WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Innovation Framework

Response to RIIO-ED2 Draft Determination

Redacted Version

Contents

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Please note that this is a redacted version of the full document and has been produced on 12/09/2022

1. Introduction

1.1. This addendum provides supplementary information to address Ofgem's draft determination comments and queries related to our Innovation Framework. In line with the Ofgem guidance, we have not sought to re-write or resubmit the full strategy but simply address the aspects queried by Ofgem.

1.2. Scaling back innovation at this time runs counter to the long term challenges of electrifying of energy in support of net zero and reducing customer bills.

1.3. Following your Questionnaire on RIIO-1 Innovation Funds issued in November 2021, we provided our response which included answers to each question, and a spreadsheet capturing information including benefits on all of our NIA and NIC projects to date.

1.4. On the 7th March 2022 you then asked for:

- the existing model which was used to derive our estimates of both forecast and, where appropriate, realised benefits including details of assumptions and calculations using those assumptions;
- where possible, an explanation of those assumptions, their source and the logic behind their use.

1.5. For the following projects:

- WPD_NIA_004 (Solar Storage)
- WPD_NIA_017 (ENTIRE)
- WPDEN02 (OpenLV)
- WPDEN03 (EFFS)

We provided this to you on the 23rd March 2022 by email.

1.6. On the 29th of March, you asked for Excel models detailing this analysis. We followed up on the 31st March seeking clarification as to what format you needed. It appears that this may not have been followed up by Ofgem or WPD and apologise for our part in this if it were omitted.

1.7. Within this addendum, we now believe we have provided what you have asked for in the form of our internal benefits calculation spreadsheets, (i.e. – "detailed Excel models"). Please confirm this is the correct interpretation or advise what else you'd like to see.

Ofgem's Draft Determination feedback

1.8. As per section 5.5 of the draft determination Ofgem considered that WPD satisfactorily met four out of the five NIA criteria.

1.9. The feedback regarding why Ofgem did not award the fifth mark was as follows. "WPD did not provide evidence that demonstrates it already has in place robust procedures to rollout innovation to BAU, which we consider must include a process to monitor benefits from innovation projects. WPD did previously populate the E6 table of the regulatory reporting packs in RIIO-ED1, which reports quantified benefits from innovation. However, in response to our recent request, WPD did not provide supporting evidence, such as in the form of models, that these estimates were based on a robust process. Moreover, its Business Plan submission did not describe the process for monitoring innovation benefits. WPD's CEG also noted that it had not seen an explanation of how efficiencies from innovation would be measured".

1.10. Therefore, we are able to provide additional signposting, information and clarity to address these concerns as follows: Demonstrate robust procedures to roll out innovation.

- Further supporting evidence and models regarding table E6.
- Information about our process for monitoring and measurement of Innovation Benefits

2. RIIO ED1 innovation governance and benefit tracking

2.1. During the RIIO ED1 price control period, our innovation team have delivered a wide range of innovation projects, some of which have already directly fed into our business as usual processes, and others are still ongoing with roll out plans in place or due to be created. Our projects are managed to exceed the requirements of Ofgem's NIA and NIC governance. Our internal project governance guidelines set out the processes and methods.

2.2. The following sections give an overview of processes in place to ensure benefits are tracked during the course of a project and following its closure and roll out into our business. This is then followed by case studies of three of our projects.

2.3. As requested by Ofgem, we have now supplied two cost benefit models which fully demonstrate how we have calculate the benefits of the projects stated within our RIGS E6 submission.

WPD Project Governance Guidelines

2.4. WPD has a set of rigorous internal governance guidelines which are implemented by all innovation engineers in the management of our NIA, NIC and R&D projects. This involves the maintenance of project management documentation, regular reporting, a change control methodology, weekly project partner meetings, monthly innovation manager meetings, and three monthly project progress review meetings. The governance extends beyond WPD into our project partner organisations.

2.5. In addition to the requirements of 2.4, our governance makes a specific requirement to track the benefits of all of our NIA and NIC programme throughout their project lifecycle. This then feeds into our reporting, change control and project progress review processes. The sections below provide detail on this.

