



FUSION

Project Progress Report (PPR_01)



Version History

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Michael Green	V0.1	19/09/2019	Draft	
Ehsan Mian	V0.2	26/09/2019	Final	

Approval


Name	Position	Date	Signature
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1 Introduction

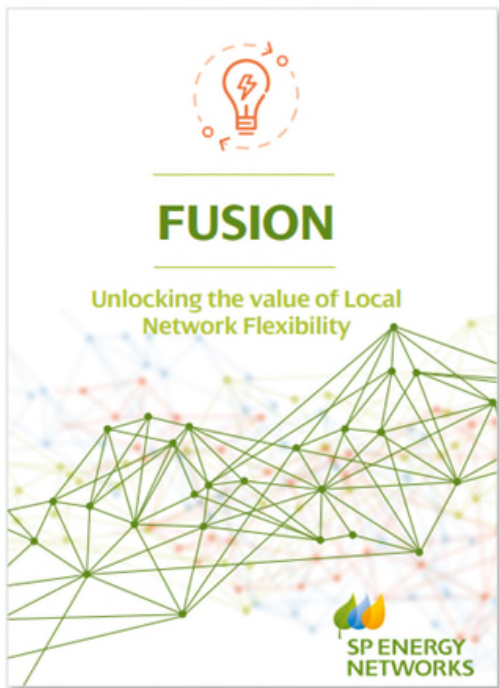
This is the first of what will comprise a series of annual Project Progress Reports (PPR) for Project FUSION. This first edition (PPR_001) reports on the period spanning from 28th September 2018 to 28th September 2019, hitherto referred to in this report as the “reporting period”.

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

The first agreed Project Deliverables are due in November and December of 2019.

The specified outputs from these deliverables are summarised in *Table 1* below.

These (and all other Project Deliverables) are on-track for completion according to schedule and budget.

2019 Project Deliverables		Evidence required	Due date
1	Report on flexibility quantification in East Fife	1. Report on the quantification of the flexibility market value in East Fife, including robust assessments across voltage levels, market sector and industry type.	04/12/19
2	Public Consultation on USEF	1. Deliver the consultation document on the basis of workshops. 2. Hold an open consultation for a 3-month ¹ duration. 3. Report on consultation responses and analysis. 4. Report on associated changes to USEF implementation plan.	29/11/19

Table 1: Project Deliverables due in 2019

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

Progress against programme has been good – often exceeding expectations. Notable achievements during the reporting period include the following;

WP:	Achievement / Milestone accomplished
WP1	Various engagement events have been hosted and attended (both locally and nationally).
WP2	On-site audits completed to quantify existing in-situ flexibility availability at key locations.
	Extrapolation exercise completed to infer flexibility availability across entire study area.
	3 x draft sector-specific reports completed which quantify available flexibility in study area.
WP3	USEF Due Diligence Report published.
	USEF Consultation Document published.
	8-Week USEF Public Consultation now completed and responses collated for analysis.
WP4	Technical Specification for the flexibility trading platform completed and ratified by business
	Strategy drafted for the procurement the flexibility Platform by competitive tender.

Table 2: Notable milestones during reporting period

¹ NB – the duration of the open consultation period has been condensed from 12 weeks (3months) to 8weeks (2 months). Further detail is available in Section 0 of this report.

2.1.3 Problems encountered

No significant problems have been encountered during this reporting period.

Several minor issues have been successfully navigated, the most notable of which is listed below;

i. Data Protection Policies;

- Compliance with new policies was considerably more laborious than anticipated.
- This meant that stakeholder engagement required more resource allocation to cope with the additional associated workload
- This mitigation measure was successful with minimal impact to budget and programme

Further detail of how this and other issues were resolved is provided in *Section 0 - Table 7: Project Highlights*

Project Issues.

2.1.4 Interim Learnings & Dissemination

Although no Project Deliverables were due during the reporting period, progress against programme has been strong and consistent – often exceeding expectations. Key interim outputs generated during the reporting period are listed in *Table 3* below;

WP:	Output:	Status:	Disseminated?
WP2	FUSION Launch event in St. Andrews	Completed	Public event
	3 x draft sector-specific reports quantifying flexibility in North East Fife	Draft	Awaiting approval for publication
WP3	USEF Due Diligence Report	Completed	On website
	USEF Consultation Document	Completed	On website
	2 x USEF Consultation Workshops in London & Glasgow	Completed	Public events
WP4	Technical Specification for FUSION platform	Completed	Redacted roadmap shared with FUSION partners. Redacted roadmap and user journeys shared with TEF group.

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 the Project to deviate from its agreed aims and objectives. Risks are reviewed regularly during weekly progress meetings.

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 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, more information is provided in *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 red).

Progress to date has been very good and all Project Deliverables are on-track for submission either on or before their contractual due-dates.

For a summary 'RAG' status report of the progress made against '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

