



FUSION


Project Progress Report (PPR_03)



Version History

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Michael Green	V0.1	28/09/2021	First Draft	
Michael Green	V0.2	06/10/2021	Second Draft	
Michael Green	V0.2 redacted	14/10/2021	Public	Redaction of commercially sensitive content for publication

Approval

Name	Position	Date	Signature
James Yu	Future Networks Manger	06/10/21	

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1 Introduction

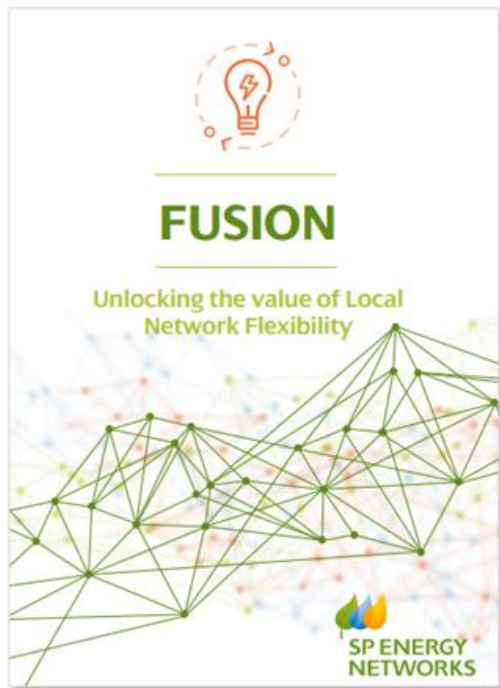
This is the third of what will comprise a series of annual Project Progress Reports (PPR) for Project FUSION. This third edition (PPR_003) reports on the period spanning from 28th September 2020 to 28th September 2021, henceforth referred to in this report as the “reporting period”.

Project FUSION seeks to demonstrate the effectiveness of harnessing commoditised local-network flexibility as an asset management tool to allow the DSO to;

- Alleviate distribution network congestion issues, and
- Complement national balancing requirements within the existing regulatory framework.

SP Energy Networks submitted the proposal for Project FUSION in 2017 under the Network Innovation Competition (NIC) funding mechanism. Ofgem approved the proposal and issued the Project Direction on the 28th of September 2018.

The project officially commenced in October 2018 and is due to conclude in November 2023.



2 Executive Summary

2.1 Progress Update

Project progress to date has been in-line with or better than the expectations set-out in the Project Direction. No project delay or overspend is noted or anticipated.

2.1.1 Project Deliverables

There were no Project Deliverables due during this reporting period. However, *Table 1* below summarises the progress made during this period towards those deliverables due in the future.

All Project Deliverables due to date have been successfully completed according to schedule and budget. Progress to date on pending deliverables indicates that the project is trending towards completion of all remaining deliverable according to schedule and budget also.

Remaining Project Deliverables			
Deliverable	Evidence required	Due date	Status (@ 28/09/21)
1 Implement a minimum of two physical and live trials of commoditised flexibility based on the USEF framework.	<ul style="list-style-type: none"> Identify two trial locations. Identify the required flexibility services available from flexibility providers. Contract for flexibility services. Undertake live trials. Report on the implementation and analysis of USEF trials. 	03/04/23	Good progress. <ul style="list-style-type: none"> Physical trials now fully live and operational @ two trial locations since 09/09/21 Data being collated for analysis and reporting Next interim learnings report anticipated Q1 2022
2 Modelling report on commoditised flexibility benefits for the UK (Imperial College London).	<ul style="list-style-type: none"> Academic modelling report on GB flexibility. 	28/02/23	Good progress. <ul style="list-style-type: none"> Empirical data being collated from live-trials for since 09/09/21 Analysis ongoing. First (internal) draft anticipated Q1 2022
3 Open Networks report in coordination with the ENA Open Networks Programme.	<ul style="list-style-type: none"> Report on coordination and hierarchies of control for flexibility, in collaboration with the ENA Open Networks Programme. 	28/02/23	Good progress. <ul style="list-style-type: none"> Trial learning objectives designed to capture learnings relevant to this report.

Table 1: Project Deliverables during the PPR_02 reporting period

Further detail on the progress made in relation to these (and all other) Project Deliverables is provided in *Section 8 - Project Deliverables*.

2.1.2 Notable Milestones

Table 2 below lists some of the most¹ notable milestones achieved during this reporting period.

Ref	Achievement / Milestone accomplished
1	'Go-Live' of the FUSION trial was achieved on 9 th September 2021, heralding the first successful deployment of a USEF-compliant local flexibility market in GB .
2	A tender exercise was launched in September 2021 to procure a further 4.5MW of flexibility in East Fife in preparation for Phase 2 of the FUSION trials, which will run from April 2022 – March 2023.

Table 2: Notable milestones during reporting period

2.1.3 Challenges encountered

No significant problems have been encountered during this reporting period.

Several minor issues were identified early and successfully navigated, the most notable of which are listed below. An expanded summary of each of the issues listed below is provided in *Section 3.3 Project Issues – Concise Summary*.

COVID impact on forecasts

- The network forecasting algorithms had to be modified to account for changes in network demand arising from lockdown measures being implemented.
- These modifications were successfully implemented prior to the implementation of live trials and they significantly improved the forecast accuracy.

Residential customer participation

- Recruitment of residential customer participation in the trial has proved to be a challenge
- However, the implementation of a targeted social media advertising campaign resulted in successful responses from local homeowners willing to participate in time for phase 2.

¹ Section 3.2 'Project Highlights – Concise Summary' provides an expanded list of additional notable milestones achieved during this reporting period.

2.1.4 Interim Learnings & Dissemination

Key interim outputs generated during the reporting period are listed in *Table 3* below;

WP:	Output:	Method of Dissemination
WP5	<u>IT development</u> Draft 'interim trial learnings' report detailing the methodology and processes involved in developing the various platforms to comply with the USEF requirements as set-out in the technical specification	<ul style="list-style-type: none"> These findings have been articulated in a draft version of the 'interim trial learnings report' which is due for publication on the FUSION website in October 2021.
	<u>Test scripts</u> Scripts were developed for testing of independent platforms and the entire end-end system prior to trial go-live	<ul style="list-style-type: none"> Details of these test scripts will be made available within the above report
WP6	<u>ENIC 2020</u> FUSION presented at the 2020 ENIC event.	<ul style="list-style-type: none"> Pre-recorded video with accompanying slides.
	<u>Phase 2 trial design:</u> <ul style="list-style-type: none"> FUSION has published its second 'Flexibility Services Requisition' which disseminates the following planned characteristics for Phase 2 of the trial; <ul style="list-style-type: none"> the flexibility service types that we will be trialing @ each of our 2 x trial locations the availability windows we will be requesting the magnitude (kW), duration (Hr) and technical characteristics of the flexibility availability that we will be procuring. 	<ul style="list-style-type: none"> Flexibility Service Request (FSR#2) published on the FUSION website on 20/09/21 Social media post, FUSION website news item, emails to known stakeholders and webinar with Q&A. A promotion webinar is scheduled for 5th October 2021.

Table 3: Interim outputs generated during reporting period

2.2 Project Risks

No risks have been identified that are likely to impede the achievement of any of the Project Deliverables outlined in the Project Direction or cause any deviation from the agreed aims, objectives or delivery programme. Risk are reviewed regularly during weekly progress meetings and reflected periodically in the Risk Register.

A comprehensive list of identified project risks and their corresponding mitigation measures is provided in *Section 12 - Risk Management*.

3 Project Manager's Report

3.1 Project Overview

3.1.1 Project Plan

In order to ensure the successful completion of the FUSION Project, a project delivery plan was developed by SPD, which grouped activities into discrete Work Packages, within which tasks and timescales were also defined.

An overview of these Work Packages and their associated timescales is provided below in *Figure 1: Project Delivery Timeline*.

For a more detailed summary of Project Progress against each Work Package, please refer to *Section 5: Progress against Plan*.

3.1.2 Project Deliverables

The latest² Project Direction issued for FUSION articulated a set of 'Project Deliverables' and associated timescales, against which the success of the project would be evaluated.

Figure 1 below provides a timeline showing the due-dates established by the Regulator for each of these seven 'Project Deliverables' (shown in **green** for completed or **red** for pending).

Progress to date has been very good with all 'Project Deliverables' having been submitted either on or before their contractual due-dates.

For a detailed 'RAG' status report of the progress made against each of the 'Project Deliverables' please refer to *Section 8: Project Deliverables*.