Project Progress Review and benefit forecasting

2.6. All Projects with a value greater than £1.0m must form a Project Review Group which will be in place by the project start date. The role of the Project Review Group is to: Perform project reviews at agreed stage boundaries, ensure the project is aligned with organisational strategy and needs, assist with resolving strategic level issues and risks and assess project progress and report on the project to senior management and higher authorities.

2.7. In addition to this, our governance expects that the Project Review Group will review the updated benefits case, based on incoming learning, every three months. In the event that the benefits case is shown to be eroded to the point of negative benefit, then our process expects that the project is reformed to pursue available benefits or halted. For an example of where this process, has taken place, please see the DC Share case study in section 3.16.

2.8. Projects with a budget of less than £1.0m still have benefits tracking, but this is not directly reported to a project review group. In this case all of our other mechanisms are still in place, and updates on the projects are instead provided to the Innovation Manager in regular monthly meetings and any changes to the benefits of the project are raised to the project sponsor.

Change Control

2.9. Our project governance guidelines set out the process to be followed by all Innovation Engineers when specific types of changes are needed. This includes any change to the expected benefits of a project. Using this mechanism, we ensure that project benefits are tracked, and any change is managed in a way to ensure the project still provides benefits worthy of the project continuing.

Reporting

2.10. We carry out regular reporting on all of our projects to ensure all stakeholders are up to date with progress. This includes monthly, annual and closedown reporting, as well as 6 monthly reporting for all projects with a value of over £1.0m. A key part of this reporting is to assess whether there have been any changes to the underlying business case.

Staff Competency

2.11. The job description of our Innovation Engineers and our Innovation Manager expects individuals to attain Prince2 and MSP qualifications respectively. This is relevant to the treatment of project benefits because Prince 2 and MSP include content that ensures individuals are capable of applying internationally accepted benefit review, benefit measurement and benefit management process's,

2.12. Because we expect our innovation staff to have this competency, we consider it enhances the robustness of our benefits measurement and management process.

Project Cost Benefit Analysis and Roll Out Plans

2.13. During the RIIO-ED1 price control period, we implemented a standardised method of assessing benefits and preparing roll out plans for our innovation projects. This includes carrying out cost benefit analysis of the project, its solutions and a roll out across our network. We carry this out during the life of our projects, to ensure that the project should continue delivering the planned method, and at the close of a project to support the transition of any solution that will be rolled out into business as usual. Examples of this can be seen in Section 3.19.

3. Supporting and Evidencing the RIGS E6 Submission

3.1. Although benefits of innovative solutions have been included within our Ofgem RIGS E6 submission, they are supported by more detailed internal models. In the following sections, we provide two examples of the models that support our RIGS submission.

3.2. We have already provided Ofgem with the detailed CBA of for the requested projects that were included within the E6 submission. These projects were: Demand Side Flexibility and Active Network Management (ANM).These models can be found in the confidential version of this document, but an explanation of the benefits case for each can be found below:

Lincolnshire Low Carbon Hub - Active Network Management

3.3. Active Network Management (ANM) came to WPD as a result of the Lincolnshire Low Carbon Hub innovation project, which ran during DPCR5 from 2010 to 2015. In this project, WPD trialled, amongst other things, alternative commercial arrangements, in which the generator is willing to operate in a suitable reactive power control mode and to constrain active power export when required[1]. This allows more generation to connect without having to pay for network reinforcement, so the benefits of this can be looked at in two ways:

- Further access to additional generation under ANM, assuming the generator wouldn't have connected if reinforcement was required, or;
- Reinforcement avoided by using ANM, assuming the generator would have connected anyway