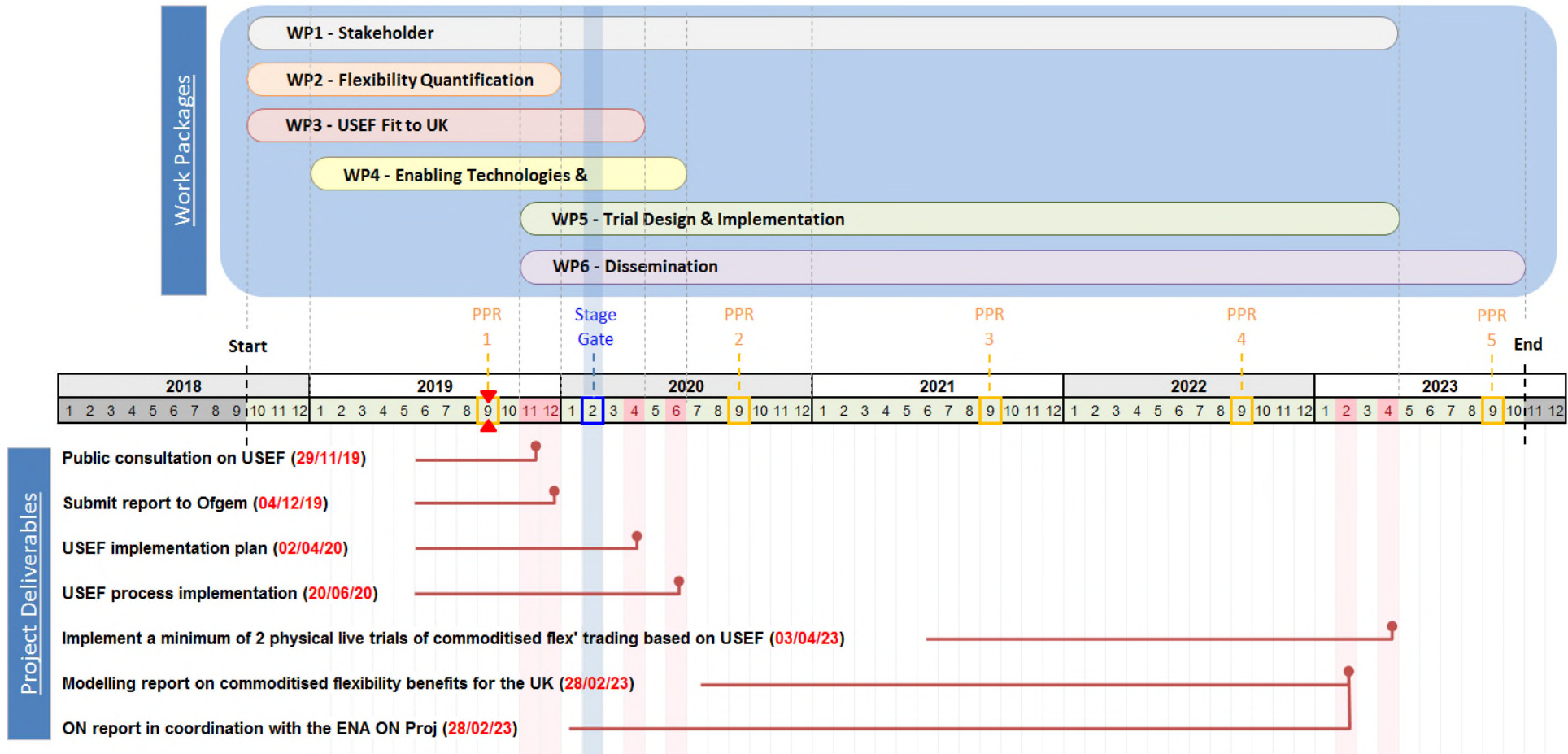


Figure 1: Project Delivery Timeline

3.2 Project Highlights - Concise Summary

Table 4 below provides a concise summary of the key successes noted during the reporting period. Further detail on each of the highlights listed below is provided in *Section 5.3 - Project Highlights*.

Ref	Deliverable Affected	Summary of Highlight	Brief Detail
1	Funding Condition	Fully satisfied	All Collaboration Agreements (CA's) were agreed and signed with Partners in January 2019.
2	WP1: Stakeholder engagement	Coherent strategy & good progress being made.	<ul style="list-style-type: none"> • Live 'FUSION Communications Strategy' in place. • Multiple physical events organised / attended • Active & ongoing multimedia presence
3	WP2: Flexibility Quantification Reporting	Work progressing according to schedule & budget.	<ul style="list-style-type: none"> • Final draft report anticipated 21st October 2019 (2months ahead of submission due date). • Initial drafts are of high quality.
4	WP3: USEF implementation plan	3months ahead of schedule.	<ul style="list-style-type: none"> • USEF Consultation complete • USEF Implementation Plans anticipated Dec 2019 • This will allow earlier commencement of WP4 & 5
5	WP4: System readiness	Progress ahead of schedule	<ul style="list-style-type: none"> • Platform specification already complete & ratified by SPD business (Sep' 2019) • Ongoing meetings with TEF to explore joint procurement
5	WP5: Live Trial	Progress ahead of schedule	<ul style="list-style-type: none"> • Trial sites already identified • Detailed planning underway to accelerate trial commencement & generation of interim learnings.
6	TEF Stage Gate preparation	Value-added through professional collaboration	<p>Demonstrable progress made in exploring potential for:</p> <ul style="list-style-type: none"> • Adoption & development of the EFFS forecasting algorithms through the provision of SPEN data and review input from FUSION. • Joint procurement of flexibility platform • Knowledge-sharing with ENA ON Project

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 have been successfully navigated and these are summarised in *Table 5* below.

Further detail on each of issues listed below is provided in *Section 0 - Table 7: Project Highlights*

Project Issues.

Ref	Deliverable Affected	Issue Summary	Brief Detail
1	WP2: Flexibility Quantification Reporting	Data Protection policies	Recently introduced policies have made stakeholder engagement more labour intensive than previously anticipated.
2	WP2: Flexibility Quantification Reporting	Seasonality of the agricultural sector	The ambitious timescale for completing flexibility site surveys meant that in many cases seasonal variations in energy usage and flexibility availability had to be inferred using data-extrapolation techniques. During the summer months of the survey, farmers were sometimes too busy to cooperate with surveyors.
3	WP2: Flexibility Quantification Reporting	Limited flexibility	Available flexibility is: <ul style="list-style-type: none"> ▪ Sufficient to demonstrate live trial of commoditized flexibility trading using USEF. ▪ Insufficient to significantly alleviate existing network congestion in the trial area. Mitigation measures could include temporary generation.
4	WP3: USEF fit for purpose	Consultation Period	In an effort to accelerate the commencement of the trial, the USEF Consultation period was condensed from 3months to 2months.
5	Project Direction	Typo'	Page 3 of the Project Directive ³ currently fails to include PassivSystems Ltd in the Partner List. This typo' requires remediation.

Table 5: Project Issues – Concise Summary

³ https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion_-_direction_amended_09_2018.pdf

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	Local stakeholder engagement campaign	<ul style="list-style-type: none"> - Local SPD district engineers will receive training in Project FUSION so that they, in turn, can communicate the Project aims and objectives to the customers they come into contact with daily. - A 1200-word article is being written with a view to publishing them in the Local Magazine (InFocus)
WP2	Flexibility Quantification Report	The finished report will be published on the FUSION website in December 2019
WP3	USEF Implementation Plan	- Report on Consultation repos (4/10/19)
		- Report on associated changes to USEF (11/10/19)
		- USEF implementation plan (FUSION)
		- USEF implementation plan (GB)
WP4	Enabling technologies	- Refine the existing platform specification where necessary, taking into account the findings of WP3
		- Provide specification of comm's protocols between participants
		- Provision of template flexibility contracts
		- Quantify market participant costs for interfacing with USEF
WP5	Trial design	- Identify the required flexibility services available from flexibility providers
		- Contract for flexibility services
		- Commence implementation of live trials in an agile approach, allowing us to generate interim learnings early
		- Report on any interim learnings from the implementation and analysis of USEF trials
WP6	LCNI 2019	- A 3-4min video is being prepared to explain the FUSION Project. This will be unveiled at the LCNI event in October 2019 and will be posted on the FUSION website for future reference.
TEF	Common Stage Gate	- A report, written by TRANSITION, EFFE & FUSION will be submitted to the Regulator in time for the Feb 2020 TEF Common Stage Gate review.