² [https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion - direction amended 09 2018.pdf](https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion_-_direction_amended_09_2018.pdf)

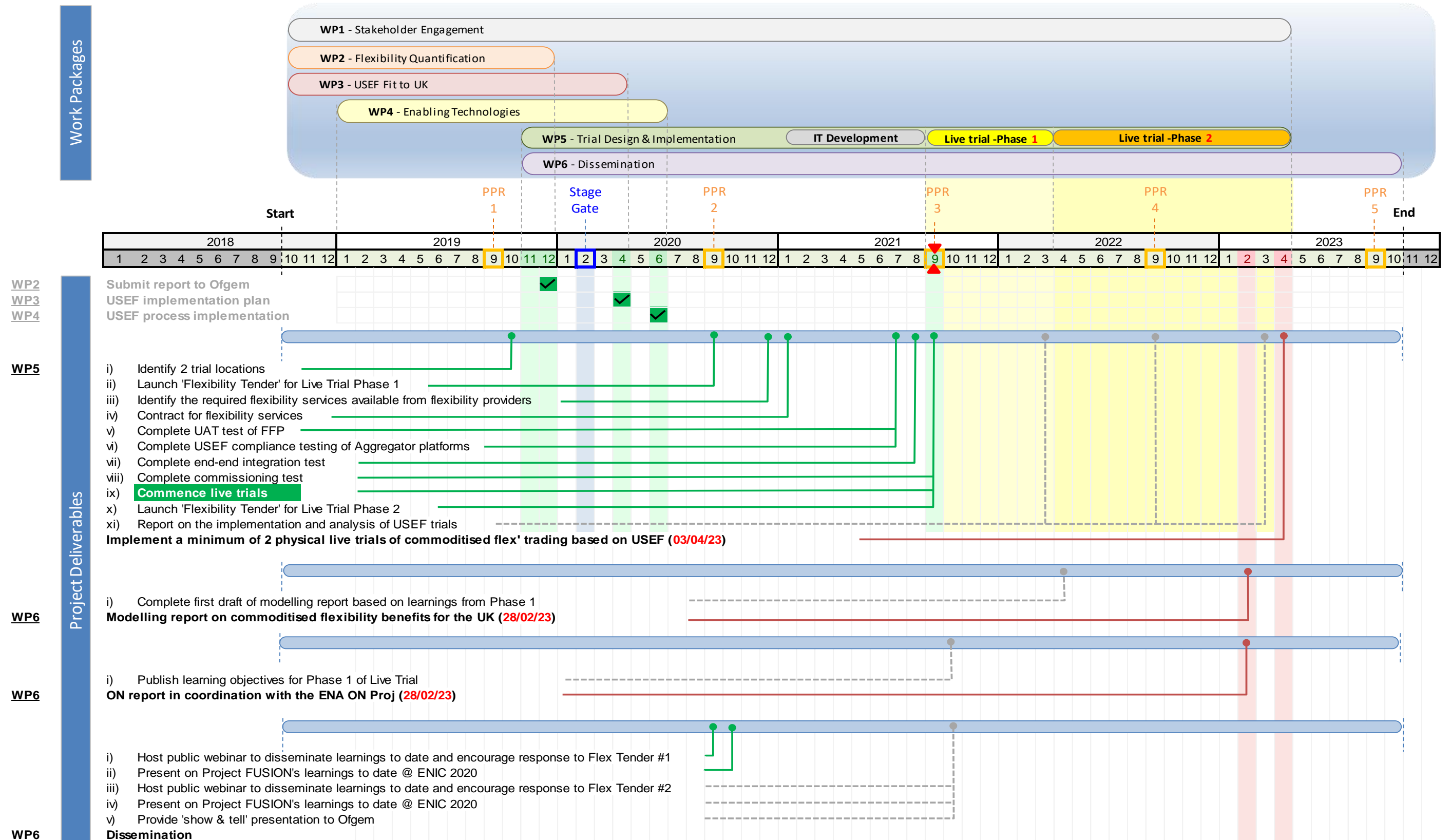


Figure 1: Project Delivery Timeline

3.2 Project Highlights - Concise Summary

Table 4 below provides a concise summary of the key successes noted during the reporting period.

Detail on further highlights is provided in *Section 5.3 - Project Highlights*.

Ref	Deliverable Affected	Summary of Highlight	Brief Detail
1	WP5: Live Trial	Go-live achieved	<p>Phase 1:</p> <ul style="list-style-type: none"> Flex' Tender #1 completed and Flexibility Service Agreements (FSA) signed to contractually procure flexibility availability for phase 1 of live trial IT development work completed to enhance the DSO and Aggregator trading platforms to comply with USEF requirements Testing & commissioning of all end-end systems completed Trial go-live achieved 9th September 2021, heralding the first successful GB deployment of a USEF-compliant flexibility market. Trial learning objectives and evaluation criteria articulated to continually monitor progress of live trials. Details of these will be included in the 'interim trial learnings report' anticipated in October 2021.
		Tender process launched	<p>Phase 2:</p> <ul style="list-style-type: none"> Flex' tender exercise #2 launched on 20th September 2021. The tender calls for 4.5MW of local flexibility to be available between April 2022 – March 2023. FUSION has promoted a webinar event (scheduled for 5th October) to accompany the most recent flexibility tender launch and encourage all interested flexibility service providers to find out more and respond with their bids.

Table 4: Project Highlights – Concise Summary

3.3 Project Issues - Concise Summary

No significant problems have been encountered during this reporting period.

Several minor issues were successfully navigated and these are summarised in *Table 5* below.

Further detail on each of issues listed below is provided in *Section 5.4 Project Issues*

Ref	Deliverable Affected	Issue Summary	Brief Detail
1	WP5: Trial design	Covid-19 impact on forecasting	<ul style="list-style-type: none"> During the first lock-down in Q1-2 2020, a 30% reduction in demand was observed @ St Andrews Primary substation. It became apparent that the algorithms used to forecast demand on our network assets had to be re-calibrated (at least in the short-term) to more accurately reflect changing customer behaviour and provide a robust solution for the 'new normal'.

			<ul style="list-style-type: none"> These modifications were made to the PRAE forecasting tool in time for the live trials commencing in Q3 2021 and were tested to confirm that they successfully resolved the issues encountered
2	WP5: Trial design	Recruiting residential flexibility	<ul style="list-style-type: none"> In December 2020 FUSION concluded its first flexibility tender exercise to procure flexibility availability for phase 1 of the live trials. Whilst the exercise was successful in procuring all of the flexibility that was specified, none of it represented flexibility from the residential sector. Having residential customers participate in FUSION would add value by providing insights into that sectors participation in flexibility markets and how, specifically, innovative USEF features (like ‘free bidding’) might serve to improve the accessibility of residential customers participating in flexibility markets. In the interest of recruiting residential customers to participate in the trial then, FUSION launched a dedicated Facebook campaign in 2021 which, to date has successfully recruited circa 20 local homeowners to participate in the trial via one of our existing contracted aggregators.

Table 5: Project Issues – Concise Summary

3.4 Outlook to the Next Reporting Period

Table 6 below provides a summary of the progress planned under each work package during the next reporting period.

For specific detail of timings associated please refer to the RAG status report in *Section 8 - Project Deliverables*.

Anticipated activity		Associated Outputs / Value Added
WP1	FUSION Flex' Tender #2	<ul style="list-style-type: none"> - Host a webinar to accompany the recent launch of the FUSION Flex' Tender #2 and engage with stakeholders that might like to find out more. - Organise follow-up 1-2-1 meetings with webinar attendees and seek to facilitate any appropriate introductions of relevant stakeholders prior to the 'Invitation to Tender' (ITT) round in Q4 2021. - Promote and announce each stage of the flexibility tender process on social media
WP5	Continue to run live trials:	<p><u>General:</u></p> <ul style="list-style-type: none"> - Continue to operate the live trials until April 2023 with no pause between Phases 1 & 2. <p><u>Phase 1:</u></p> <ul style="list-style-type: none"> - Continually monitor the progress of phase 1 of the trials according to the following planning documents developed for that purpose: <ul style="list-style-type: none"> ▪ Phase 1 'Trial Learning Objectives' and ▪ Phase 1 'Evaluation Methodology' <p><u>Phase 2:</u></p> <ul style="list-style-type: none"> - Conclude the FUSION Flex' Tender #2 exercise in Q4 2021 and contract up to 4.5MW of flexibility in Q1 2022 in preparation for Phase 2. - Develop the following documents in preparation for commencement of Phase 2 of live trials: <ul style="list-style-type: none"> ▪ Phase 2 'Trial Learning Objectives' and ▪ Phase 2 'Evaluation Methodology' - Continue to liaise with external stakeholders (including NGESO) via our regular Steering Group Meetings and explore how we can maximise the value of Phase 2 of the live trials, incorporating learnings from Phase 1. - Commence Phase 2 of live trials in April 2022.
WP6	Share learnings from live trial phase 1	<ul style="list-style-type: none"> - Share interim trial learnings reports @ 6-monthly intervals commencing Sep' 2021). - Present at ENIC 2021 (pre-recorded video message already submitted).
TEF	Collaboration	<ul style="list-style-type: none"> - Continue to meet monthly to ensure that our respective projects are aligned and relevant to the needs of the industry - Continue to cooperate with and seek to add value to the ENA ON-P by implementing and reporting back on various ON-P outputs including: <ul style="list-style-type: none"> ▪ V2.0 of the 'Flexibility Services Agreement' (FSA) (WS1a – P2) ▪ The Common Evaluation Methodology (CEM) (WS1a – P4) ▪ The TNEI baselining tool (WS1a – P7)

Table 6: Anticipated activities in next reporting period

4 Business Case Update

The continued relevance of the business case was a key criterion against which projects were evaluated last year at the TEF³ Common Stage Gate review.

The findings of that comprehensive review concluded that FUSION's business case (in February 2020) was no less relevant than it was in 2018 when the project was awarded.

Since that time the advent of the Covid-19 pandemic has been shown, at least in the short term, to have reduced the demand on our distribution networks within the trial area. That said, as work patterns appear to be returning to their pre-Covid norm, the medium to long term impact of the pandemic on the business case for FUSION is expected to be negligible.

In the absence of sufficient concrete evidence to the contrary it is therefore this author's opinion that the findings of the Stage Gate review in Feb 2020 still provide the most reliable evaluation available of the project's business case.

³ TRANSMISSION (SSEN), EFFE (WPD), FUSION (SPEN)

5 Progress against Plan

This section explains in greater detail the progress made against the Project Delivery Plan.

5.1 Overview

Figure 1 above provides a timeline showing the due-dates established by the Regulator for each of the seven 'Project Deliverables'.

During this reporting period, Project FUSION's interim outputs have been generated either in-line with or ahead of the timelines specified in the Project Directive.

5.2 Work Packages

The following sub-sections describe in more detail the progress made under each discrete Work Package during the reporting period.

5.2.1 WP1 - Stakeholder Engagement

The key objective of Work Package 1 is to ensure that relevant stakeholders are continually engaged with throughout the FUSION project.

