RaaS
Resilience as a Service

Project Deliverable 3
Business Model

Scottish & Southern Electricity Networks

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Document Control

Document Ownership

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Contents

Project Overview

The Resilience as a Service - RaaS - innovation project seeks to improve the operational resilience of electricity distribution networks in remote areas.

The aim is to develop and trial a new market-based solution which can swiftly, automatically, restore supply to customers in the event of a fault, using services provided by a local Battery Energy Storage System, and incorporating local Distributed Energy Resources. Figure 1 provides a high level illustration of the RaaS scheme.

The RaaS concept represents a flexible solution for areas where traditional reinforcement or use of DNO owned standby generation to provide network resilience would be prohibitively costly. Through temporary operation of the network in islanded[1] mode, RaaS will maintain supply to customers during the time required for a DNO to respond to a fault. At other times, a RaaS Service Provider would be able to use the battery to provide other services to the electricity system, supporting the economics of the solution.

The key benefits of this approach in providing cost effective, local network resilience will include an improved service to customers, together with a lower carbon solution than the conventional option of transporting a temporary diesel generator to site, supporting the UK's transition to Net Zero.

The project is a partnership between Scottish and Southern Electricity Networks (SSEN), E.ON and Costain, with funding of £10.9m through Ofgem's Network Innovation Competition (NIC).

In addition to demonstrating the technical concept, the work will develop the commercial framework for RaaS - evaluating the financial case from a DNO perspective and assessing the investment case for RaaS Service Providers with options for revenue stacking in other flexibility services markets.

The first phase of the project focuses on site selection, system design for the chosen demonstration site, and refinement of the business case for RaaS. This stage will validate whether the concept is technically feasible and financially viable, to inform a Stage Gate decision in early 2022 on whether to proceed with the deployment and operation of a RaaS system at the chosen site for a trial period of up to two years.

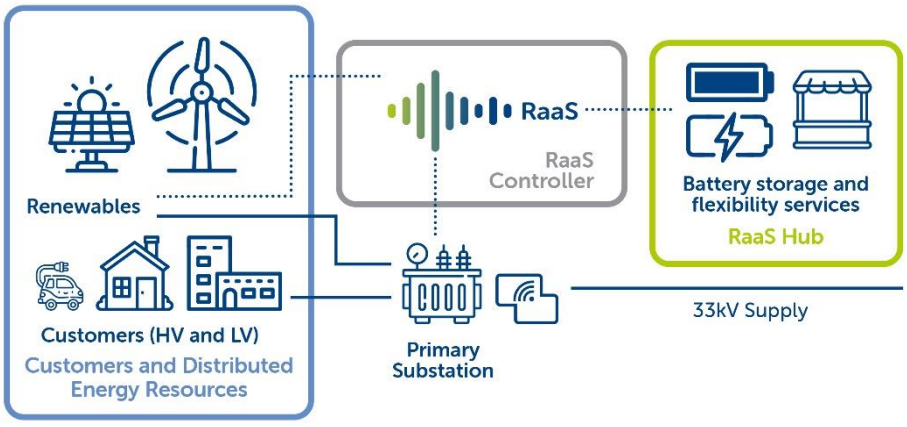

Figure 1 - Schematic of the RaaS solution supporting a 33kV to 11kV primary substation

[1] in islanded mode, an area of the network is disconnected from the main electricity grid and operates independently

Introduction to PD3

This PD3 overview document sets out the work undertaken within the RaaS - Resilience as a Service - project to meet the requirements of Project Deliverable 3 - Business Model, defined in the Project Direction as:

RaaS Project Deliverable 3

PD3.1 Construct investment business case for RaaS supplier

PD3.2 Produce draft Heads of Terms for RaaS method

The paper introduces the work undertaken to evaluate the investment business case from a RaaS Service Provider's perspective, and reviews the potential Heads of Terms associated with a RaaS solution. As an enhancement to the original scope, this deliverable also provides an assessment of the business case for RaaS from a DNO's perspective. These corresponding views provide an understanding of how the RaaS Investor and DNO business cases currently align and support the evaluation of options that could improve the attractiveness of RaaS to both parties.

The accompanying business case documents detail the methodologies developed to evaluate the Investor and DNO business cases for RaaS. The conclusions are drawn together in the Business Case Conclusions section of this document, and factors that will act to support the future application of RaaS are also presented.