Table 6: Anticipated activities in next reporting period

4 Business Case Update

The continued relevance of the business case is a key criterion against which projects will be evaluated at the TEF⁴ Common Stage Gate review in February 2020. Consequently, this consideration is reviewed regularly during the monthly TEF meetings.

The findings of that review have consistently concluded the absence of any known developments, since the issue of the Project Directions, which would adversely affect the business case for the FUSION Project (or any of the other TEF Projects).

⁴ TRANSMISSION (SSEN), EFFS (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.

5.1.1 Accelerated Progress

Figure 2 below illustrates which Work Packages that Project FUSION has accelerated and during the reporting period, and the accelerated completion dates for associated deliverables

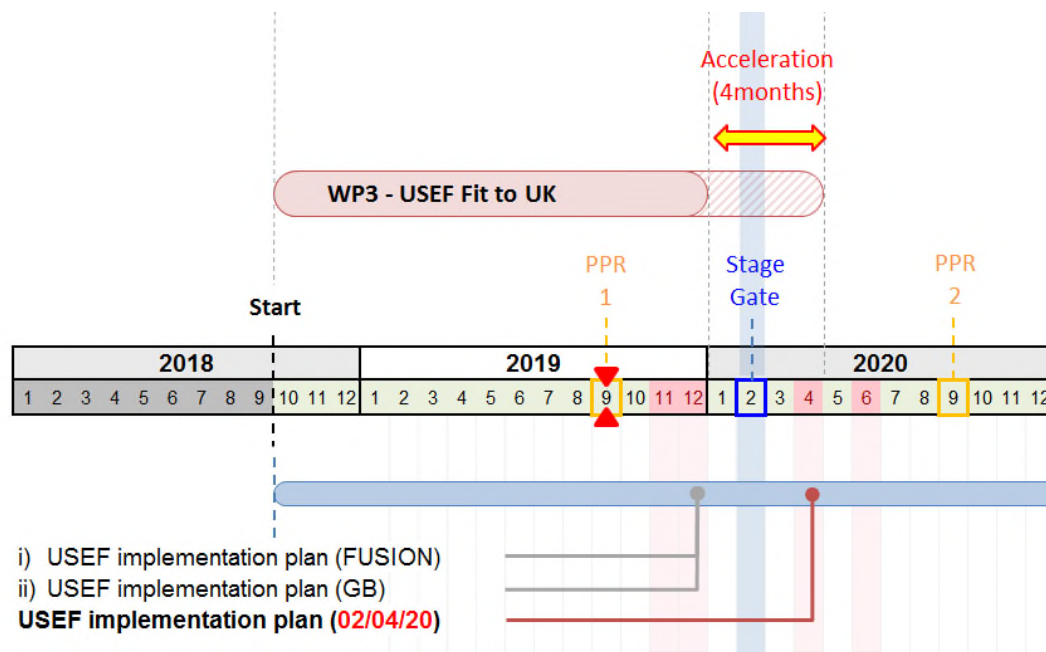


Figure 2: Acceleration of WP3 with view to conclude USEF Implementation Plan 4months early.

Looking forward to the next reporting period; Project FUSION will continue to pursue opportunities to accelerate the trial commencement and interim learnings.

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 Project Set-Up

Following the award of project funding on 28th September 2018, activity commenced on completing the 'project set-up' in preparation for Partner mobilisation.

Key 'project set-up' activities included the establishment of the following;

i. Collaboration Agreements (CA):

These contractual agreements have been negotiated and signed by SPD and each one of the Project Collaborators.

They took the form of framework agreements, whereby;

- The Collaboration Agreement provided the over-arching T&C's for the framework collaboration,
- The Collaboration Agreement includes a blank template of a Call-Off Agreement, the function of which is described below.

ii. Call-Off Agreements (CO):

- Call-Off Agreements enable SPD to mobilise Partners by defining the specific roles responsibilities, timelines and payment triggers for the completion of discrete deliverables.
- These CO's are subject to the T&C's outlined in the overarching CA.
- Before Partners can commence any activity, they require the necessary CO to be in place, which defines their roles, responsibilities and payment triggers etc.
- New CO's can be issued whenever there is a need for a defined scope of work to be commenced by that Partner.
- Each partner is expected to have multiple (often simultaneous) call-offs over the course of the FUSION Project.
- The CO's required to mobilise Partners on activities due to commence in 2019 were defined, agreed and signed as part of the Project Set-Up process.

iii. FUSION Project Website and Mailbox:

- The FUSION Project website was made live in early 2019 to allow for relevant information to be published and disseminated.
- The 'reports & Document' section provides an up to date repository of published documents which are freely available to download.
<https://www.spenergynetworks.co.uk/pages/fusion.aspx>
- A dedicated FUSION mailbox (fusion@spenergynetworks.com) provides interested parties with easy access to Project Engineers



5.2.2 WP1 - Stakeholder Engagement

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

Figure 3 below shows the timescale for implementing WP1.

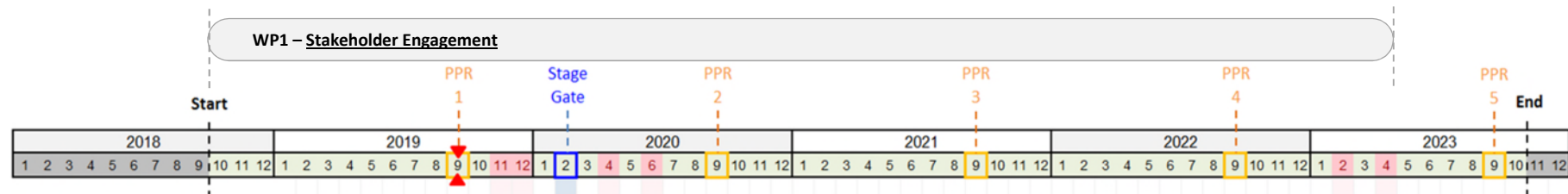


Figure 3: Timescale for implementing WP1

There is no specific Project Deliverable associated with WP1.

The original FUSION budget 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

This reporting period has seen significant progress made under WP1 with well-attended stakeholder events completed at both local and national level.

The stakeholder forum has maintained strong momentum and participation continues to grow as more contacts are being added to Tractvity and voluntarily providing their written consent for FUSION Partners to engage with them further.

5.2.3 WP2 - Flexibility Quantification Report

Figure 4 below shows the timescale for implementing WP2 and the single associated Project Deliverable that it seeks to address over that period.