Figure 2: Timescale for implementing WP1

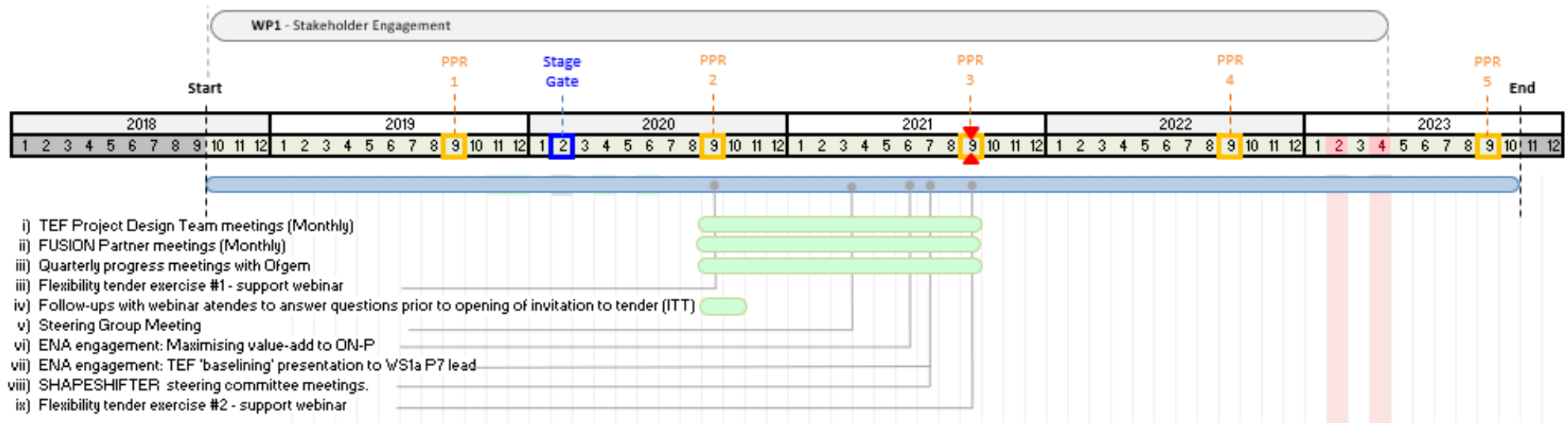


Figure 2: Timescale for implementing WP1

The original FUSION FSP defined the key activities associated with WP1 as follows:

Description
Establish and maintain an enduring and openly engaging stakeholder forum
Review and map all relevant stakeholders, their interests and alignments with FUSION
Undertake national level stakeholder events
Undertake trial location level stakeholder events

Despite the challenges imposed by Covid-19, this reporting period has seen significant progress made under WP1 with effective stakeholder engagement achieved at a local, national and international level. The stakeholder forum has maintained strong momentum and participation continues to grow as more contacts are voluntarily providing their written consent for FUSION Partners to retain their details on our GDPR-compliant system.

5.2.2 WP2 - Flexibility Quantification Report

This WP was successfully completed during the previous reporting period. Figure 3 below shows the timescale for implementing WP2 and the associated Project Deliverable due dates.

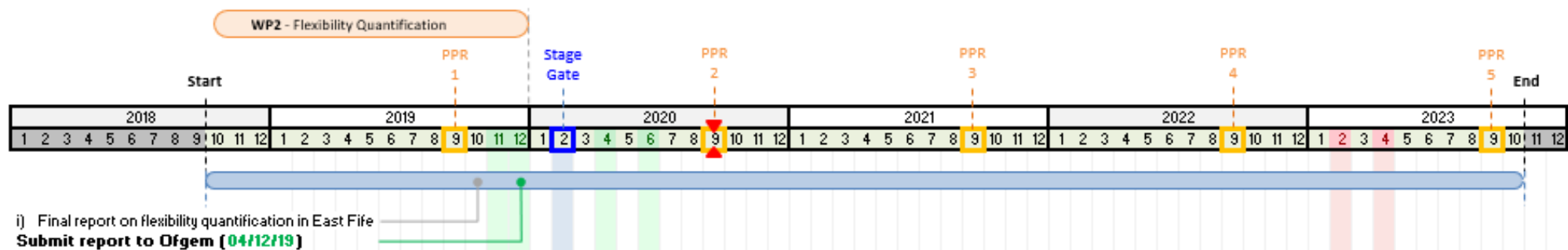


Figure 3: Timescale for implementing WP2

5.2.3 WP3 - USEF Fit for UK

This WP was successfully completed during the previous reporting period. Figure 4 below shows the timescale for implementing WP3 and the associated Project Deliverable due dates.

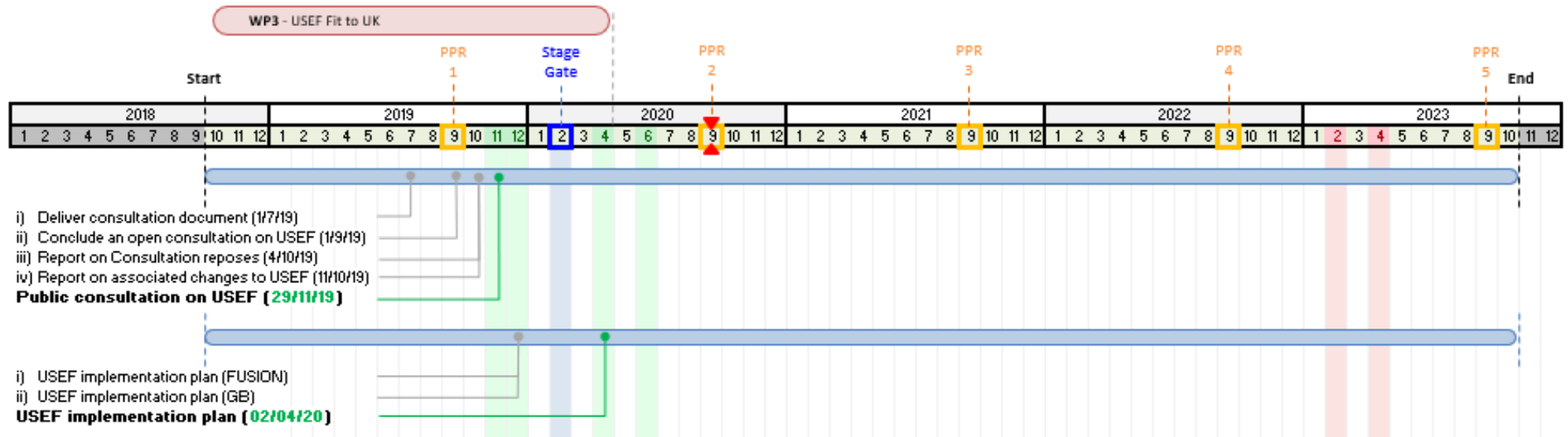


Figure 4: Timeline for implementing WP3

5.2.4 WP4 - Enabling Technologies

This WP was successfully completed during the previous reporting period. Figure 5 below shows the timescale for implementing WP4 and the associated Project Deliverables.

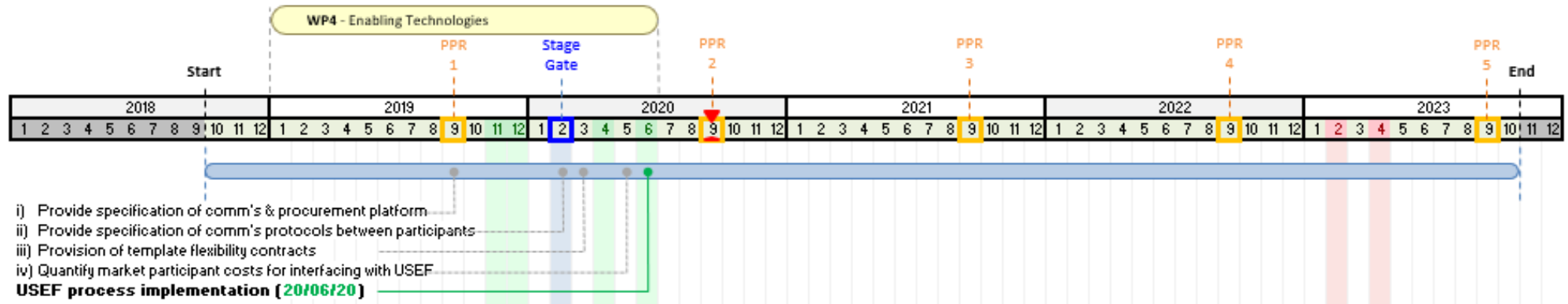


Figure 5: Timeline for implementing WP4

5.2.5 WP5 - Trials

Live trials have now successfully commenced. *Figure 6* below shows the timescale for implementing WP5 and the associated Project Deliverables.

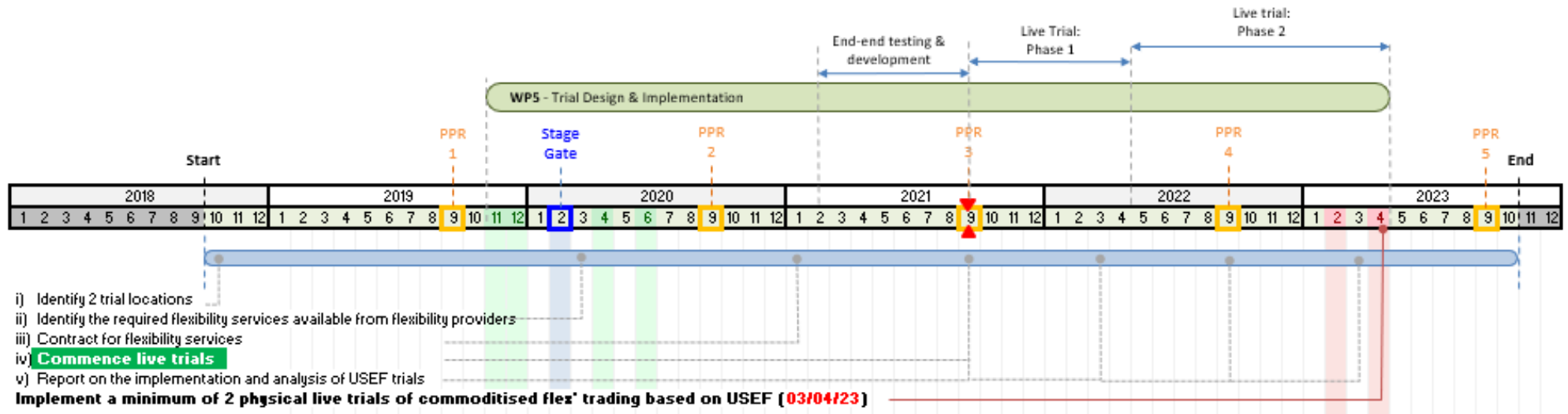


Figure 6: Timeline for implementing WP5

The excerpt below from Section 8 – ‘Project Deliverables’ summarises the progress made under WP5 during the reporting period and briefly describes the key activities planned for the next reporting period.