The approach taken to assessing potential Heads of Terms for RaaS, and the associated recommendations, are presented in a further accompanying report. This work builds on the Standard Agreement for procuring Flexibility Services[2] developed through the ENA's Open Networks project. The review also explores relationships with a range of other parties that a RaaS Service Provider may contract with to deliver a RaaS service. This wider context is of relevance when considering the future application and evolution of the RaaS concept.

This Project Deliverable, together with associated project material, will be published on the project website - www.project-raas.co.uk - and made available to all interested parties.

To provide the context for PD3, Appendix 1 presents the Project Deliverables defined in the RaaS Project Direction.

[2] Standard Agreement for Procuring Flexibility Services, ENA Open Networks project, www.energynetworks.org/creating-tomorrows-networks/open-networks/flexibility-services

Business Case for RaaS

Context

To develop a detailed understanding of the Business Model for RaaS, the project has evaluated the business cases from both the RaaS Service Provider (RSP) and DNO perspectives. A key principle central to the RaaS concept is that a third party RaaS Service Provider is able to use the storage scheme to participate in other flexibility markets in addition to RaaS, and thereby stack revenues to support the economic deployment of RaaS.

The Investor Business Case has been developed by RaaS project partner E.ON, in conjunction with consultants Cornwall Insight.

The DNO business case has been developed by project partner SSEN, in conjunction with consultants TNEI, appointed through a tender process undertaken in October 2020.

The subsections below introduce the methodologies developed to assess the business case for RaaS, and provide summaries of the key findings and conclusions. The detail of this work is presented in the accompanying reports which comprise Project Deliverable 3.

Investor Business Case

Considering the financial case from a RaaS Service Provider's perspective, E.ON have assessed the potential for optimising revenue stacking from participation in other markets, and what that may mean for the level of income a RaaS Service Provider may need to expect to offer a RaaS service - this represents the 'Willingness to Accept' side of the transaction.

This optimisation assessment has been undertaken on the basis that the required energy capacity would be reserved for RaaS, with the available headroom capacity used to participate in other Flexibility Services. To provide an understanding of what may influence the economics of RaaS for the Investor, and therefore the DNO, the modelling work has evaluated three differing RaaS Product Design Scenarios[3], together with different wholesale and balancing price scenarios, to provide sensitivity analysis that can inform the future development of RaaS through the project.

The key revenue streams incorporated into the analysis are:

- Wholesale markets, including day-ahead and within-day trading
- Balancing Mechanism
- Frequency Response - Dynamic Containment
- Capacity Market

A number of additional potential revenue streams (existing or emerging) have not been included in this modelling work due to a current lack of information or certainty on these revenue streams, and with recognition of the fact that some revenue streams are highly site specific. These may, however, offer additional sources of income for any individual RaaS site.

[3] the three RaaS Product Design Scenarios evaluated consider different levels of granularity in the specification of RaaS service level requirements, which equate to differing levels of reserved capacity required for RaaS, and were defined through prior project work as described in RaaS E4.1 Future Scenarios for Flexibility Markets in which the RaaS Battery System can be Optimised, E.ON, November 2020

Using the central wholesale pricing scenario applied by Cornwall Insight, across the different RaaS Product Design Scenarios this work indicates an income of around £45,000 to over £125,000 per year from other flexibility markets for the originally envisaged 4.2 MW/4.2 MWh battery. This rises quite substantially to around £130,000 to over £160,000 per year for a larger battery of 4.2 MW/5.8 MWh providing additional capacity for participation in other flexibility markets.

The figures also give a clear indication that more refined forecasting of demand, which governs the required reserved battery capacity, is advantageous. Enhanced forecasting at the local level and in close to real time would bring further benefits, albeit recognising that at present DNOs may not yet have that capability.

This assessment of participation in other markets and flexibility services is described in detail in the E.ON Optimisation Assessment at the RaaS Trial Site and a Generic Site for RaaS Battery Operation report provided as Appendix 2.

The figures for potential income from other markets, together with assumptions on battery capital cost, operational costs, and standard financial inputs such as inflation and tax, were then applied to E.ON's business case model to evaluate the fee that may be required from RaaS to achieve a given rate of return on investment in a BESS scheme. This assessment similarly considered both the potential trial site of Drynoch primary substation[4] on the Isle of Skye, and a 'generic site' which more broadly represent requirements across a range of potential sites for comparison.

Based on the original idea for RaaS proposed at the start of the project - i.e. provision of a 4 hour RaaS service which is available 100% of the time - for this specific application of RaaS the conclusion for the Drynoch site is that with current battery prices, the fee required to make a reasonable return would be around £450,000 per year for a 10 year RaaS contract, rising to £740,000 per year for a 5 year contract, as shown in Table 1[5].