3.4. The process map that we apply for the calculation of the benefits arising from ANM is depicted in Figure 1.

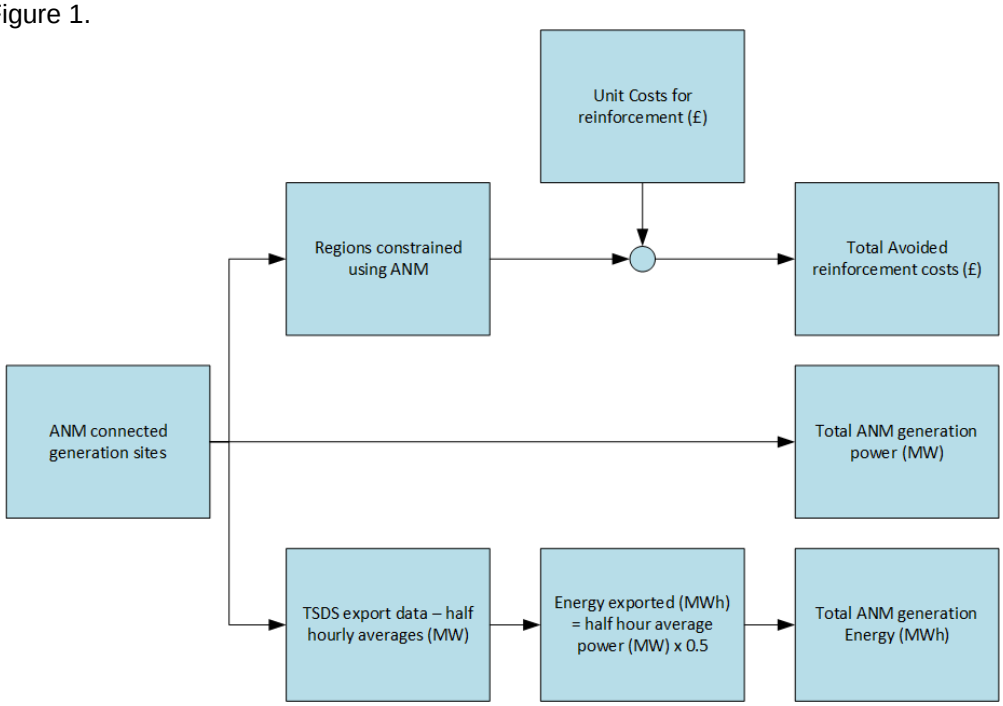

Figure 1 Method for working out the benefits of Active Network Management

[1] https://www.westernpower.co.uk/downloads/5846

3.5. The unit cost rates that we assume within this model have already been made available to Ofgem in a confidential version of this document.

Additional Capacity Connected to date

3.6. Currently, we have 18 connected ANM sites, with the capacity to produce 144 MW. Some of these sites are Short Term Operating Reserve (STOR) sites, which are used to balance the grid at short intervals, allowing for a greener makeup of the UKs electricity supply. Of these sites, 71 MW are zero carbon sites, such as photovoltaic and wind farms, which are intermittent by nature, and favour a more flexible connection that ANM gives them.

3.7. By finding these sites' past half-hourly average exports to the grid, it is possible to work out the total energy exported to the sites (unit assumptions are published in the un-redacted version). This shows that 823.9 GWh have been exported since January 2017, and that 739.9 GWh have been from zero carbon sources. This works out at 40.2 MWh of green energy per day, taking into account the dates of each site connecting.

Reinforcement Avoided to date

3.8. The 18 ANM connected sites are using ANM to alleviate a constraint, which would otherwise need to be reinforced.

Business Case at Project Close

3.9. Similar logic can be applied to the business case which was presented at the end of the project. 50 MW of additional capacity under the alternative connection agreements was expected at the time, and the cost of rolling out the ANM zone was estimated to be £500,000. Our latest Cost benefit Analysis for the Low Carbon Hub project shows that a saving of £18.8 million is being delivered from the deferred reinforcement of 50 MW.

Business Case for ED2

3.10. The business case for further expansion and updating of ANM in ED2 is covered in EJP153.

Project Entire – Demand Side Response

3.11. Project Entire was funded Network Innovation Allowance and built on earlier flexibility and Demand Side Response (DSR) projects under the Low Carbon Network Fund (LCNF)., It aimed to develop a comprehensive and commercially effective DSR capability which was really for replication and rollout.. During and after this project, some of these capabilities were taken into business as usual, such as the newly developed Flexible Power Platform[2]. The benefits of DSR capability come from reduced need to reinforce the network, as is the case with ANM

3.12. There are also other benefits that come with a more flexible grid. Crucially, this will allow more intermittent sources of generation to be connected, which aligns with the UK's and WPD's zero carbon goals.