				Not started	
				Ongoing	
				Complete	
Ref	Project Deliverable	Due Date (Ofgem)	Evidence required	Status	Progress update
5	Implement a minimum of two physical and live trials of commoditised flexibility based on the USEF framework.	3/4/23	5.1 Identify two trial locations.		<ul style="list-style-type: none"> Tender packs have been published as part of 2 x FUSION Flex Tender exercises launched in September 2020 and 2021 respectively. These tender packs sought to procure flexibility services that address network needs at the following two trial locations; <ul style="list-style-type: none"> St. Andrews Primary Substation Leuchars Primary Substation These tender packs can be found on the FUSION website and they specify the flexibility services that we wish to procure at each trial site
			5.2 Identify the required flexibility services available from flexibility providers. (Phase 1)		<ul style="list-style-type: none"> The first of the FUSION Flex Tender exercises sought 250kW of flexibility at each of the above trial locations for the duration of Phase 1 of the live trials. Responses to the FUSION Flexibility Tender #1 confirmed that all of the flexibility services that the Project sought to procure were available from local providers.
			Identify the required flexibility services available from flexibility providers. (Phase 2)		<ul style="list-style-type: none"> The second of the FUSION Flex Tender exercises sought 4.5MW of flexibility at each of the above trial locations for the duration of Phase 2 of the live trials. Responses to the FUSION Flexibility Tender #2 are due in December 2021. In the near future activity is underway to engage with and attract interest from prospective flexibility service providers.
			5.3 Contract for flexibility services. (Phase 1)		<ul style="list-style-type: none"> Flexibility Service agreements have been signed for Phase 1 of the live trial. These were signed with the 2 x successful respondents to the 'Invitation to Tender' (ITT) for the FUSION Flex Tender #1
			Contract for flexibility services. (Phase 2)		<ul style="list-style-type: none"> Once the bidding window closes for the FUSION Flex Tender #2 – successful respondents will be invited to enter into a contractual 'Flexibility Service Agreement' (FSA) with SPEN. The bidding window closes in Dec 2021 and the successful vendors will be identified in January 2022 and invited to enter into contract with SPEN. We aim for successful vendors to conclude the contractual negotiations with SPEN and sign FSA's in February 2021. In an effort to expedite the conclusion of the contractual negotiations, vendors are required to agree to the T&C's contained in the draft version of the FSA as a pre-requisite to participating in the tender.
			5.4 Undertake live trials. (Phase 1)		<ul style="list-style-type: none"> Phase 1 of the FUSION trials successfully went live in September 2021 The live trials are operating according to plan for addressing our learning objectives Services being traded include: Secure, Sustain and Dynamic Flexibility services are being traded at least 4 times per week Trading and dispatches are typically day-ahead or same-day. Data is being gathered for analysis in accordance with the Phase 1 'learning objectives' and 'evaluation methodology'
			Undertake live trials. (Phase 2)		<ul style="list-style-type: none"> Phase 1 of the live trial is due to conclude at the end of March 2021 Phase 2 is due to commence the day after the completion of Phase 1 The remaining steps listed above for deliverables 5.2 and 5.3 describe the preparations that are ongoing for the commencement of live trials Phase 2

5.2.6 WP6 - Dissemination

Figure 7 below shows the timescale for implementing WP6 and the associated Project Deliverables that it seeks to address over that period.

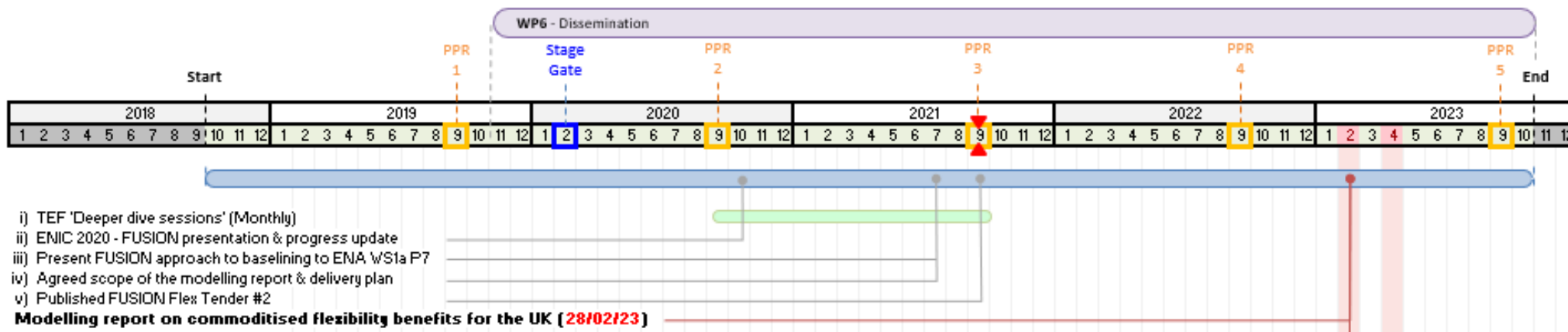


Figure 7: Timeline for implementing WP6

The excerpt below from *Section 8 – ‘Project Deliverables’* summarises the progress made under WP6 with respect to the specific deliverables during the reporting period.

					Not started	Ongoing	Complete
Ref	Project Deliverable	Due Date (Ofgem)	Evidence required		Status	Progress update	
7	Open Networks report in coordination with the ENA Open Networks Programme.	28/2/23	7.1	Report on coordination and hierarchies of control for flexibility, in collaboration with the ENA Open Networks Programme.		<ul style="list-style-type: none"> Imperial College London have been kept informed (along with all Project Partners) about the evolving trial design and timeframe They have been able to specify their expectations from the trial to ensure that it generates data that is relevant for their reporting needs 	
N/A	Comply with knowledge transfer requirements of the Governance Document.	28/09/20xx	i	Annual Project Progress Reports which comply with the requirements of the Governance Document.		<ul style="list-style-type: none"> PPR_01 completed in September 2019 and published on the Project FUSION website PPR_02 completed in September 2020 and published on the Project FUSION website PPR_03 completed in September 2021 and pending publication on the Project FUSION website 	
		2/11/23	ii	Completed Close Down Report which complies with the requirements of the Governance Document.			
		30/10/19	iii	Evidence of attendance and participation in the Annual Conference as described in the Governance Document.		<ul style="list-style-type: none"> Project FUSION presented a progress update at the ENIC event in October 2020 	

5.3 Project Highlights

Error! Reference source not found. below elaborates the successes already summarised in Section 3.2 – ‘Project Highlights – Concise Summary’

Table 7: Project Highlights

Ref	Deliverable Affected	Summary of Highlight	Brief Detail						
1	WP1: Stakeholder engagement	Progressing according to schedule.	<div>Examples of how FUSION has successfully engaged with local, national & international stakeholders include the following:</div> <table><tr><td>Local</td><td><ul style="list-style-type: none">1-2-1 meetings with customers (admittedly Covid-19 has made this interaction more challenging but that impact has been mitigated through adapting to virtual meetings. More detail available in section 3.3).Social media campaign to attract local residential customers to participate in trial and subsequent 1-2-1 follow-ups with interested parties.</td></tr><tr><td>National</td><td><ul style="list-style-type: none">FUSION presentation at ENIC 2020Aggregator webinar in 29/09/2020 to attract interest from flexibility providers to respond to the recently-launched FUSION flexibility tender and follow-up 1-2-1 meetings with interested parties.Engagement with ENA ON-P via TEFAttendance at DSO roadmap development workshops</td></tr><tr><td>Inter – national</td><td><ul style="list-style-type: none">FUSION attendance @ SHAPESHIFTER⁴ steering committee meetings.Our Partner DNV recently had a meeting with the Norwegian energy regulator NVE where they talked at high-level about FUSION, its scope, progress to date and learnings</td></tr></table>	Local	<ul style="list-style-type: none">1-2-1 meetings with customers (admittedly Covid-19 has made this interaction more challenging but that impact has been mitigated through adapting to virtual meetings. More detail available in section 3.3).Social media campaign to attract local residential customers to participate in trial and subsequent 1-2-1 follow-ups with interested parties.	National	<ul style="list-style-type: none">FUSION presentation at ENIC 2020Aggregator webinar in 29/09/2020 to attract interest from flexibility providers to respond to the recently-launched FUSION flexibility tender and follow-up 1-2-1 meetings with interested parties.Engagement with ENA ON-P via TEFAttendance at DSO roadmap development workshops	Inter – national	<ul style="list-style-type: none">FUSION attendance @ SHAPESHIFTER⁴ steering committee meetings.Our Partner DNV recently had a meeting with the Norwegian energy regulator NVE where they talked at high-level about FUSION, its scope, progress to date and learnings
Local	<ul style="list-style-type: none">1-2-1 meetings with customers (admittedly Covid-19 has made this interaction more challenging but that impact has been mitigated through adapting to virtual meetings. More detail available in section 3.3).Social media campaign to attract local residential customers to participate in trial and subsequent 1-2-1 follow-ups with interested parties.								
National	<ul style="list-style-type: none">FUSION presentation at ENIC 2020Aggregator webinar in 29/09/2020 to attract interest from flexibility providers to respond to the recently-launched FUSION flexibility tender and follow-up 1-2-1 meetings with interested parties.Engagement with ENA ON-P via TEFAttendance at DSO roadmap development workshops								
Inter – national	<ul style="list-style-type: none">FUSION attendance @ SHAPESHIFTER⁴ steering committee meetings.Our Partner DNV recently had a meeting with the Norwegian energy regulator NVE where they talked at high-level about FUSION, its scope, progress to date and learnings								
2	WP5: Live Trial	Go-live achieved	Phase 1:						