Table 1 - RSP valuation of RaaS for a 4 hour service at Drynoch, based on Product Design Scenario 1

	5 Year RaaS Contact		10 Year RaaS Contact	
	Year 1 RaaS fee	% of total revenue stack	Year 1 RaaS fee	% of total revenue stack
4% IRR	£630,000	75%	£366,000	64%
8% IRR	£740,000	78%	£455,000	69%

Table 1 also indicates that for a battery of this size operated to provide a 4 hour RaaS service, the income from other markets only represents 20-30% of the overall income, with around 70-80% of the income required to achieve the associated IRR then sought from RaaS.

The full detail of the investor business case assessment is presented in the E.ON Investor Business Case report provided as Appendix 3.

[4] the project's trial site selection process is documented in RaaS 'Site Selection' (E2a.1), E.ON, February 2021

[5] the figures provided here are based on the following key assumptions:

- a 4 hour RaaS service at Drynoch, applying Product Design Scenario 1 (seasonal requirements)
- Cornwall Insight 'Central' wholesale price scenario
- BESS Capex £3m, Opex 1% of Capex p.a. inflated by CPI
- 10 year participation of the battery in other flexibility markets
- Aggregator (managing participation in other flexibility markets) paid 10% of other flexibility market revenues
- 25% tax rate, 18% written down allowances
- fixed annual inflation of RaaS fee by 2%

DNO valuation of RaaS

To appraise the business case for RaaS from a DNO's perspective, SSEN appointed TNEI to develop a methodology for valuing a RaaS service at any given site. The approach created provides a means of understanding the price that it would be cost effective for a DNO to pay for a service when considering either the reduction in Customer Interruptions (CIs) & Customer Minutes Lost (CMLs), or the reduced impact on customers with regard to the Value of Lost Load (VoLL) - this may be considered the 'Willingness to Pay' component for a RaaS service.

Due to the unpredictable nature of faults, the methodology developed is based on probabilistic analysis of both the number of faults that may occur within a given year and the duration of each fault. Monte Carlo simulation is used to determine an 'average' benefit of RaaS in reducing the duration of faults through the assessment of thousands of possible combinations of fault frequency and duration at a site. The methodology evaluates the benefit associated with potential RaaS service durations of 1 to 6 hours, and the financial assessment provides figures for both CIs/CMLs and VoLL.

The CI/CML benefit represents the reduction in Interruption Incentive Scheme (IIS) penalty payments that a DNO may reasonably expect over a number of years, based on the probabilistic assessment of faults.

The VoLL assessment is also important as RaaS is most likely to be applied at locations which have higher than typical numbers of power outages, or longer durations off supply. The VoLL figures used for the RaaS project are drawn from Electricity North West's detailed VoLL[6] work, which recognises differences in the impact on customers based on different frequencies and durations of event, and with regard to different customer types. Those comprehensive figures therefore represent a relevant and appropriate means of assessing the benefits of RaaS alongside the more generic, fixed, CI/CML rates.

The DNO valuation methodology developed by TNEI aligns with, and importantly adds detail to, the Common Evaluation Methodology[7] for flexibility services and network investment decisions developed through the ENA's Open Networks project, particularly with regard to services associated with restoring the network.

The valuation methodology was used to assess a suite of potential sites within SSEN's North region, as illustrated in Figure 2. The figures in the charts represent the mean (i.e. average over all simulations) figure from the probabilistic analysis - these are typically around the 60th-70th percentiles of the output probability distributions, reflecting the skew in input probability distributions based on historic data.

This analysis indicates that at the proposed trial site of Drynoch it would be reasonable for a DNO to aim to pay around £23,000 a year for a 4-hour RaaS service based on the saving in IIS penalties associated with CIs & CMLs that could be expected by avoiding outages of less than 4 hours, based on the Monte Carlo simulation of faults. It's clear that there are a range of benefits across the sites, therefore to provide another example, a 4 hour RaaS service at Kinloch primary substation on the Isle of Mull could merit an annual payment of £245,000 per year based on the VoLL benefit to customers.