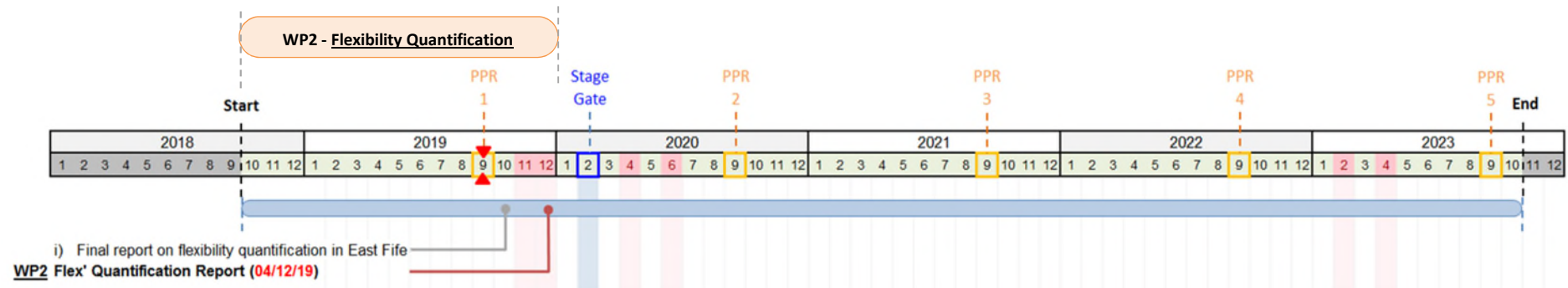


Figure 4: Timescale for implementing WP2

The excerpt below from *Section 8 – ‘Project Deliverables’* summarises the progress made under WP2 during the reporting period and briefly describes the key activities planned for the next reporting period.

					Not started		
					Ongoing		
					Complete		
Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	Evidence required		Status	Progress update
1	Report on flexibility quantification in East Fife.	4/12/19	21/10/19	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">• 3 x sector-specific reports have been drafted and are currently undergoing iterative review and refinement.• Next step is to reconcile the 3 reports into a single report for delivery to Ofgem.• Work progressing in-line with anticipated completion date

5.2.4 WP3 – USEF Fit for UK

Figure 5 below shows the timescale for implementing WP3 and the two associated Project Deliverables that it seeks to address over that period.

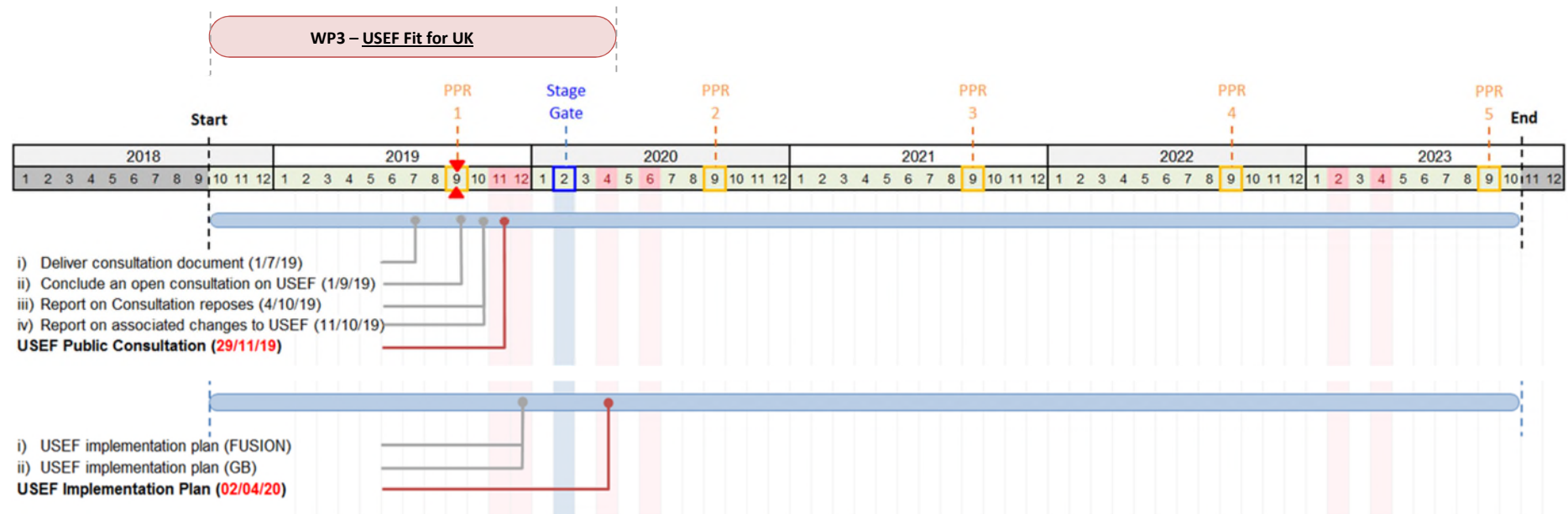


Figure 5: Timeline for implementing WP3

The excerpt below from *Section 8 – ‘Project Deliverables’* summarises the progress made under WP3 during the reporting period and briefly describes the key activities planned for the next reporting period.

Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	Evidence required	Status	Progress update
2	Public consultation on USEF	29/11/19	1/7/19	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
			1/9/19	2.2 Hold an open consultation for a three 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.
			4/10/19	2.3 Report on consultation responses and analysis.		<ul style="list-style-type: none"> DNV-GL are currently analysing the results from the Open Consultation and drafting this report. Work progressing in-line with anticipated completion date
			11/10/19	2.4 Report on associated changes to USEF implementation plan.		<ul style="list-style-type: none"> This deliverable is planned to be discharged in the form of a concluding sub-section to the 2.3 report. Work progressing in-line with anticipated completion date
3	USEF implementation plan	2/4/20	31/12/19	3.1 FUSION USEF implementation plan.		<ul style="list-style-type: none"> Call-off contracts are being drafted to mobilise the DNV-GL to complete this work. First draft anticipated in November.
			31/12/19	3.2 Report on GB specific reference implementation of USEF.		<ul style="list-style-type: none"> Call-off contracts are being drafted to mobilise the DNV-GL to complete this work. First draft anticipated in November.

5.2.5 WP4 - Enabling Technologies

Figure 6 below shows the timescale for implementing WP4 and the single associated Project Deliverable that it seeks to address over that period.