3.13. There are currently 8 planned Constraint Management Zones (CMZs) which have started to procure flexibility. From the Regulatory and Reporting RIGS Environment and Innovation table E6, we have avoided reinforcement costs of £40.9 million. This number is found using the same process as used for ANM; looking at the works need to alleviate the identified constraint, and

[2] https://www.westernpower.co.uk/downloads-view-reciteme/39682

making estimates from the unit costs we have seen previously. These constraints have been alleviated by procuring 558.9 MVA.

Business Case at Project Close

3.14. In the closedown report, it was identified that a further 164 MW of flexibility was compliant and eligible for Demand Side Response. Using the same figure of saving per MW procured gives the net benefit of procuring this, and by taking into account additional costs such as staff and setting up the CMZs, a net benefits figure can be obtained.

Business Case for ED2

3.15. Further expansion of DSR is covered in detail in EJP 152 and further described our DSO Strategy and other parts of the business plan.

Project & Technology	Benefit to date (£m)	Estimated Net Benefits at the end of the project (£m)	Annual Net Benefits for ED2 (£m)
LLCH & ANM	51.9	28.0	52.5
Entire & Demand Side Response	40.9	13.4	14.7

Case Studies from our ED1 Portfolio

3.16. This section contains a number of case studies from our RIIO-ED1 project portfolio, demonstrating the tracking of benefits that have taken place at varying project stages.

DC Share – NIC

3.17. The DC Share project was a 2019 NIC winning project which investigated the use of LVDC equalisation networks. Because our project governance requires us to track the evolving benefits of projects that are in progress we detected that the project was unlikely to provide the benefits that were expected at the FSP stage of the NIC. As a result of this, we explained the conclusions of our benefits measurement process to Ofgem and asked that the project be halted. Ofgem agreed with the conclusions of our process and has now issued a formal halt instruction.

3.18. As a result of our benefit monitoring and measurement process explained in 3.17 we have instigated the return of £2.48M to customers.

3.19. Halting a high profile NIC project such as DC Share proves that WPD's benefits tracking approach is mature and effective.

ALARM – NIA

3.20. The ALARM project was an NIA project aimed at developing a network of sensors to better understand the Low Voltage network. This project was successfully delivered to completion under our innovation project governance guidelines, with benefits tracked throughout and verified at completion. At the close of the project, we carried out a detailed cost benefit analysis and roll out plan to aid us in transitioning the project into Business as Usual.

3.21. The overall strategy for assessing the Cost Benefit Analysis of ALARM, was to assess at what point would the benefit of LV monitoring with distance to fault calculation would outweigh the cost of installing and maintaining the monitors. To do this, an estimate of the total cost of roll-

out is required, considering the CAPEX and OPEX requirements. In addition, any financial benefits that the monitoring devices offer need to be characterised, and benefits estimated. Then using this information, a careful analysis to identify the most strategic deployment methods was carried out.

3.22. We have already made CBA spreadsheet justifying the roll out of the ALARM in a confidential submission of this document.

Take Charge - NIA

3.23. Take Charge is an ongoing NIA project looking to develop a package substation solution for use to support Electric Vehicle charging in Motorway Service Areas. Its benefits case was re-evaluated during our change control process, in line with our innovation project governance guidelines. The change request submitted related to learning in two key areas: the first of these was learning on additional surveys required prior to the projects planning application, which caused delays to the project, and the other relates to costs of the project relating to civil work, cable installation costs and the cost of additional surveys.

3.24. The changes to the project led to a change in the overall method cost, and the learning to date meant that we had a more accurate view of the roll out costs following successful completion of the project. This information was used to update cost benefit analysis, and this then formed the decision to make changes to the project.