[6] www.enwl.co.uk/go-net-zero/innovation/smaller-projects/network-innovation-allowance/enwl010---value-of-lost-load-to-customers

[7] www.energynetworks.org/creating-tomorrows-networks/open-networks/flexibility-services - ref. ON20-WS1A-P1

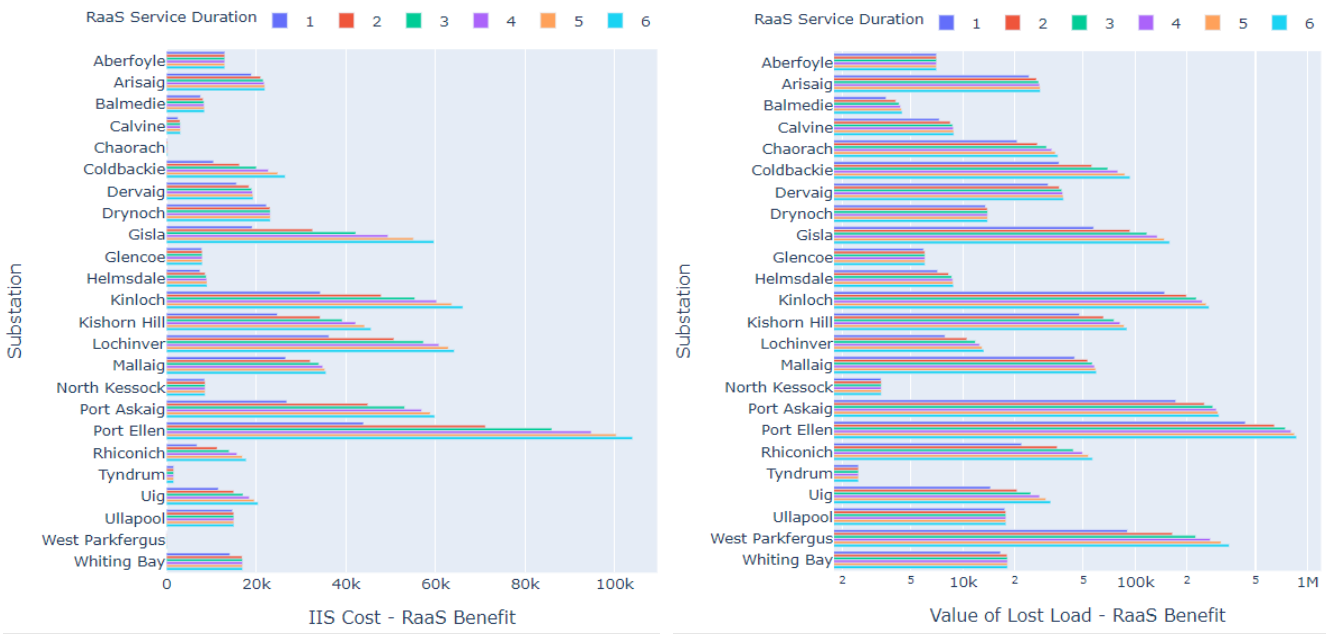

Figure 2 - Examples of DNO valuation of RaaS for service durations of 1 to 6 hours, based on IIS (CIs/CMLs) and VoLL

In addition to providing an assessment of the DNO business case for RaaS, TNEI have also looked at the potential role and benefits of enhanced forecasting within RaaS, and explored different potential payment structures for RaaS, as different payment 'configurations' may appeal differently to different types of RaaS Service Provider.

All aspects of this work are presented in the TNEI DNO Business Case Review report provided as Appendix 4.

Business Case Conclusions

Whilst the project team is comfortable that it will be possible to apply the proposed technical solution presented in PD2 'Detailed Design'[8], drawing together the RaaS Service Provider and DNO business cases, it is acknowledged that the assessments based on current prices for individual BESS schemes of the ~4MW/4MWh size, and the original 'RaaS product concept' of reserving sufficient capacity to cover the significant majority of faults with little granularity in the DNO's specification of service requirements, currently indicates a gap between what the RaaS Service Provider Willing to Accept and the DNO would be Willing to Pay for some sites that would benefit from a RaaS scheme.

However, it is important to note that that gap is 'at present', and based on the original 'RaaS product concept' of procuring a battery which reserves sufficient energy to meet 4 hours of electricity demand for 90% of the year. In light of these findings, and drawing on key stakeholder engagement activities[9], the project team has identified a range of factors that will act to better align these figures and support the future application of RaaS. These address such considerations as evolving technologies and data capabilities; developments that will influence costs; and variations to the 'RaaS product design', as described in the subsection below. Subject to a positive Stage Gate decision, these aspects of the business model will be further investigated through the project, in addition to Phase 2 providing the opportunity for gaining experience from the technical application of RaaS for fault response and local resilience, with associated learning for other flexible solutions and use cases.