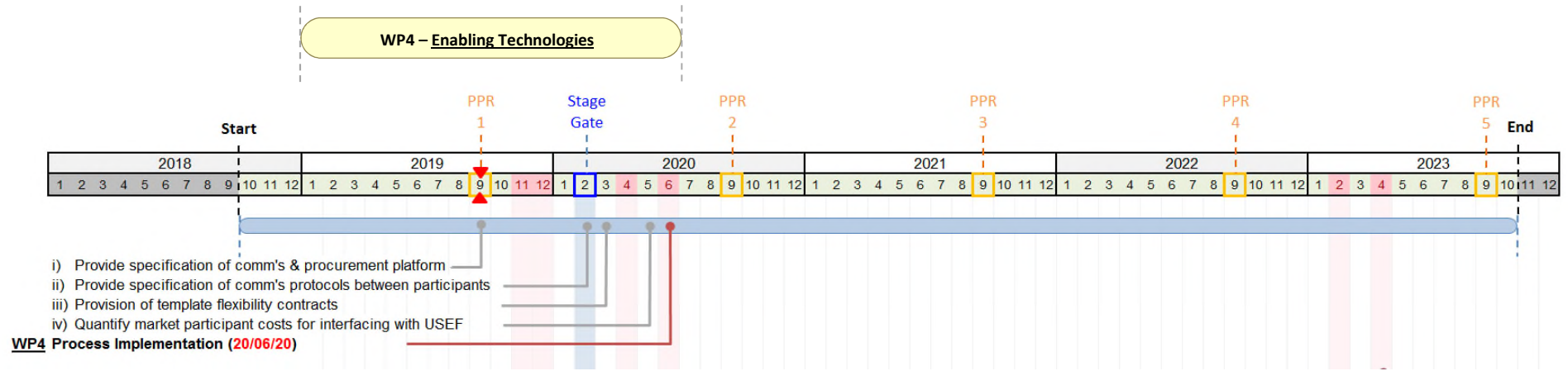


Figure 6: Timeline for implementing WP4

The excerpt below from *Section 8 – ‘Project Deliverables’* summarises the progress made under WP4 during the reporting period and briefly describes the key activities planned for the next reporting period.

				Not started		
				Ongoing		
				Complete		
Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	Evidence required	Status	Progress update
4	USEF process implementation	2/6/20	1/3/20	4.1 Provide specification of communication and procurement platform.		<ul style="list-style-type: none">● Draft technical specification complete for platform● Ongoing discussions with TRANSITION to explore potential for joint procurement exercise
			1/3/20	4.2 Provide specification of communication protocols between market participants.		<ul style="list-style-type: none">● Draft technical specification complete for platform● This will need to be refined following the completion of deliverable 3.1
			1/4/20	4.3 Provision of template flexibility contracts.		<ul style="list-style-type: none">● Project FSION has access to several template flexibility contracts already● USEF also prescribes some of the key contents for a flexibility contract● Next step will be to synthesise the existing templates with the requirements from USEF to form a template contract for the FUSION trial● This exercise will commence following the completion of deliverable 3.2
			1/5/20	4.4 Quantify market participant costs for implementing USEF interface compatibility.		

5.2.6 WP5 - Trials

Figure 7 below shows the timescale for implementing WP5 and the single associated Project Deliverable that it seeks to address over that period.

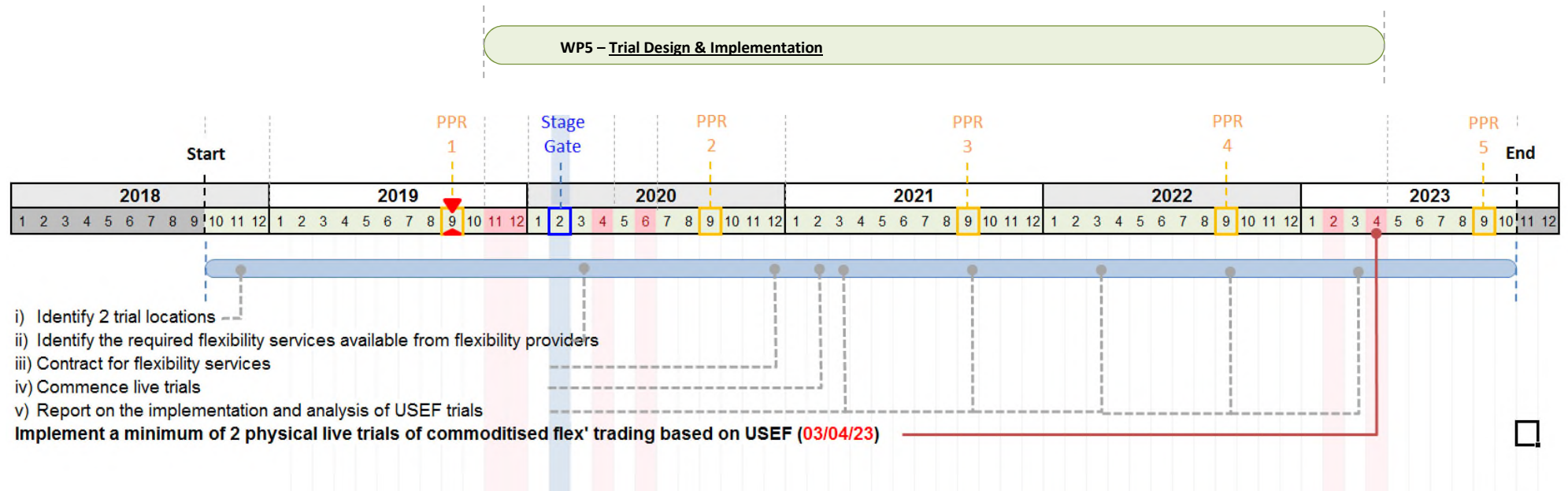


Figure 7: Timeline for implementing WP5

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.

Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	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	1/1/19	5.1 Identify two trial locations.		These will be those parts of the distribution network that are served by either of the following constrained primary substations; - St. Andrews Primary - Leuchars Primary
			1/4/20	5.2 Identify the required flexibility services available from flexibility providers.		
				5.3 Contract for flexibility services.		
				5.4 Undertake live trials.		
				5.5 Report on the implementation and analysis of USEF trials		

5.3 Project Highlights

Table 7 below elaborates the successes already summarised in Section 3.2 – ‘Project Highlights – Concise Summary’

Ref	Deliverable Affected	Summary of Highlight	Further Detail																				
1	Funding Condition	Fully satisfied	All Collaboration Agreements (CA's) were agreed and signed with Partners in January 2019.																				
2	WP1: Stakeholder engagement	Coherent strategy & good progress being made.	<ul style="list-style-type: none"> • ‘FUSION Communications Strategy’; A dedicated strategy is in place. This is regularly reviewed and disseminated during the following meetings; <ul style="list-style-type: none"> - Weekly SPD Communications Team call. - Monthly FUSION Partner call, and - Monthly TEF Project Delivery Board meeting • Events; Physical events attended during the reporting period include; <table border="1"> <thead> <tr> <th>Date</th><th>Event Title</th><th>Location</th><th>Objective</th></tr> </thead> <tbody> <tr> <td>Oct 2018</td><td>LCNI 2018</td><td>Telford</td><td>Promote FUSION to national audience and gathered contact details of interested stakeholders/guests</td></tr> <tr> <td>May 2019</td><td>Utility Week Live</td><td>Birmingham</td><td>Promote FUSION to national audience and gathered contact details of interested stakeholders/guests</td></tr> <tr> <td>May 2019</td><td>All Energy 2019</td><td>Glasgow</td><td>Promote FUSION to national audience and gathered contact details of interested stakeholders/guests</td></tr> <tr> <td>June 2019</td><td>FUSION Launch event⁵</td><td>St. Andrews</td><td>Recruit local trial participants</td></tr> </tbody> </table> 	Date	Event Title	Location	Objective	Oct 2018	LCNI 2018	Telford	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests	May 2019	Utility Week Live	Birmingham	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests	May 2019	All Energy 2019	Glasgow	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests	June 2019	FUSION Launch event ⁵	St. Andrews	Recruit local trial participants
Date	Event Title	Location	Objective																				
Oct 2018	LCNI 2018	Telford	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests																				
May 2019	Utility Week Live	Birmingham	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests																				
May 2019	All Energy 2019	Glasgow	Promote FUSION to national audience and gathered contact details of interested stakeholders/guests																				
June 2019	FUSION Launch event ⁵	St. Andrews	Recruit local trial participants																				

⁵

			Aug 2019	USEF Consultation event #1	Glasgow	Open Consultation on USEF fit to GB
			Aug 2019	USEF Consultation event #2	London	Open Consultation on USEF fit to GB
			Various	EFFS Consultation Workshops	London	Maximise the relevance of EFFS algorithms for adoption by FUSION
			<ul style="list-style-type: none"> Multimedia; Active & ongoing multimedia presence includes promoting FUSION events and recent updates on: <ul style="list-style-type: none"> FUSION website: https://www.SPDERGYNETWORKS.CO.UK/PAGES/FUSION.ASPX Facebook LinkedIn Twitter 			
3	WP2: Flexibility Quantification Reporting	Work progressing according to schedule & budget.	<ul style="list-style-type: none"> Final Flexibility Quantification report anticipated 21st October 2019 (2months ahead of submission due date). Progress to date: <ul style="list-style-type: none"> Customer surveys of existing flexibility complete. Analysis of findings complete Draft sector-specific flexibility reports are now complete Work ongoing to reconcile the 3 draft reports into a single report for submission to Ofgem 			
4	WP3: USEF implementation plan	3months ahead of schedule.	<ul style="list-style-type: none"> USEF Implementation Plans anticipated Dec 2019 (3 months ahead of schedule) This acceleration of WP3 will allow earlier commencement of WP4 & 5 to generate learnings quicker. Progress to date <ul style="list-style-type: none"> USEF Due Diligence study complete and published on FUSION website USEF Consultation Document complete and published on FUSION website USEF Consultation Events complete USEF Open Consultation completed in August 2019 Report and feedback on Consultation responses due for completion in October 2019 			
5	WP4: System readiness	Progress ahead of schedule	<ul style="list-style-type: none"> Platform specification already complete & ratified by SPD business (Sep' 2019) <ul style="list-style-type: none"> This was elaborated with the help of Opus One Solutions 			

			<ul style="list-style-type: none"> - The steps taken to arrive at this technical specification included; <ol style="list-style-type: none"> i. Definition of the business and user cases for the platform ii. Mapping-out of <ul style="list-style-type: none"> • the touch-points that the platform would have in SPD business • user journeys iii. Gap analysis iv. Technical requirements & specification v. A development roadmap • Work is ongoing to collate several existing flexibility contracts that could be synthesized into a template flexibility contract fit for the FUSION trial.
5	WP5: Live Trial	Progress ahead of schedule	<ul style="list-style-type: none"> • Trial sites already identified <ul style="list-style-type: none"> - These are essentially the areas served by the following constrained Primary substations; <ol style="list-style-type: none"> i. St. Andrews Primary ii. Leuchars Primary • Detailed planning is underway to commence preliminary trials as soon as possible <ul style="list-style-type: none"> - Trials will be agile to allow for discrete components/concepts to be trialled and interim learnings generated without having to wait for the full trial to be completed. • This is with a view to share new knowledge as early as possible.
6	TEF Stage Gate preparation	Value-added through professional collaboration	<p>Demonstrable progress made in exploring potential for:</p> <ul style="list-style-type: none"> • Adoption of EFFT forecasting algorithms <ul style="list-style-type: none"> - FUSION has attended various & supported EFFT workshops and responded to multiple consultations to help maximise the extent to which the EFFT algorithms will be adoptable by FUSION. - FUSION has been the only TEF partner to provide SPEN anonymised network data to support in the optimisation of the EFFT solution. - EFFT forecasting tools have been sent to SPD and we are currently live-trialling them in-house to evaluate how well they work with SPD systems. • Joint procurement of trading platform <ul style="list-style-type: none"> - 2 x face to face meetings have taken place between Project FUSION and Project TRANSITION to explore potential for joint procurement of the flexibility trading platform.

			<ul style="list-style-type: none"> - This will continue to be explored, with the findings presented at the Common Stage Gate. • Knowledge-sharing with ENA ON Project <ul style="list-style-type: none"> - A dedicated agenda item is included in each monthly TEF Project Delivery Board (PDB) Meeting for Kyle Murchie to provide an updates on recent progress in the ENA ON Project. - Relevant learnings from FUSION (and the wider TEF consortium) are fed back to the ENA via Kyle Murchie each month. - Common stage gate report currently being drafted for submission to the ENA by January 15th 2020
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Table 7: Project Highlights

5.4 Project Issues

No significant problems have been encountered or identified during this reporting period. *Table 8* below provides more detail on those minor issues already summarised in *Section 3.3 – ‘Project Issues – Concise Summary’*.