3.25. The project is now expected to provide a total saving of £33.3m once rolled out across GB. We have already delivered an updated business case to Ofgem for this project in a confidential version of this document.

4. Our overall RIIO ED2 Innovation Programs

4.1. In RIIO ED2 we will be running two innovation programs under a common governance framework.

Innovation Program

4.2. In RIIO ED2 we will continue our activities to deliver NIA funded innovation and embark upon delivery of SIF funded innovation. In accordance with updated governance, these projects will focus on advancing the UK's net zero goals and tackle consumer vulnerability

4.3. The purpose of part of our innovation strategy is to deliver new capabilities for that focus on advancing the UK's net zero goals and tackling consumer vulnerability.

Business Innovation and Efficiency Program

4.4. In RIIO ED2 we will introduce a new and additional innovation program.

4.5. Multiple meetings with our CEG were focused on the broadening of innovation project benefit reporting to broader business change.

4.6. We therefore developed the Business Innovation and Efficiency Strategy in conjunction with our CEG and broader stakeholders. This document forms part of our business plan submission but does not appears to have been assessed as part of the NIA funding draft determination.

4.7. The Business Innovation and Efficiency Strategy will run in parallel with our award winning innovation, but will primarily be funded through Totex benefits.

4.8. As per our Business Innovation and Efficiency Strategy, the key themes for this programme will be customer experience, delivery excellence, markets and competition, network performance and net zero accelerator.

5. RIIO-ED2 planned Innovation Project rollout governance

5.1. This section responds to feedback in the draft determination relating to needing robust procedures to roll out innovation.

Governance

5.2. Our ED2 submission also includes a refined governance framework for how we will to innovate and then roll-out change. Further detail on this framework below shows why we have a robust process for the roll out of innovation.

5.3. Figure 1 shows and organogram of how we expect govern and co-ordinate both innovation programmes. The detailed roles and responsibilities of each of the management layers are in the full version of this document that has already been supplied to Ofgem.

5.4. The Programme Board is responsible for defining what goals need to be achieved in five themed areas and then defining and reviewing what capabilities the organisation needs to develop to achieve and then sustain the goals. This form of capability management is a technique employed in the defence sector to ensure that the operational capability of an organisation meets the needs of its stakeholders instead of focusing on purchasing systems and equipment. A description of the roles and responsibilities of the Programme board has already been submitted to Ofgem.

5.5. The External Advisory Group provide oversight and constructive challenge to the goals and development priorities set by the programme board. It is intended that the External Advisory Group represent the needs of our stakeholders and customers. A description of the roles and responsibilities of the External Advisory Group has already been submitted to Ofgem.

5.6. When the programme board determines that a capability needs to be created or updated, the project board will appoint a sponsor from a business unit and the innovation team will record a development roadmap to navigate the innovation steps from the current capability to business roll out. Section 5.9 to 5.14 introduces this process.

5.7. Because the project board assembles the linkages between innovation and outputs in one place and then provides a delivery capability, we believe it will increase the scope for business leaders and key internal influencers to drive innovation towards benefit.

5.8. The innovation team are intended to deliver the innovation programme on a day to day basis. Because business leaders are expected to be sponsors of projects and appoint technical authority to projects, we will ensure that the persons who have the greatest influence on how we do things on a day to day basis will have a stake in innovation programmes. We believe this to challenge the culture of innovation being separate to daily business function operations.