[8] RaaS PD2 'Detailed Design', November 2021, is available via the documents section of the project website, https://ssen-innovation.co.uk/raas/project-docs

[9] the conclusions regarding the business case for RaaS have been presented during the RaaS Stage Gate stakeholder consultation events held in November 2021, and presented to both the RaaS Stakeholder Advisory Board and Ofgem

Factors that will act to influence the Business Case for RaaS

The project work and stakeholder engagement activities undertaken through Phase 1 of the project have drawn out the following suite of considerations which represent additional drivers for RaaS, or may influence future costs:

- SSEN RIIO-ED2 Worst Served Customers (WSC) aspirations, similarly Ofgem expectations for service to vulnerable consumers (beyond consideration of VoLL or CIs/CMLs), as illustrated in Figure 3.

Output	Output type	RIIO-ED2 target	Cost in baseline plan
Reliability – Interruptions Incentive Scheme (IIS)	ODI-F	Meet our targets and reduce the average frequency and duration of unplanned power interruptions affecting our customers by 20% by 2028	£24.2m
Guaranteed Standards of Performance (GSoPs) i.e. quality of supply	LO	Meet our obligations under GSOPs and minimise the number of customers experiencing an outage greater than 12 hours.	N/A
Reliability – Reduce number of Worst Served Customers (WSCs)	PCD	By 2028 improve the network performance for at least 75% of worst-served customers[1]	£25.2m

LO: licence obligation; PCD: price control deliverable; ODI: output delivery incentive (F: Financial, R: Reputational), CVP: Consumer Value Proposition, SSEN Aim: company goal

[1] This is based on 2019/20 fault data and investing to remove 75% of those customers who remain WSC at the start of RIIO-ED2

Figure 3 - Excerpt from SSEN RIIO-ED2 business plan relating to reliability and Worst Served Customers[10]

- external impact - avoiding the visual impact of a new overhead line (alternatively accepting the high cost of undergrounding)
- battery costs reducing - economies of scale, potential reuse of former EV batteries, etc.
- measures that will reduce or remove any network import/export constraints that a BESS may be subject to, potentially increasing the power (MW) that a RaaS Service Provider can offer to the market and commercialise - this is of particular relevance where a BESS sizing decision is significantly influenced by the power that the scheme has to be capable of delivering to trigger network protection schemes, and/or to black start the local 11kV network
- future availability of other cost effective storage technologies with grid forming capability - e.g. hydrogen fuel cell schemes, flywheels, etc.
- implementing RaaS using BESS assets installed primarily for other purposes (for example associated with a renewable energy scheme), with RaaS then representing an additional use case & income for the asset rather than being the primary function of the storage scheme, and enhancing the use of existing assets within a whole systems approach
- future market structure - the planned project trial would be focused on a specific application of RaaS in the context of the present day - i.e. supporting a primary substation in a rural location using a battery together with existing generating capacity - however there are many ways in which the market structure for RaaS could adapt to incorporate new technologies and capabilities over time; examples here include the incorporation of Vehicle to Grid (V2G) capability, or increasing Demand Side Response (DSR) capability, and in each case participation could be supported by an Aggregator, or through automated microgrid management & settlement technologies - this potential for incorporating a much wider range of participants, or 'actors', to deliver local resilience brings some interesting considerations with regard to

[10] the Reliability Strategy associated with Section C 'A Safe, Resilient and Responsive Network' of SSEN's Final RIIO-ED2 Business Plan submission is available via https://ssenfuture.co.uk/wp-content/uploads/2021/12/A_7.2_Reliability_CLEANFINAL_REDACTED.pdf

different terms and interactions between participants, and to what extent this may add complexity or simplify the operation of a RaaS scheme in the context of other dynamic network operation solutions and flexibility markets, as represented in Figure 4