Ref	Deliverable Affected	Issue Summary	Further Detail
1	WP2: Flexibility Quantification Reporting	Data Protection policies	<p>In order to quantify the available flexibility in the study area, it is crucial that SPD and our FUSION Partners engage with local customers and start a dialogue</p> <p>Data Protection Policies that SPD adhere to posed challenges to this activity by mandating that prior to undertaking any of the following activities, SPD must first obtain written consent from the stakeholder / customer concerned;</p> <ul style="list-style-type: none"> ▪ inviting stakeholders to attend stakeholder events ▪ introducing stakeholders to Project Partners ▪ disclosing any stakeholder details with our Project Partners, including; <ul style="list-style-type: none"> - their contact details - their identity / location / connection type / any other information we might hold on them <p>This was navigated by laboriously obtaining written consents.</p> <p>Various efforts were made to expedite this process, which included;</p> <ul style="list-style-type: none"> ▪ holding open public events and recruiting signatories on the day ▪ calling key stakeholders to explain situation and seek their cooperation

2	WP2: Flexibility Quantification Reporting	Seasonality of the agricultural sector	<p>The ambitious timescale for completing flexibility site surveys meant that seasonal variations in energy usage and flexibility availability had to be inferred. This challenge was anticipated in advance and there was provision in budget for extrapolative inference from the empirical data collated.</p> <p>Also, during the summer months of the survey, farmers were sometimes too busy to cooperate with surveyors. In those instances, data from previous years was used to infer trends.</p> <p>In both cases, details of the inference methods used will be available in the Flexibility Quantification Report.</p>
3	WP2: Flexibility Quantification Reporting	Limited flexibility	<p>Initial findings from the draft quantification reports would suggest that the flexibility available in the study areas is:</p> <ul style="list-style-type: none"> ▪ Sufficient for the trials to demonstrate live trials of commoditized flexibility trading using USEF. ▪ Less than the target 3MW required to significantly alleviate existing network congestion in the trial area. <p>Considerations for how to increase the amount of available flexibility could include;</p> <ul style="list-style-type: none"> ▪ Exploring public funding that might be available for the installation of flexible low-carbon energy assets. ▪ Encouraging owners of temporary generation sets to compete in the flexibility market.
4	WP3: USEF fit for purpose	Consultation Period	<p>One of the conditions in the FUSION Project Direction was a 3-month open consultation on USEF. Following detailed consideration, the project team took the decision to condense that consultation period to 2 months.</p> <p>A change request for this minor amendment was formally submitted to Ofgem on 02/04/19 (well in advance of the consultation period) and a copy of the submitted request form is provided in <i>Section 14</i> of this report.</p> <p>The rationale for this change was that it would;</p> <ul style="list-style-type: none"> ▪ Maintain the momentum and urgency of the consultation process to encourage early engagement and avoid stakeholder boredom/disengagement ▪ Accelerate interim learnings by allowing earlier commencement of dependent activities ▪ Represent alignment with the practice of the ENA ON Project, which has typically limits the duration of its Open Consultations to 8 weeks⁶.

⁶ E.g. the 2018 Future Worlds consultation.

5	Project Direction	Typo'	It was noted in an email ⁷ to Ofgem on 20/02/19 that page 3 of the Project Directive ⁸ failed to include PassivSystems Ltd in the Partner List. This typo' still requires remediation.
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Table 8: Project Issues

⁷ Further detail of this issue and the communication submitted to regulator is available in *Section 14: Material Change Information*

⁸ https://www.ofgem.gov.uk/system/files/docs/2018/10/fusion_-_direction_amended_09_2018.pdf

6 Progress against Budget

6.1 Assumptions Used & their Limitations

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

6.1.2 Accrued costs

7 Project Bank Account

8 Project Deliverables

Table 9 below provides a comprehensive 'status report' of the progress made to date against each of the Project Deliverables, and indicates next steps.

						Not started	Ongoing	Complete
Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	Evidence required	Status	Progress update		
0	Sign Collaboration Agreements (CA's) with all Project Partners	N/A	1/3/19	0.1 Signed contracts		• Completed January 2019		
1	Report on flexibility quantification in East Fife.	4/12/19	21/10/19	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"> • 3 x sector-specific reports have been drafted and are currently undergoing iterative review and refinement. • Next step is to reconcile the 3 reports into a single report for delivery to Ofgem. • Work progressing in-line with anticipated completion date 		
2	Public consultation on USEF	29/11/19	1/7/19	2.1 Deliver the consultation document on the basis of workshops.		• Completed & published on FUSION website in June 2019		
			1/9/19	2.2 Hold an open consultation for a three 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. 		
			4/10/19	2.3 Report on consultation responses and analysis.		<ul style="list-style-type: none"> • DNV-GL are currently analysing the results from the Open Consultation and drafting this report. • Work progressing in-line with anticipated completion date 		
			11/10/19	2.4 Report on associated changes to USEF implementation plan.		<ul style="list-style-type: none"> • This deliverable is planned to be discharged in the form of a concluding sub-section to the 2.3 report. • Work progressing in-line with anticipated completion date 		
3	USEF implementation plan	2/4/20	31/12/19	3.1 FUSION USEF implementation plan.		<ul style="list-style-type: none"> • Call-off contracts are being drafted to mobilise the DNV-GL to complete this work. • First draft anticipated in November. 		
			31/12/19	3.2 Report on GB specific reference implementation of USEF.		<ul style="list-style-type: none"> • Call-off contracts are being drafted to mobilise the DNV-GL to complete this work. • First draft anticipated in November. 		
4	USEF process implementation	2/6/20	1/3/20	4.1 Provide specification of communication and procurement platform.		<ul style="list-style-type: none"> • Draft technical specification complete for platform • Ongoing discussions with TRANSITION to explore potential for joint procurement exercise 		
			1/3/20	4.2 Provide specification of communication protocols between market participants.		<ul style="list-style-type: none"> • Draft technical specification complete for platform • This will need to be refined following the completion of deliverable 3.1 		
			1/4/20	4.3 Provision of template flexibility contracts.		<ul style="list-style-type: none"> • Project FUSION has access to several template flexibility contracts already • USEF also prescribes some of the key contents for a flexibility contract • Next step will be to synthesise the existing templates with the requirements from USEF to form a template contract for the FUSION trial • This exercise will commence following the completion of deliverable 3.2 		
			1/5/20	4.4 Quantify market participant costs for implementing USEF interface compatibility.				

