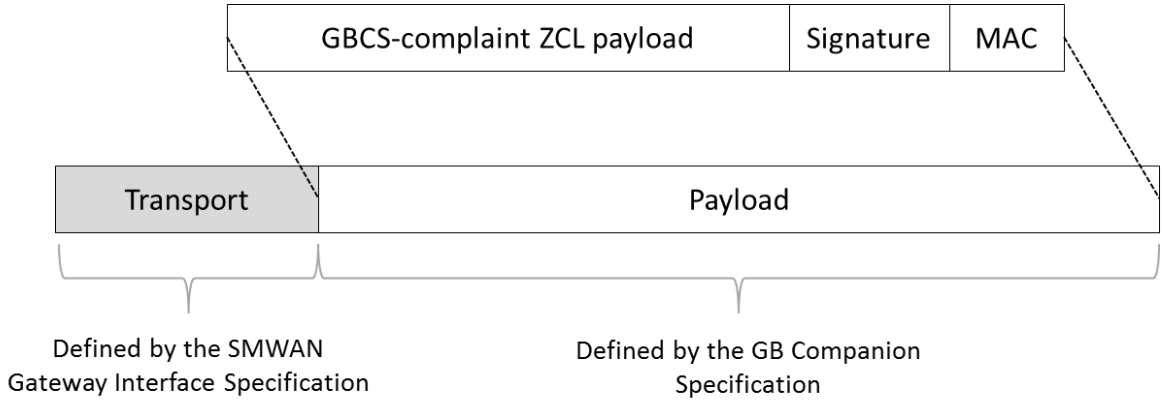


Figure 2: Zigbee protocol stack illustration

1.6 In relation to the DCC SMWAN Gateway Interface, the following Zigbee-specific protocol assumptions shall be made:

a) The version of the Zigbee protocol specified by the GB Companion Specification (GBCS) will support extensions to the Zigbee Cluster

Library and command set to meet all requirements set out in paragraph 1.2 above.

b) Further detailed protocol requirements (specific to security) will be set out in the GBCS.

2. Message categories

2.1 The table below sets out further detail regarding the five (5) categories of message. In order to meet SMWAN Capacity Management and optimisation requirements, the Contractor Solution may implement local caching of Category 2 messages, as defined in this table.

2.2 In any such optional implementation of Communications Hub caching, the following principles shall apply for the DCC SMWAN Gateway Interface for all messages:

a) messages related to the Contractor Solution for management of Alerts related to power outage are not constrained by these HAN Interface Command category definitions;

b) the Contractor shall not alter or transform or translate Category 2 HAN Interface Command responses received at the Communications Hub HAN interface;

c) temporary caching of Category 2 responses to HAN Interface Commands must not cause the response time requirements set out in Schedule 2.2. (Performance Measures and Monitoring) to be exceeded;

d) the Contractor Solution should include provisions to detect and prevent unsolicited messages from being forwarded across the Communications Hub SMWAN interface.

Table 1: Message categories

Category	Description	Bulk Message	Format of Message
Category 1	Contractor distribution of Firmware data to the data store on the Communications Hub	Yes	To be agreed through the DCC WAN Gateway Interface Specification. The required outcome is distribution of a signed Firmware data to target Communications Hub(s)
Category 2	Recurring meter response to schedule configuration	No	GB Companion Specification compliant HAN Interface Command meter response
Category 3	Meter Alert	No	GB Companion Specification compliant HAN Interface Command meter Alert

Category	Description	Bulk Message	Format of Message
Category 4	Dynamic load control and other future functionality	Yes	GB Companion Specification compliant HAN Interface Command that is a Non-Critical Command (future functionality)
Category 5	Secured, unicast GB Companion Specification format HAN Interface Commands to meters	No	GB Companion Specification HAN Interface Command (Critical Commands and Non-Critical Commands)

2.3 For messages defined as being in the 'Bulk Message' category, use of multicast or a similar network-layer routing mechanism by Contractor Solutions is not precluded. For all other message categories, unicast or single endpoint-to-single endpoint message routing is mandatory.

2.4 To allow the Contractor to perform capacity optimisation in the provision of the Services, the Contractor may optionally implement scheduling for Category 1 messages and temporary local caching of Category 2 messages.

2.5 Through the SMWAN Gateway Interface Specification, the Contractor shall agree a Code of Connection that specifies the level of DSP scheduling that will be implemented for some Category 5 messages.

2.6 The table below summarises the possible Capacity Management approaches available to the Contractor for these message types:

Table 2: Possible Capacity Management approaches for message types

Message type	Optional Capacity Management approach
Firmware update distribution (all types)	The Contractor may provide a dedicated mechanism for distribution of device Firmware updates, multicast is not precluded for Firmware distribution to Communications Hubs, though a secure, unicast message will be used to initiate updates once this distribution is complete.
Meter Billing Data Read (scheduled read only)	Scheduled meter reads are initiated by the meters themselves based on a billing calendar configuration set by the Energy Supplier. The Contractor shall not generate read requests to control SMWAN utilisation but may provide a solution that caches data on the Communications Hub which is retrieved by an 'out-of-band' poll or request or any other mechanism. This retrieval must be frequent enough to support the configured read schedule and associated Performance Measures against limits of meter register storage.
DSP Scheduled	The DSP schedules messages in order to optimise performance on the SMWAN. The DSP will smooth the demand across the DCC WAN Gateway Interface to the CSP and pass the requests on with sufficient time to the CSP. The Code of Connection will be used to specifically set out how the DSP will schedule the messages.
Load Control Distribution of bulk	Load control and other bulk message types are included in the smart grid message volume profiles to support future functionality. These

Message type	Optional Capacity Management approach
load control commands (Energy Supplier or DNO initiated)	are ‘placeholders’ to evaluate Contractor capability to meet the demands of potential future functionality. Multicasting these message types is not precluded, but future implementation must meet overarching security requirements.

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