- potential evolution of RaaS - similarly, the successful application of RaaS through this project provides a foundation for the RaaS concept to evolve - which could include potential use on non-rural distribution networks, or at higher or lower voltage levels of the distribution network, or potential adoption by other industries or commercial customers for their own site's use but also with the capability to support the DNO network in the local area - therefore by trialling this initial solution, the project can provide learning to pave the way for such future adaptation of the Resilience as a Service concept
- wider policy context - RaaS is also well placed to support wider policy and strategy aims, both through a low carbon approach to improving network resilience, and through the potential for a RaaS asset to support a range of other activities, and examples of key documents published since the RaaS project commenced which the project team believe RaaS could support include:
  - Scottish Government's plans for an inclusive energy transition supported by strong collaboration at local community level[11]
  - the independent Electricity Engineering Standards review which recommends a customer focused resilience standard, and approaches to using distributed resources to supply customers in islanded mode under outage conditions[12]
  - the National Infrastructure Commission's recommendations about using flexibility services to keep options open as energy demands change, and applying managed approaches to proactively and incrementally adapt[13]
- the approach to DNO requirements specification for procurement, including moving from the original concept of 'meeting 90% of 4 hr faults' where RaaS may represent the primary income stream for the RSP, to the concept of RaaS representing a top-up/locational incentive to install storage implemented for other purposes in an area where it can also contribute to system resilience, and cost-effectively bring benefits to customers
- the role of forecasting, including:
  - demand - to inform DNO requirements specification and reserved capacity for RaaS over different periods of time
  - interruptions - to inform DNO decisions re 'standing down' a RaaS service at certain points in time
  - income from other flexibility markets - to inform RSP battery sizing decisions, RaaS fees, and potential 'opt out' options for RSPs
- the implications of different RaaS fee structures - e.g. fixed / availability / utilisation payments, contract vs incentives - rewards / penalties
- enhanced participation in ESO markets that currently require commitment - e.g. Dynamic Containment
- the possible concept of 'double booking' capacity, where a DNO may accept a RaaS Service Provider using 'reserved' capacity to participate in other markets, or be 'available' for a number of different infrequent services at the same time, on the basis that there may be a low likelihood of infrequent events coinciding
- a potential for 'bundling' with additional DNO flexibility services - for example CMZs (Constraint Managed Zones) which form a key aspect of DNO plans for the RIIO-ED2 price control period[14], or providing high speed EV charging capability - where appropriate

[11] www.gov.scot/publications/local-energy-policy-statement

[12] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943685/Electricity_Engineering_Standards_Review.pdf

[13] https://nic.org.uk/app/uploads/Anticipate-React-Recover-28-May-2020.pdf

- the concept of 'transportable RaaS', where the BESS asset may, for example, provide RaaS in one area during winter, and provide enhanced resilience at a different location with high tourism during summer together with support for higher levels of EV charging
- potential benefits from maintaining visibility of the 11kV system following an outage on the higher voltage network during an extreme weather event, to support the identification of faults and deployment of field teams - during significant events, such as storms, outages on the higher voltage network remove visibility of issues on the lower voltage networks, thereby requiring field teams to patrol & inspection to find faults, adding significant time to the process of restoring supply to customers
- RaaS as a low carbon alternative for island locations where DNO owned diesel generation is already in use to provide standby generation[15], supporting island decarbonisation in line with SSEN's Scottish Islands Strategy[16], and with the associated reduction in diesel and maintenance costs factored into the DNO valuation
- potential value for distributed generation through allowing the DNO to increase any maximum export limits in place due to constraints on the higher voltage network upstream of the primary substation