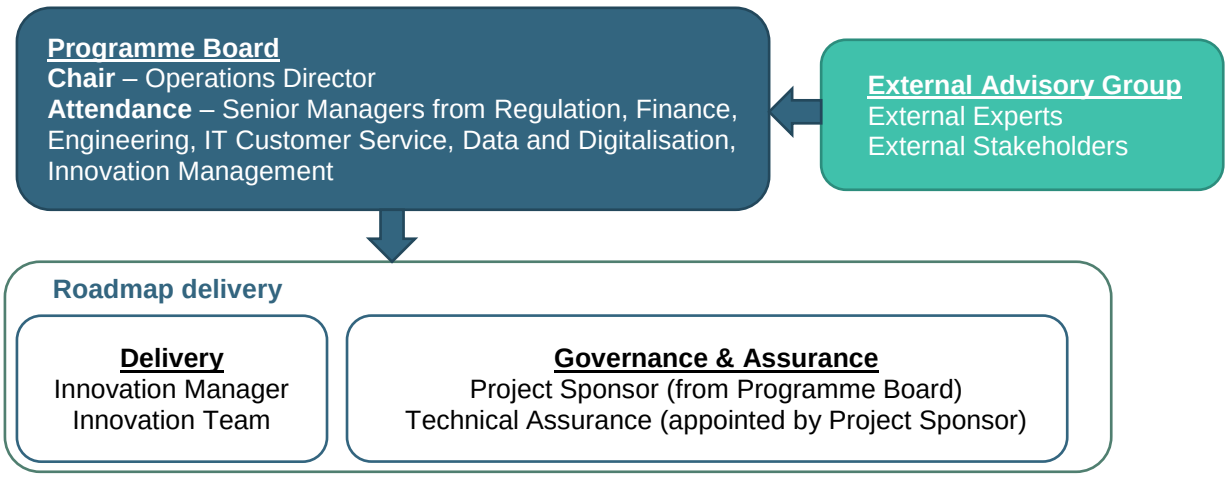

Figure 2 Innovation governance organogram

Promoting Roll-Out

5.9. We have learnt that to build a capability and roll out it out a series of development steps is often preferential to one large project. We have also learnt that successful innovation needs to address all of the features of a capability[3] and not just focus on technology readiness indexes.

5.10. To promote successful innovation roll out we expect to employ capability development roadmaps.

5.11. Capability development roadmaps are an innovation tool that we have been trialling in the last year. The purpose of the roadmap is to set out a sequence of logical steps that ensure we develop the right capability to respond to the performance gaps that need to be resolved.

5.12. These roadmaps promote successful roll out by structuring how we prioritise the best solutions and filter out the worst solutions at an early stage and how we then progress through trials to roll out. To promote efficient capability development, each roadmap will have criteria for what performance needs to be attained to be scalable. This feature ensures we will develop towards capability that can scale up and deliver benefits at scale.

5.13. The roadmaps are created by the innovation team and presented to project sponsors and their nominated technical authorities for approval. The innovation team then embarks on innovation projects to deliver the steps along the development roadmap with review and steering from the project sponsor and technical authority.

5.14. It should be understood that innovation roadmaps and project delivery will have oversight from the rest of the business in accordance with target setting from the project board. We believe that this will overcome some of the previous barriers to roll out.

[3] We believe that an operational capability needs to be considered in terms of: Application concept, Training, Technology readiness, Personnel, Information, Organisation, Infrastructure and Logistics.

6. Benchmarking and measurement in RIIO ED2

6.1. In this document we have already explained that we do have robust benefit monitoring and measurement. This is because we in keeping with good project management principles.

6.2. We recognise the need to be able to benchmark and review the performance of our innovation programme against other DNOs and similar organisations. In RIIO ED2 we will implement the Innovation Measurement Framework (IMF) as defined within the Energy Networks Innovation Process (ENIP) to estimate the benefits of our Innovation Programme in a manner which is consistent with others. The IMF is an immature framework and we will therefore provide leadership in its further development through the Energy Networks Association.