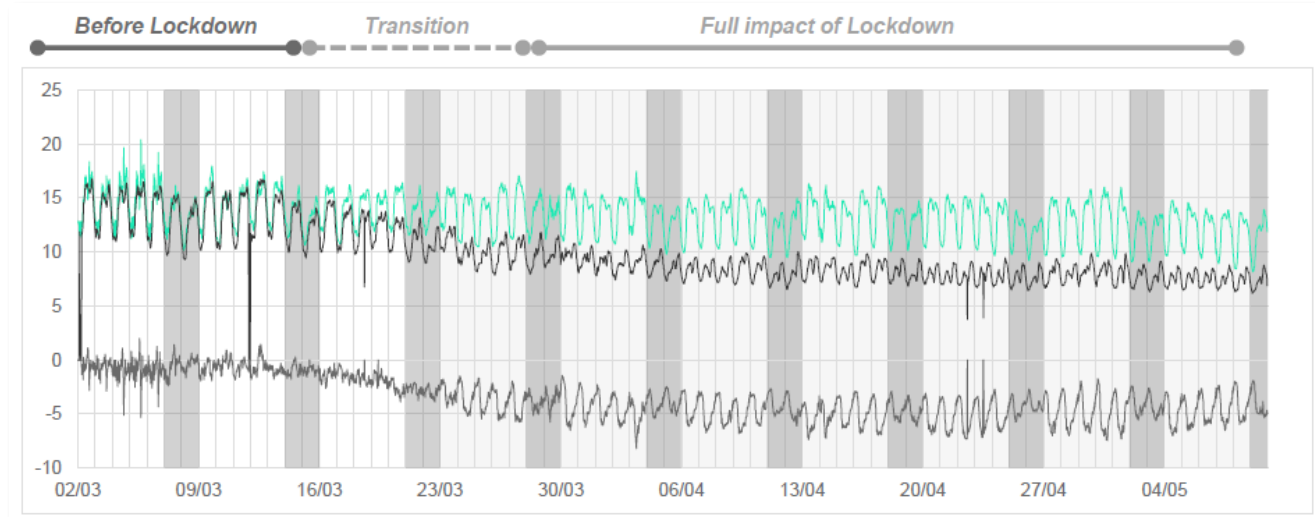
⁴ Note that SHAPESHIFTER is the re-branded name of the UFTP protocol which will be maintained by the GOPACS organisation. The SHAPESHIFTER protocol has also been adopted by the Linux Energy Foundation, offering a platform for the ongoing maintenance and support of the protocol.

			<ul style="list-style-type: none"> • Flex' Tender #1 completed and FSA contracts signed in January 2021 to procure flexibility availability for phase 1 of live trial • IT development work completed to enhance the DSO and Aggregator trading platforms to comply with USEF requirements • Testing and commissioning of all end-end systems completed • Trial go-live achieved 9th September 2021. This is GB's first successful deployment of a USEF-compliant flexibility market. • Trial learning objectives and evaluation criteria articulated to continually monitor progress of live trials.
		Tender process launched	<p>Phase 2:</p> <ul style="list-style-type: none"> • Flex' tender exercise #2 launched on 20th September 2021. The tender calls for 4.5MW of local flexibility to be available between April 2022 – March 2023. • FUSION has promoted a webinar event (scheduled for 5th October) to accompany the most recent flexibility tender launch and encourage all interested flexibility service providers to find out more and respond with their bids.
3	WP6: Dissemination	Progressing according to schedule.	<ul style="list-style-type: none"> • FUSION presented a video update at ENIC 2020 • Project FUSION's first interim trial learnings report has been drafted for internal review and is due to be published on the FUSION website later this month. The report provides insights into how the project team achieved go-live, the development and testing work that was carried out and includes feedback from the participating aggregators and platform providers on their experiences of having successfully implemented USEF. • The planned webinar (scheduled for 5th October) to promote the most recent flexibility tender will include presentations from aggregators participating in phase 1 of the live trials and a Q&A session. This will allow attendees to learn from their experiences of implementing USEF and trading in the FUSION live trials. • Project FUSION has presented at several 'deeper dive' sessions attended by TEF Partners and their respective Project Partners
4	TEF Collaboration	Progressing according to schedule.	<p>The past year saw the introduction of monthly 'deeper-dive' sessions to accompany and complement the regular monthly TEF meetings. These sessions have proved beneficial and allow us to dedicate an hour to digging deeper into once (mutually agreed) topic per month. We invite technical experts from our respective projects and are able to share our questions and learnings in a constructive way, often highlighting potential avenues for collaboration.</p>

5.4 Project Issues

No significant problems have been encountered or identified during this reporting period. This section provides more detail on those minor issues already summarised in Section 3.3 – ‘Project Issues – Concise Summary’.

Table 8: Issues encountered

Ref	Deliverable Affected	Issue Summary	Further Detail
1	WP5: Trial design	Covid-19 impact on forecasting	<ul style="list-style-type: none"> During the lock-down in Q1-2 2020, a 30% reduction was observed in demand @ St Andrews Primary substation. It became apparent that the algorithms used to forecast demand on our network assets had to be re-calibrated (at least in the short-term) to more accurately reflect changing customer behaviour and provide a robust solution for the ‘new normal’. <div>  </div> <p>Figure 8: Impact of 2020 lockdown on demand profile @ St. Andrews Primary substation</p>

- Modifications were made to the PRAE forecasting tool which significantly improved the accuracy of their forecasts.

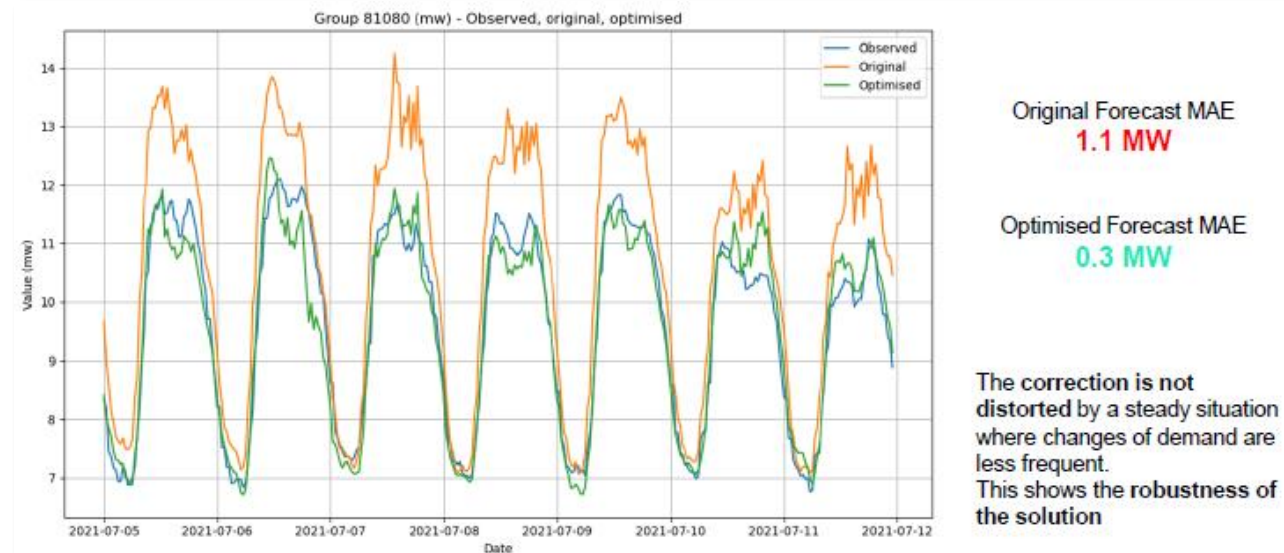
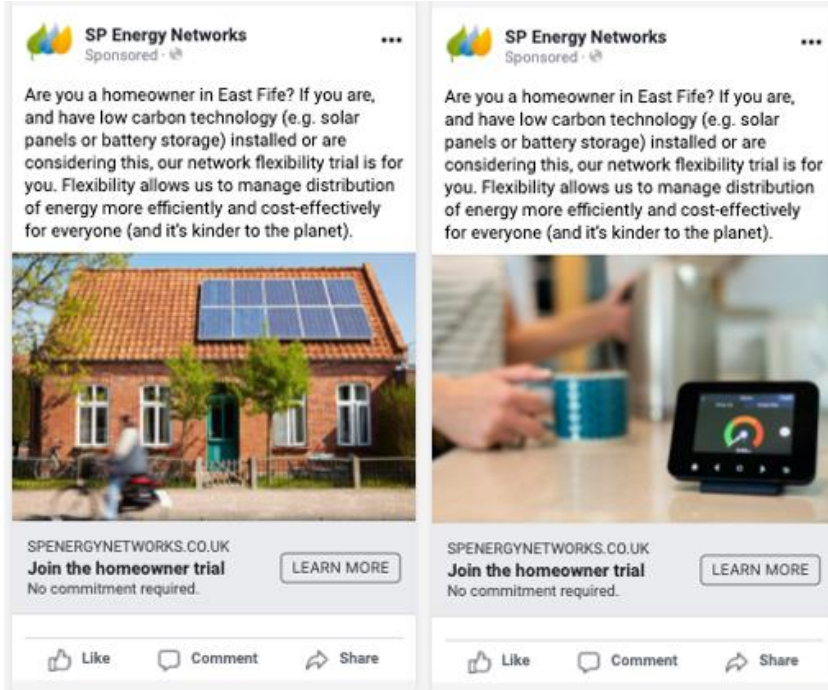


Figure 9: Before and after performance

- These modifications were made to the PRAE forecasting tool in time for the live trials commencing in Q3 2021 and were tested to confirm that they successfully resolved the issues encountered.
- This challenge has provided an opportunity to test and demonstrate the efficacy with which the PRAE forecast tool can adapt to rapid changes in customer behaviour.