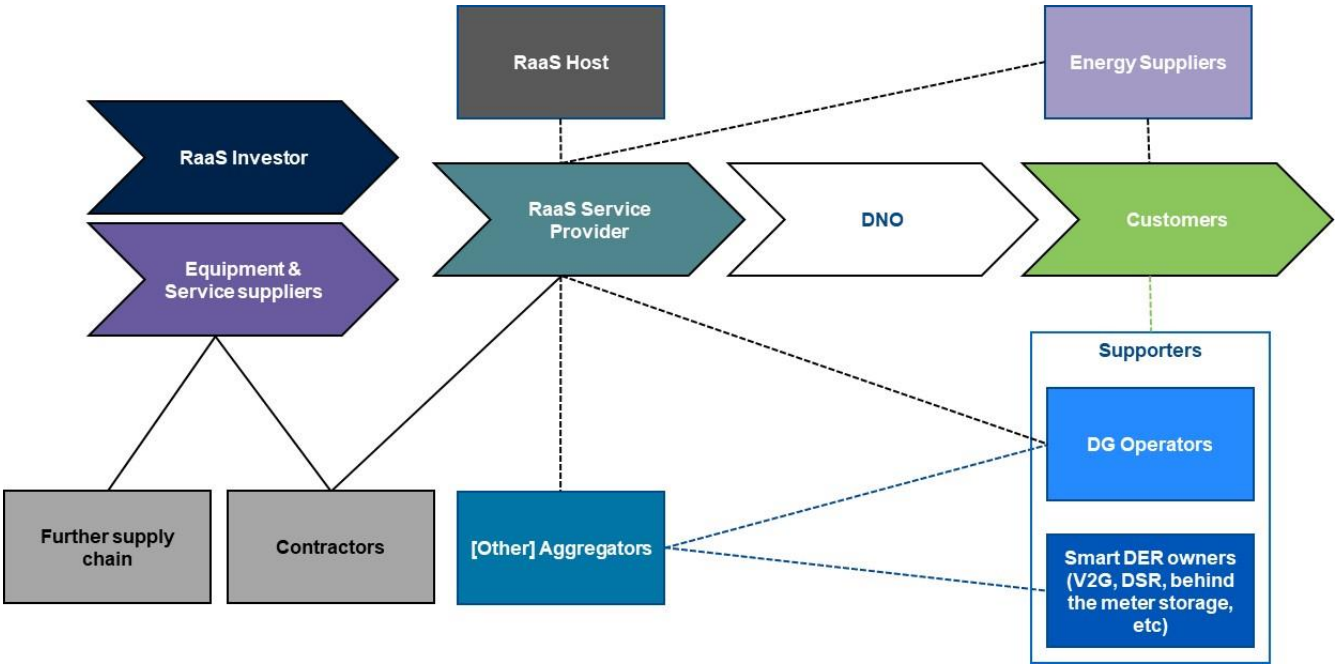

Figure 4 - Potential future market structure for RaaS

[14] the DSO Strategy associated with Section D 'Accelerated Progress Towards a Net Zero World' of SSEN's Final RIIO-ED2 Business Plan submission is available via https://ssenfuture.co.uk/wp-content/uploads/2021/12/A_11.1._DSO_Strategy_CLEANFINAL_REDACTED.pdf

[15] SSEN currently operate seven island based standby generation power stations

[16] the Scottish Islands Strategy associated with Section C 'A Safe, Resilient and Responsive Network' of SSEN's Final RIIO-ED2 Business Plan submission is available via https://ssenfuture.co.uk/wp-content/uploads/2021/12/A_8.1_ScottishIslands_CLEANFINAL_REDACTED.pdf

Heads of Terms for RaaS

Context

When scoping the project for the original NIC Bid Submission, this piece of work had been intended to create the draft terms of a contract for RaaS. However, since commencement of the RaaS project the Energy Networks Association's Open Networks project has developed a Standard Agreement for procuring Flexibility Services[17] as a common contract for use by all DNOs to provide consistency which will support increased engagement by third parties with DNO flexibility services. Accordingly, it is appropriate that this should also be adopted (and adapted where necessary) for the future procurement of RaaS.

For this Project Deliverable, therefore, a review of the Open Networks Flexibility Services Standard Agreement (FSSA) has been undertaken to identify any changes necessary to ensure the suitability of its use for RaaS.

Further, the work has been broadened to explore other contractual relationships that a RaaS Service Provider may enter into to deliver a RaaS service, providing context which will be relevant when considering the future application and evolution of the RaaS concept.

Incorporating RaaS within the Open Networks Flexibility Services Standard Agreement

The review of the Open Networks FSSA[18] has established that it would be both possible and appropriate to incorporate the procurement of RaaS into the agreement.

The four key areas for revisions are:

- Definitions

  The FSSA currently considers services based on more manual instructions from a DNO to a service provider. As RaaS will provide an automated response, with shorter timeframes, revisions related to service definition, activation/utilisation signals, and subsequent response, would be required to better reflect the RaaS solution.

- Company Obligations

  The FSSA contains a clause setting out Provider obligations, but no associated clause regarding Company obligations. RaaS will require the DNO to undertake specific activities for both the installation and operation of RaaS, for example providing the interface to the DNO aspects of the RaaS scheme and existing assets and control systems, and evaluating and making necessary changes to existing protection schemes. Accordingly, Company obligations would need to be incorporated into the agreement.

- Additions to Schedules

  Additions to the Schedules will be needed to reflect factors unique to RaaS, for example, the varying levels of storage capacity to be reserved over different Service Windows e.g. season, working/non-working day, and/or time of day, in accordance with how RaaS is to be implemented and specified by a DNO.