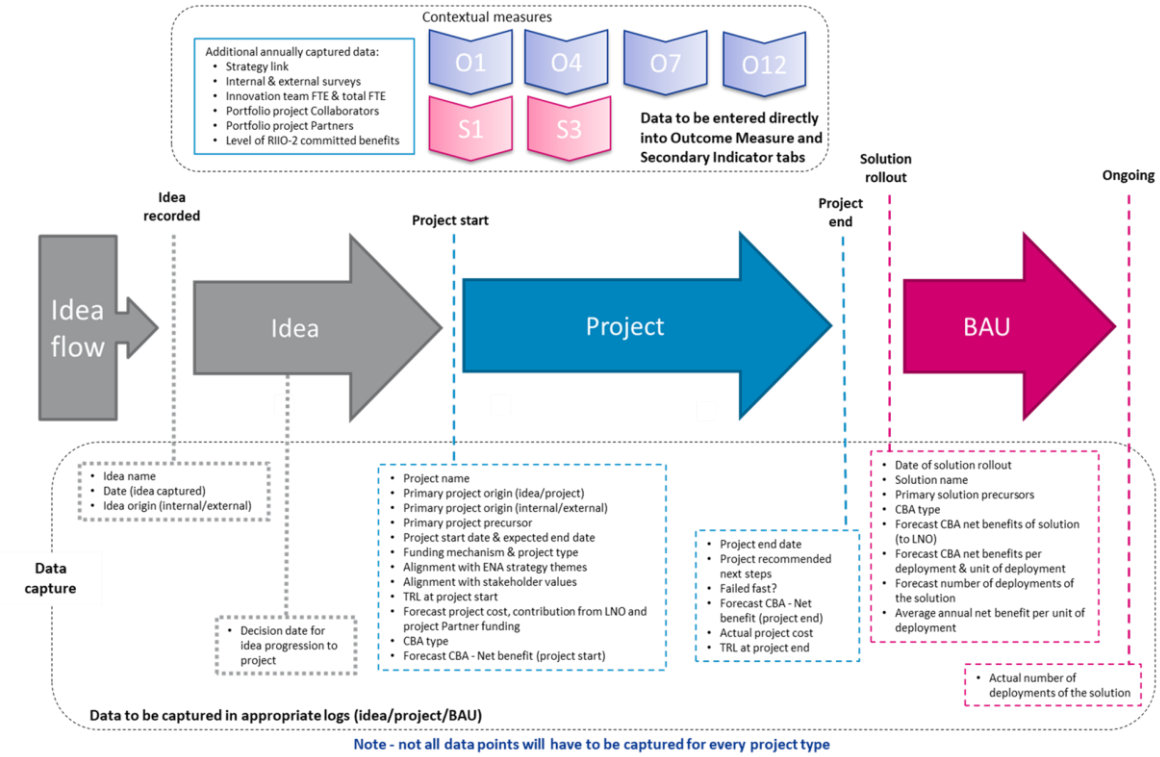

Figure 3 Illustration of Innovation Measurement Framework (IMF) process flow.

7. Conclusion

7.1. We were disappointed that Ofgem's draft determination position on our innovation framework awarded us four out of five marks. We understand that this final mark was withheld due to doubt over the information presented on benefits management. This addendum has aimed to clarify:

- We have robust mechanisms in place for Innovation Projects in ED1 as evidenced in the early termination of our flagship DC Share NIC project
- We regularly review our internal innovation cost benefit analyses for completed projects and provide high level results through the summary tables in RRP table E6 in year. Supporting information and examples of our existing models and process have been made available to Ofgem in a confidential version of this document.
- We are introducing a new Business Innovation and Efficiency rollout program in ED2. This strategy document may not have been clearly signposted as forming part of our innovation suite to be considered as part of setting NIA allowances.
- We are further enhancing our governance and benefits reporting for NIA and NIC projects in ED2
- We are implementing and will lead the further development of ENA's Innovation measurement Framework
- We believe this document contains the "detailed benefits models" which were requested in March 2022.

7.2. In section 3.17 we explain that we instigated a process to return £2.48M of DC Share NIC funding to customers. This was because we detected that the promised benefits would not translate to scale. We were able to take this action that protected customers because we do have a robust benefits monitoring process in place.

7.3. In this document we provide Ofgem with additional evidence demonstrating that in RIIO ED2 we have been diligently tracking the benefits of our innovation portfolio. In this document we also provide deeper detail on our plans for RIIO ED2. We believe it would be unjustified to have no credit for our recent performance and plans for RIIO ED2 in these areas. To have zero credit in this area would be detrimental of the net zero ambitions of our customers.

7.4. Because of the new evidence that we have presented, we request that Ofgem review their scoring assessment for our NIA submission.