2	WP5: Trial design	Recruiting residential flexibility	<ul style="list-style-type: none"> • In Dec 2020 FUSION concluded its first tender exercise to procure flexibility for phase 1 of the live trials. • Whilst the exercise was successful in procuring all of the specified flexibility, the residential sector was not represented. • Having residential customers participate in FUSION would add value by providing insights into the extent to which innovative USEF features (like ‘free bidding’) might serve to improve their access to market. • In the interest of recruiting residential customers to participate in the trial then, FUSION launched a dedicated Facebook campaign in 2021 which, to date has successfully recruited circa 20 local homeowners to participate in the trial via one of our existing contracted aggregators. <div>  </div> <p>Figure 10: Screenshot of targeted advertising campaign</p>
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6 Progress against Budget

To date, Project FUSION has underspent by (redacted) relative to the forecast expenditure for the same period. A breakdown of this variation in expenditure and a summary explanation for these perceived variations is provided below (redacted).

Table 9: Variation between forecast & actual expenditure.

Table 10: Explanation for perceived variations in expenditure

6.1 Assumptions Used & their Limitations

6.1.1 Adjustment of the ‘forecast’ periods to align with the ‘reporting’ period

Ideally, when comparing actual and forecast expenditure, data would be available that corresponds to the same time period. However, in the case of the FUSION project the ‘forecast’ periods and the ‘reporting’ periods are out of phase, which makes their relative comparison complex.

This situation is described in more detail below, along with the assumptions used in eliciting a meaningful analysis of the available data and the associated limitations of those assumptions.

Actual monthly expenditure data is readily available for Project FUSION, dating right back to the project commencement on 28th September 2018.

When assessing the financial performance of Project FUSION over the PPR period, the actual expenditure data is readily available for analysis. However, the difficulty lies in quantifying the forecasted project expenditure for the corresponding 12-month PPR periods. Unfortunately, because Project FUSION did not commence at the start of the financial reporting year, the time periods used in the FSS to ‘forecast’ project expenditure are not synchronous with those used for the 12monthly Project Progress Reporting.

Figure 9 **Error! Reference source not found.** below helps to illustrate this asynchronous relationship.

Figure 11: Non-synchronous reporting periods for ‘Forecast Project Expenditure’ & ‘Project Progress Reporting’

In the FSS, Project Expenditure is forecast for each **financial** year.

The FUSION project was originally planned to commence in January 2018. Therefore;

- The first forecast period forecasted in the FSS corresponds to Jan, Feb & Mar 2018 (the last 3 months of the financial year 2017/18)

- Subsequent forecast periods in the FSS correspond to 12-month financial years, until the forecast end date.

The actual expenditure over a given PPR reporting period does not directly correspond to any of the discrete forecast periods within the FSS.

If Project FUSION had commenced on 1st April, then comparing actual and forecast expenditure over any given financial year would have been a straightforward exercise. Unfortunately, however, that has not been the case, and that means that quantifying the forecast expenditure over a given 12-month PPR reporting period requires some assumptions to be made.

Namely, we have had to;

- i. Disaggregate the forecast expenditure over each financial year into monthly spend*.
- ii. Carve-out from that financial year the forecast expenditure up to and including December only.
- iii. Sum the resultant forecast expenditure with that from the remainder from the previous financial year.

* Disaggregating the yearly forecast expenditure into a monthly forecast has employed the following assumptions:

1. Generally, forecast annual expenditure has been assumed to be uniformly distributed over the constituent 12 months.
2. The exception to this rule being where, within a given financial year of the forecast, a large expense can be confidently anticipated to occur within specific months. In which case its inclusion in any given PPR period has been a function of the timing of that anticipated expense.

A breakdown of the monthly forecast expenditure during the PPR period is provided in (*redacted*).

6.1.2 Accrued costs

When expressing the actual expenditure for the FUSION Project during the PPR_03 reporting period, the following 'accrued' costs have been included for September 2021.

These costs have not yet been invoiced for, but the associated work has been completed and the costs are therefore accounted for as having been already 'accrued'; (*redacted*).

7 Project Bank Account

A dedicated bank account was made available by SPD to act as the Project Bank Account in to which Ofgem deposited the project funds.

A copy of the latest bank statement for the Project Account is provided below in Figure 12 informing the transaction made to that account and the interest earned over the term.

(redacted)

Figure 12: Bank statement

8 Project Deliverables

Table 11 below provides a comprehensive 'status report' of the progress made to date against each of the Project Deliverables and indicates next steps.

Ref	Project Deliverable	Due Date (Ofgem)	Evidence required	<div>Not started</div> <div>Ongoing</div> <div>Complete</div>		Progress update
				Status		
1	Report on flexibility quantification in East Fife.	4/12/19	1.1	Report on quantification of the flexibility market value in E Fife, including robust assessments across voltage levels, market sector, industry type.		<ul style="list-style-type: none"> Completed and published on the FUSION website in Nov 2019 https://www.spenergynetworks.co.uk/userfiles/file/FUSION_Quantifying_Flexibility_Report.pdf
2	Public consultation on USEF	29/11/19	2.1	Deliver the consultation document on the basis of workshops.		<ul style="list-style-type: none"> Completed & published on FUSION website in June 2019 https://www.spenergynetworks.co.uk/userfiles/file/SPEN_USEF_Consultation_Document.pdf
			2.2	Hold an open consultation for a 3-month duration.		<ul style="list-style-type: none"> An 8-week open consultation was successfully held between 08/07/19 and 02/09/19 During that time, 2 x stakeholder events were held in Glasgow & London to promote stakeholder participation and respond directly to questions.
			2.3	Report on consultation responses and analysis.		<ul style="list-style-type: none"> Completed and published on the FUSION website in Nov 2019 https://www.spenergynetworks.co.uk/userfiles/file/USEF_Consultation_Report.pdf?v=1.2
			2.4	Report on associated changes to USEF implementation plan.		<ul style="list-style-type: none"> Completed and published on the FUSION website in Nov 2019 https://www.spenergynetworks.co.uk/userfiles/file/Associated_Changes_to_USEF_Implementation_Plan_Exec_Report.pdf?v=1.2
3	USEF implementation plan	2/4/20	3.1	FUSION USEF implementation plan.		<ul style="list-style-type: none"> Completed and published on the FUSION website in March 2020. https://www.spenergynetworks.co.uk/userfiles/file/FUSION_USEF_Implementation_Plan.pdf
			3.2	Report on GB specific reference implementation of USEF.		<ul style="list-style-type: none"> Completed and published on the FUSION website in March 2020. https://www.spenergynetworks.co.uk/userfiles/file/GB_Ref_Implementation_of_USEF.pdf
4	USEF process implementation	2/6/20	4.1	Provide specification of communication and procurement platform.		<ul style="list-style-type: none"> Completed and published on the FUSION website in May 2020. https://www.spenergynetworks.co.uk/userfiles/file/D4.1_specification_of_communication_and_procurement_platform.pdf
			4.2	Provide specification of communication protocols between market participants.		<ul style="list-style-type: none"> Completed and published on the FUSION website in May 2020. https://www.spenergynetworks.co.uk/userfiles/file/D4.2_specification_of_communication_protocols_between_market_participants.pdf
			4.3	Provision of template flexibility contracts.		<ul style="list-style-type: none"> Completed and published on the FUSION website in June 2020. https://www.spenergynetworks.co.uk/userfiles/file/D4.3_Template_Flexibility_Contract.pdf
			4.4	Quantify market participant costs for implementing USEF interface compatibility.		<ul style="list-style-type: none"> Completed and published on the FUSION website in May 2020. https://www.spenergynetworks.co.uk/userfiles/file/D4.4_quantification_of_market_participant_costs_for_implementing_USEF.pdf