- Variation to Service Windows or RaaS Requirements

  The agreement currently allows the DNO to amend the Service Windows and Power Requirement to be delivered by the Provider. A RaaS Service Provider's business case may be based on defined Service

[17] Standard Agreement for Procuring Flexibility Services, ENA Open Networks project, www.energynetworks.org/creating-tomorrows-networks/open-networks/flexibility-services

[18] note that version 1.2 of the Flexibility Services Standard Agreement has been used for the purpose of this assessment - any subsequent versions of or proposed changes to the FSSA would require further review by the RaaS project team, and wider industry through Open Networks consultation activities, to understand their implications

Windows and RaaS requirements which allow the RaaS Service Provider to evaluate the revenues that could be achieved from using the available headroom capacity to participate in other Flexibility Services, determine the optimal battery size, and/or make a business decision to invest in a RaaS asset. Any changes to the Service Windows or Requirement over the course of a contract may adversely affect the RaaS Service Provider's business case, representing a risk which may deter participation in RaaS. In the case of RaaS the option to vary the service will have to be optional to/in agreement with the Provider.

Details of the proposed amendments to the FSSA are presented in the E.ON Heads of Terms: Supporting Information report provided as Appendix 5.

Subject to a positive Stage Gate decision for the RaaS project, these points will be raised with the Open Networks project during Phase 2 of RaaS, and discussed with the Flexibility Workstream to reach an industry consensus which ensures that the standard agreement will be suitable for the future BAU roll out of RaaS.

Overview of other contracts a RaaS Service Provider may enter into

The review of other contractual relationships that a RaaS Service Provider may enter into considers the application of RaaS at present, and future implementation as RaaS becomes more widely deployed and the market evolves to incorporate increasing numbers of participants and smart, sustainable energy technologies.

The parties considered are:

- Aggregators
- Battery/Storage Scheme Suppliers
- BESS/Storage Scheme Installers
- BESS/Storage Scheme O&M Providers
- Energy Management System (EMS) Suppliers
- Energy Suppliers
- Individual Domestic or Commercial Customers
- Landowners
- Local Distributed Energy Resources
- National Grid ESO or DSOs

Descriptions of these parties, and an exploration of the potential key roles and responsibilities, data exchanges, and contractual terms that may be required for the delivery of RaaS, are given in the E.ON Heads of Terms: Supporting Information report provided as Appendix 5.

Contact Details

Interested parties are very welcome to contact the RaaS project team with any enquiries via the contact details below:

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Appendices

Appendix 1 - RaaS Project Deliverables

Appendix 2 - Optimisation Assessment for RaaS Battery Operation at the RaaS Trial Site and a Generic Site (RaaS E4.2/E4.3), E.ON, August 2021

Appendix 3 - Investor Business Case (RaaS E5.3), E.ON, January 2022

Appendix 4 - DNO Business Case Review, TNEI, October 2021

Appendix 5 - Heads of Terms: Supporting Information (RaaS E5.4), E.ON, January 2022

Appendix 1 - RaaS Project Deliverables

To provide the context for PD3, Table 2 presents the Project Deliverables defined in the RaaS Project Direction.

Table 2 - RaaS Project Deliverables

Deliverable	Description	Evidence
1	Front End Engineering Design (FEED)	Report detailing the selected site for demonstration and proposed use case(s) for the RaaS demonstration. External peer review of FEED.
2	Detailed Design	Detailed design of controls, electrical integration, available DER and the BESS complete. Publish Trial Programme on SSEN RaaS webpage.
3	Business Model for potential RaaS suppliers	Construct investment business case for RaaS supplier. Produce draft Heads of Terms for RaaS method.
4	Stakeholder Feedback Event (Stage Gate)	Stakeholder feedback event to disseminate and gather feedback on outputs.
5	Supply Chain Engagement	Publish Commercial Strategy on SSEN RaaS webpage. Present Enterprise design for Resilience as a Service on SSEN website.
6	Network Adaptation and Acceptance Testing	Produce interface and configuration specifications and commissioning reports.
7	Trial 1 - Demonstration at first site complete	Publish Demonstration analysis results on SSEN RaaS webpage covering both technical and commercial aspects. Stakeholder dissemination event showcasing learnings.
8	BAU Preparation	Technical design to support second demonstration site. Consultation with potential RaaS market for second demonstration site.
9	Comply with knowledge transfer requirements of the Governance Document	Annual Project Progress Reports which comply with the requirements of the Governance Document. Completed Close Down Report which complies with the requirements of the Governance Document. Evidence of attendance and participation in the Annual Conference as described in the Governance Document.