				Not started	
				Ongoing	
				Complete	
Ref	Project Deliverable	Due Date (Ofgem)	Evidence required	Status	Progress update
5	Implement a minimum of two physical and live trials of commoditised flexibility based on the USEF framework.	3/4/23	5.1 Identify two trial locations.		<ul style="list-style-type: none"> • Tender packs have been published as part of 2 x FUSION Flex Tender exercises launched in September 2020 and 2021 respectively. • These tender packs sought to procure flexibility services that address network needs at the following two trial locations; <ul style="list-style-type: none"> - St. Andrews Primary Substation - Leuchars Primary Primary Substation • These tender packs can be found on the FUSION website and they specify the flexibility services that we wish to procure at each trial site
			5.2 Identify the required flexibility services available from flexibility providers. (Phase 1)		<ul style="list-style-type: none"> • The first of the FUSION Flex Tender exercises sought 250kW of flexibility at each of the above trial locations for the duration of Phase 1 of the live trials. • Responses to the FUSION Flexibility Tender #1 confirmed that all of the flexibility services that the Project sought to procure were available from local providers.
			Identify the required flexibility services available from flexibility providers. (Phase 2)		<ul style="list-style-type: none"> • The second of the FUSION Flex Tender exercises sought 4.5MW of flexibility at each of the above trial locations for the duration of Phase 2 of the live trials. • Responses to the FUSION Flexibility Tender #2 are due in December 2021. • In the meantime activity is underway to engage with and attract interest from prospective flexibility service providers.
			5.3 Contract for flexibility services. (Phase 1)		<ul style="list-style-type: none"> • Flexibility Service agreements have been signed for Phase 1 of the live trial. • These were signed with the 2 x successful respondents to the 'Invitation to Tender' (ITT) for the FUSION Flex Tender #1
			Contract for flexibility services. (Phase 2)		<ul style="list-style-type: none"> • Once the bidding window closes for the FUSION Flex Tender #2 – successful respondents will be invited to enter into a contractual 'Flexibility Service Agreement' (FSA) with SPEN. • The bidding window closes in Dec 2021 and the successful vendors will be identified in January 2022 and invited to enter into contract with SPEN. • We aim for successful vendors to conclude the contractual negotiations with SPEN and sign FSA's in February 2021. • In an effort to expedite the conclusion of the contractual negotiations, vendors are required to agree to the T&C's contained in the draft version of the FSA as a pre-requisite to participating in the tender.
			5.4 Undertake live trials. (Phase 1)		<ul style="list-style-type: none"> • Phase 1 of the FUSION trials successfully went live in September 2021 • The live trials are operating according to plan for addressing our learning objectives • Services being traded include: Secure, Sustain and Dynamic • Flexibility services are being traded at least 4 times per week • Trading and dispatches are typically day-ahead or same-day. • Data is being gathered for analysis in accordance with the Phase 1 'learning objectives' and 'evaluation methodology'
			Undertake live trials. (Phase 2)		<ul style="list-style-type: none"> • Phase 1 of the live trial is due to conclude at the end of March 2021 • Phase 2 is due to commence the day after the completion of Phase 1 • The remaining steps listed above for deliverables 5.2 and 5.3 describe the preparations that are ongoing for the commencement of live trials Phase 2

			5.5	Report on the implementation and analysis of USEF trials		<ul style="list-style-type: none"> • The success of the first phase of trials will be continually monitored and evaluated against pre-defined success criteria • The findings of this evaluation will be periodically reported and the learnings disseminated in time for the recommendations to be applied in the second phase of the trial. • The first of these interim trial learnings reports has been drafted and is due for publication in September 2021.
6	Modelling report on commoditised flexibility benefits for the UK (Imperial College London).	28/2/23	6.1	Academic modelling report on GB flexibility		<ul style="list-style-type: none"> • Imperial College London have been kept informed (along with all Project Partners) about the evolving trial design and timeframe • They have been able to specify their expectations from the trial to ensure that it generates data that is fit for their modelling needs • The scope and content of the modelling report has been agreed by the Project Partners along with the required inputs required from the various stakeholders. • Work has commenced on drafting the first iteration of the report which is due for internal review in Q1 2022

Not started
Ongoing
Complete

Ref	Project Deliverable	Due Date (Ofgem)	Evidence required	Status	Progress update
7	Open Networks report in coordination with the ENA Open Networks Programme.	28/2/23	7.1 Report on coordination and hierarchies of control for flexibility, in collaboration with the ENA Open Networks Programme.		<ul style="list-style-type: none"> • Imperial College London have been kept informed (along with all Project Partners) about the evolving trial design and timeframe • They have been able to specify their expectations from the trial to ensure that it generates data that is relevant for their reporting needs
N/A	Comply with knowledge transfer requirements of the Governance Document.	28/09/20xx	i Annual Project Progress Reports which comply with the requirements of the Governance Document.		<ul style="list-style-type: none"> • PPR_01 completed in September 2019 and published on the Project FUSION website • PPR_02 completed in September 2020 and published on the Project FUSION website • PPR_03 completed in September 2021 and pending publication on the Project FUSION website
		2/11/23	ii Completed Close Down Report which complies with the requirements of the Governance Document.		
		30/10/19	iii Evidence of attendance and participation in the Annual Conference as described in the Governance Document.		<ul style="list-style-type: none"> • Project FUSION presented a progress update at the ENIC event in October 2020

Table 11: Project Deliverables - Status Report

9 Data Access Deliverables

The 'Publicly Available Data Sharing Policy' is available to view via the following link:

FUSION Webpage (<https://www.spenergynetworks.co.uk/pages/fusion.aspx>)

10 Learning Outcomes

Table 12 to Table 14 below outline the learning outcomes generated under each of the Work Packages during the reporting period;

WP1 – Stakeholder Engagement			
Ref	Activity Summary	Further Detail	Output / Value Delivered
1	Flexibility Procurement	<ul style="list-style-type: none"> • Webinar to promote our flex tender • Regular follow-up 1-2-1 calls with aggregators and local customers • Matchmaking to catalyse viable partnerships • Contract negotiation 	<ul style="list-style-type: none"> • Successfully procured all of the specified flexibility required for Phase 1 of the FUSION live trials. • Pioneered a process for procuring flexibility entirely in-house without relying on third party intermediates
2	Engagement with wider industry via the ENA / TEF	<ul style="list-style-type: none"> • WS1a P4 – Flexibility Services Agreement <ul style="list-style-type: none"> ○ Provided a written review of version 2 of the FSA ON-P to ensure USEF compliance 	<ul style="list-style-type: none"> • Ensures that the FSA is as universally applicable as possible
		<ul style="list-style-type: none"> • WS1a P2 – Flexibility Procurement <ul style="list-style-type: none"> ○ Launched flexibility procurement exercise in Autumn as per the standard approach recommended by P2 	<ul style="list-style-type: none"> • FUSION is seeking to ingest and employ the recommendations from the ENA and intends to feedback on the success of those approaches as part of our learnings reports.
		<ul style="list-style-type: none"> • WS1a P7 – Baselineing <ul style="list-style-type: none"> ○ FUSION is trialling a nomination baselineing approach. ○ FUSION is also committed to leveraging the baselineing tool developed by P7 to evaluate under what circumstances the nomination baselineing approach offers a favourable approach over historical baselineing. 	<ul style="list-style-type: none"> • Baselineing presentation provided to WS1a P7 team

Table 12: Learning Outcomes - WP1

WP5 - Trial			
Ref	Activity Summary	Further Detail	Value Delivered
1	IT development	The following platforms have all been successfully enhanced so as to comply with the USEF requirements as specified in the technical Specification: <ol style="list-style-type: none"> 1. FUSION Flexibility Platform (FFP) - Opus One 2. Aggregator platform - GridImp / Engie 3. Aggregator Platform – Orange Power 	Having achieved this milestone we now know what the enhancements entail in terms of time and effort and we also know what the pitfalls and challenges are that can be avoided. These learnings will be more fully articulated in our first 'interim trial learnings report' which is due in October 2021.
2	Testing and commissioning	As part of the above IT development process, platforms were tested independently before being integrated and tested as an end-end system.	We have developed test scripts which could be recycled
3	Live trials	We have successfully commenced live trials with a fully commissioned end-end system of USEF compliant platforms.	Now that the trials are live and operational with daily dispatches of flexibility onto our local networks - we are gathering empirical data for analysis. This will inform the interim trial learnings reports which will be published on a 6-monthly basis.

Table 13: Learning Outcomes - WP5

WP6 - Dissemination			
Ref	Activity Summary	Further Detail	Value Delivered
1	ENIC presentation Oct 2020	Video recording providing a Project FUSION progress update and view of next steps.	<ul style="list-style-type: none"> ▪ Stakeholder engagement ▪ Sign-posting to the various publications made in the preceding 12months available on our website
2.	Flexibility Services Requisition (FSR) #2	In September 2021 FUSION published a call for 4.5MW of flexibility in East Fife	<ul style="list-style-type: none"> ▪ The FSR articulates exactly what our flexibility needs are for phase 2 and allows aggregators and to prepare for the bidding window which is due to open later this year.

Table 14: Learning Outcomes - WP6

11 IPR

Project FUSION complies with the Ofgem default position regarding the IPR ownership and no further IPR has been generated by FUSION during this reporting period nor is expected to be generated.

12 Risk Management

Project FUSION has taken a proactive approach of regularly reviewing the risk register, allocating clear ownership of each risk and putting in place appropriate mitigation measures.

12.1 Technical Risks

A summary of the technical risks currently affecting the project is presented below in Table 15

Risk No.	Issue	Risk Description	Potential Impact	Control measures applied during reporting period
1. Technical risks				
1.01	System compatibility - SP Energy Networks ICT	SP Energy Networks communications infrastructure is unable to readily adopt the DSO platform and/or execute the USEF framework.	Delay the integration of the DSO platform and delay the commencement of live trials.	<ol style="list-style-type: none"> 1. the ITT for the DSO platform was carefully designed in collaboration with the appropriate internal stakeholders from within SPEN to ensure that the solution would be compatible with our ICT systems 2. The successful vendor of the DSO platform has agreed to implementing various stages of testing and commissioning throughout the integration process to ensure continual alignment with SPEN's ICT requirements 3. SPEN has allocated a dedicated ICT expert to superintend the vendor during this IT integration process.

1.02	System compatibility - Aggregator IT	Aggregators involved in the trial element of project FUSION are unable to readily adopt USEF due to ICT infrastructure compatibility issues.	<ol style="list-style-type: none"> 1. Few aggregators come forwards for the project trial. 2. USEF trial delayed 	<ol style="list-style-type: none"> 1. Early stakeholder engagement with aggregator community to inform them of the USEF framework and trial. Use existing engagement mechanisms such as the UK branch of the Aggregators Association. 2. Work with aggregators during the project to inform the project on aggregator needs. 3. Thorough public consultation to include aggregator community. 4. Anticipate costs associated with ICT compatibility during the aggregator tendering phase of the trial. 5. Work with Dutch DSO's to develop simulator stubs to help remove barrier to aggregators becoming USEF-compliant
1.03	Enabling local assets within the timeframe for the first live trials in June 2021	Covid-19 might inhibit works on site	This could result in flexibility service providers not having their assets enabled on time for the flexibility trials to commence in 2021	<ol style="list-style-type: none"> 1. Continue to engage with asset owners on a regular basis to understand their constraints and accommodate those limitations as best we can 2. Take learnings from other part so the business that are having to navigate site works during the pandemic 3. Design the trials to allow for a soft-start if necessary.

Table 15: Project FUSION Technical Risks & Mitigation

12.2 Procurement Risks

Similarly, the risks regarding procurement have been presented in Table 16.

Risk No.	Issue	Risk Description	Potential Impact	Control measures applied during reporting period
2. Procurement, manufacturing and installation risks				
2.01	Insufficient flexibility availability secured in tender exercise #1	Aggregators might simply not have been interested in responding to the ITT that FUSION plans to publish in December 2020	<ol style="list-style-type: none"> 1. The ambition of phase 1 of the trial might have had to be curtailed to reflect the available flexibility secured. 1. If only one flexibility service provider were to have completed the ITT that would have prohibited the trial of the dynamic spot-market and would have limited the learnings from FUSION 	<ol style="list-style-type: none"> 1. 6 months prior to the launch of the flexibility procurement exercise FUSION proactively engaged with aggregators in an effort to not only build awareness of the project but crucially to understand their concerns in an effort to remove barriers to their participation. 2. The deadline for completing the EoI was 7th October 2020. This deadline was been well advertised to the aggregator community using social media and emails. We also held a webinar to walk candidates through the EoI response form. 3. Following the webinar FUSION engaged in 1-1 calls and introduced stakeholders in an effort to catalyse the formation of viable partnerships.

2.02	Insufficient flexibility availability secured in tender exercise #2	Aggregators might simply not be interested in responding to the ITT that FUSION plans to publish in December 2021	<ol style="list-style-type: none"> 1. The ambition of phase 2 of the trial might have to be curtailed to reflect the available flexibility we can secure. 2. If only one flexibility service provider were to have completed the ITT that would have prohibited the trial of the dynamic spot-market and would have limited the learnings from FUSION 	<ol style="list-style-type: none"> 1. Now that we have 2 x USEF-compliant aggregators already participating in phase 1, we're confident that they will both participate in phase 2. 2. We have promoted our latest flexibility procurement drive and have invited the aggregator community to a webinar on 5th October 2021. 3. We intend to follow-up the webinar with 1-1 calls to attendees and offer to introduce stakeholders in an effort to catalyse the formation of viable partnerships.
2.03	Limited participation from flexibility service providers representing the domestic or transport sectors.	<p>Local flexibility derived from these sectors might be either;</p> <ol style="list-style-type: none"> 1. unavailable within our timeframes or 2. unable to compete in a competitive tender exercise 	FUSION's objectives to generate learnings from participation of these sectors would have to conclude that these sectors were (for whatever reason) unable to participate. This would reduce the value of the FUSION learnings.	<ol style="list-style-type: none"> 1. Continue already established engagement with key domestic and EV flexibility partners. 2. Tailor the tender evaluation criteria to rank contenders not on cost alone but on 'value for money' which takes into account the extent to which flexibility service providers can contribute towards the learning objectives of the project, which will include achieving the participation of residential and EV flexibility.
2.04	Limited support for USEF implementation	A broad range of stakeholders are not convinced that USEF is a suitable framework for a flexibility market.	USEF not supported in its initial form. USEF implementation must be significantly adapted prior to adoption.	<ol style="list-style-type: none"> 1. A broad-based stakeholder forum (WP1) was developed early and maintained throughout course of the project. This allows objections and concerns to be reasonably attended to in sufficient time. 2. A full public consultation was developed as part of WP3. This allows stakeholder to raise contributions to USEFs

				<p>implementation.</p> <p>3. Time and resource has been allocated to adjust USEF on the basis of the public consultation analysis.</p> <p>4. Having now successfully delivered a USEF-compliant local flexibility market in Phase 1 with British aggregators we are able to demystify the process and demonstrate that the business model works for aggregators</p>
2.05	Administrative burden	Now that phase 1 is live and operational, the FUSION team might be stretched to administer a flexibility procurement process.	It could lead to fatigue of staff and errors being made in the live trials and/or procurement process.	<p>FUSION will investigate the potential of employing third party flexibility procurement platforms to relieve the administrative burden on project staff. Trialling this alternative approach to how we procured flexibility in phase 1 will also allow us to compare the pro's and con's of each approach and add learnings.</p>

Table 16: Procurement Risks & Mitigation

12.3 HSE and Operational Risks

Table 17: HSE & operational risks

Risk No.	Issue	Risk Description	Potential Impact	Control measures applied during reporting period
3. HSE and Operational risks				
3.01	Flexibility reliability	Aggregators in the flexibility marketplace cannot be depended on to supply demand-side flexibility for the DNO.	Commoditised flexibility is not used for DNO constraint management. Standard reinforcement is relied on to relieve distribution network constraints.	<p>1. During the first stage of the trial (2021), flexibility providers are only being contracted to provide nominal amounts of flexibility (<250kW to minimise the impact on the network) and the network is in no way dependent upon the successful delivery of these services for the safe-running of the network. .</p> <p>2. Even in phase 1, a 'Monthly Performance Adjustment Factor' (MPAF) is applied to penalise aggregators failing to deliver the 100% of the contracted amount of flexibility.</p>
3.02	Cyber security	redacted	redacted	redacted

3.03	Settlement procedures	Settlement procedures are not delivered to aggregators and customers in a professional manner.	<ol style="list-style-type: none"> 1. Financial settlements are delayed in time. 2. USEF users are dissatisfied with the flexibility market framework and may request adjustments. 	<ol style="list-style-type: none"> 1. Settlement procedures are well developed based on USEF foundation findings and established protocols. 2. FUSION closely liaised with accounts payable prior to the commencement of live trials to prepare for having to process settlements at the end of each month during live trials.
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12.4 Project Management Risks

Risk No.	Issue	Risk Description	Potential Impact	Control measures applied during reporting period
4. Project Management risks				
4.01	Higher costs	Cost of scheme higher than anticipated	Exceedance of project budget; and risk of halting the demonstration project.	1. FIDIC contract terms should be used, such that the contractor takes on the risk; 2. Contingency funding deemed to be reasonable and sufficient. 3. Robust financial control measures
4.02	Resources	Sufficient resources are not available in SP Energy Networks to deliver the project	Delay in delivery of the project and impact on quality of deliverables	1. Effective engagement with Director level in SP Energy Networks to provide clear understanding about project size and resource required 2. Use competent external resources where necessary
4.03	Project filing management	Project management filing not updated - file information stored on emails and personal drives	Lack of clarity and transparency within the PM team	Shared folder to be maintained and updated weekly

Table 18: Project Management Risk & Mitigation

13 Accuracy Assurance Statement

I confirm that processes in place and steps taken to prepare the PPR are sufficiently robust and that the information provided is accurate and complete.

Signature: 

Name (Print): James Yu

Title: Future Networks Manger

Date: 30th September 2021

Signature: 

Name (Print): Michael Green

Title: Senior Innovation Engineer

Date: 30th September 2021

14 Material Change Information

During this reporting period, and indeed since its inception, Project FUSION has incurred no material changes, nor does it foresee any in the future.

Appendix 1 - Project Budget

The Project Budget below is taken directly from the latest FUSION Project Direction⁵.

ANNEX 1: PROJECT BUDGET

This is subject to changes resulting from condition 2.

Cost Category	Cost (£)
Labour	
	1,668,656.00
Equipment	
	482,765.00
	332,765.00
Contractors	
	3,031,430.00
	2,916,630.00
IT	
	300,000.00
IPR Costs	
	-
Travel & Expenses	
	216,213.99
	181,213.99
Payments to users	
	220,000.00
Contingency	
	51,780.00
Decommissioning	
	-
Other	
	-
Total	-5,970,844.99
	5,671,044.99

⁵ [https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion - direction amended 09 2018.pdf](https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion_-_direction_amended_09_2018.pdf)



Appendix 2 - Monthly Expenditure

(redacted)

Figure 13: Actual Monthly Expenditure (Postings including Accruals)⁶ vs FSS Monthly Apportioned Forecasts

⁶ Occasional peaks in actual labour expenditure (e.g. March 2019) are due to the issue of a ‘bulk transfer’ which accounts for previous months’ labour costs.

Appendix 3 - Contribution to the ENA ON-Project

Despite its rapid evolution and growth in recent years, the DSO flexibility market in GB is still in a state of relative nascency. Over the last reporting period Project FUSION, through its participation in the TEF working group, has helped to influence that evolution by continuing to contribute value to the workstreams of the ENA Open Networks Project.

A summary of the key contributions that FUSION has made to the ENA ONP over this reporting period is provided below.

Workstream 1a		
Product		FUSION contribution via TEF
P1	Common Evaluation Methodology	TEF fed back a summary PPT on experiences of using the CEM late last year in the context of supporting flex market valuation and setting commercial market price ceilings.
P2	Procurement Processes	Held advisory meeting with TRANSITION, FUSION and ENA product lead and provided documented comments on experiences and future plans within TEF to move to closer to real-time procurement of flexibility
P4	Common Contract / FSA	TRANSITION, EFFS and FUSION separately contributed comments to the drafting of the version 2.0 of the FSA/Common Contract
P7	Baselining	TEF reviewed and provided commentary on the 2020 DNV-GL summary report in late 2020, then TRANSITION and FUSION held a learnings and dissemination session with the P7 team, and also TRANSITION is supporting the ENA directly with joint tool development at present via TNEI and FUSION is planning to use that tool to compare the efficacy of historical and nomination baselining approaches.

Workstream 1b		
Product		FUSION contribution via TEF
P3	Real time data exchange & forecasting	Feedback from TEF on experiences and design views on operational forecasting, and also provided a detailed summary presentation slide-pack from EFFS on early applications of operational forecasting within WPD

Appendix 4 - Contribution to the DSO Strategy for ED2

Redacted