Not started
Ongoing
Complete

Ref	Project Deliverable	Completion Deadline (Ofgem)	Anticipated Completion Date	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	1/1/19	5.1 Identify two trial locations.		These will be those parts of the distribution network that are served by either of the following constrained primary substations; - St. Andrews Primary - Leuchars Primary
			1/4/20	5.2 Identify the required flexibility services available from flexibility providers.		
				5.3 Contract for flexibility services.		
				5.4 Undertake live trials.		
				5.5 Report on the implementation and analysis of USEF trials		
6	Modelling report on commoditised flexibility benefits for the UK (Imperial College London).	28/2/23	28/2/23	6.1 Academic modelling report on GB flexibility.		
7	Open Networks report in coordination with the ENA Open Networks Programme.	28/2/23	28/2/23	7.1 Report on coordination and hierarchies of control for flexibility, in collaboration with the ENA Open Networks Programme.		
N/A	Comply with knowledge transfer requirements of the Governance Document.	28/9/19	29/9/19	i Annual Project Progress Reports which comply with the requirements of the Governance Document.		• PPR_01 On-target for submission on schedule
		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.		

Table 9: Project Deliverables - Status Report

9 Data Access Deliverables

The 'Publically 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 10 to Table 15 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	FUSION Launch Event	<p>Date & Location: June 2019 @ Old Course Hotel, St. Andrews.</p> <p>Aim: One-day public stakeholder presentation</p> <p>Objectives:</p> <ul style="list-style-type: none"> Promote FUSION Project amongst local stakeholders Recruit potential trial participants Obtain written consents from stakeholders to contact them in future. 	<p>30 attendees.</p> <p>GDPR consent forms signed.</p> <p>Dialogue started with potential trial participants.</p>
2	USEF Consultation Workshops	<p>Date & location:</p> <ul style="list-style-type: none"> Aug 2019 @ TIC Glasgow Aug 2019 @ ENA London <p>Aim:</p> <ul style="list-style-type: none"> 2 x one-day public workshop to explain the USEF Consultation and encourage the public to respond. <p>Objectives:</p> <ul style="list-style-type: none"> Promote FUSION Project amongst local stakeholders Recruit potential trial participants Obtain written consents from stakeholders to contact them in future. 	<p>Circa 30 attendees at each event.</p> <p>GDPR consent forms signed.</p> <p>Dialogue started with potential trial participants.</p>
3	LCNI 2018	FUSION was represented at each of these annual industry events.	Project Fact Cards with details of the Project Website and Email address.
	Utility week live 2019	FUSION Fact Cards were distributed from the SPEN stand and local & national stakeholders were able to ask questions directly to the team. Also, a contact list was created for interested audiences.	
	All Energy 2019		
4	Publications	Articles on Project FUSION have been published on various multimedia platforms and in local St. Andrews media.	This helps raise awareness of the project, particularly locally.

Table 10: Learning Outcomes - WP1

WP2 – Flexibility Quantification Report			
Ref	Activity Summary	Further Detail	Output / Value Delivered
1	3 x draft sector specific report	<p>3 x reports have been drafted that quantify the existing flexibility available in East Fife for the following 3 sectors respectively;</p> <ul style="list-style-type: none"> - Residential sector - Industrial & Commercial sector - Agricultural Sector <p>These reports reflect the culmination of a number of steps, including;</p> <ul style="list-style-type: none"> - Desk-based study of existing flexibility and demographics in East Fife - Site surveys to identify flexibility - Analysis of results and extrapolation to quantify available flexibility across entire study area. 	<p>3 x written reports quantifying the flexibility market value, by sector, in the East Fife study area.</p> <p>The reports tell us:</p> <ul style="list-style-type: none"> - what flexibility is available - where it is - how it could be enhanced - what the market value might be <p>It also makes recommendations for what flexibility to consider using in the trials.</p>
2	Regular WP2 progress calls	Co-ordination and management input from SPD	<p>Continual review of interim outputs to ensure;</p> <ul style="list-style-type: none"> • Alignment with the requirements of Project Directive • Delivery on time and within budget • Avoidance of unnecessary duplication amongst partners
3	Stakeholder engagement	<p>FUSION Launch event in St. Andrews.</p> <p>Objective:</p> <ul style="list-style-type: none"> - To engage with local customers with the aim of recruiting candidates as potential trial participants - To capture their details - To gain their voluntary consent to our Data Protection Policy 	<p>We engaged with dozens of local customers whom were happy to provide us with their contact details and agree to our Data Protection Policy.</p> <p>This will make subsequent engagement with them very easy.</p>

Table 11: Learning Outcomes - WP2

WP3 – USEF Fit for UK			
Ref	Activity Summary	Further Detail	Output / Value Delivered
1	USEF Due Diligence Report	This report was drafted by DNV-GL and provided a comprehensive risk assessment to evaluate the question; <i>‘Is USEF fit for purpose to be implemented in the UK?’</i> and <i>‘what issues would have to be addressed?’</i>	<p>It verified the findings of preliminary studies, which concluded that there were no significant obstacles to the implementation of USEF in GB.</p> <p>It also formed the basis of the Consultation Document (see below).</p> <p>It was published on the FUSION website and is free to download.</p>
2	USEF Consultation Document	<p>The objective of the Consultation Document was to distil the key findings of the Due Diligence report (above) into a series of key questions that the industry would have to be consulted on in order to plot a course for successfully implementing USEF in the UK.</p> <p>In the elaboration of this Consultation Document, DNV-GL consulted with key industry stakeholders (including the ENA & National Grid) to capture their viewpoints prior to the Document being published for Open Consultation.</p>	This document was published on the FUSION website in July 2019 and it formed the basis for the Public Consultation (below).
3	8-week Public Consultation on USEF	<p>This Pubic Consultation was announced on various multimedia platforms including;</p> <ul style="list-style-type: none"> - Twitter - Facebook - FUSION website - ENA website 	<p>The workshops were both well-attended and helped raise awareness of Project FUSION generally.</p> <p>The Consultation generated a significant response and captured the industry’s views on key questions which are critical to understanding how USEF could best be implemented in the UK.</p>

		Two public workshops were also organised in Glasgow and London to guide stakeholders through the Consultation Document and answer any questions that they might have.	
4	Regular reviews of interim outputs and weekly WP3 progress calls	Co-ordination and management input from SPD	Continual review of interim outputs to ensure; <ul style="list-style-type: none">- Alignment with the requirements of project Directive- Delivery on time and within budget

Table 12: Learning Outcomes - WP3

WP4 – Enabling Technologies			
Ref	Activity Summary	Further Detail	Output / Value Delivered
1	Platform Specification	<p>In order to help SPD to create a Technical specification for the Flexibility Trading Platform, OpusOne Solutions were appointed. Their task was to complete a 2 stage report culminating in a technical specification.</p> <p>Phase 1 report: Business Use Case</p> <ul style="list-style-type: none"> Detailed review of the USEF requirements to understand the role of the Flex' Trading Platform, its minimum required functionality. Mapping of SPD business functions, showing all the internal touch points that would need to interact with a USEF-compliant Flex' Trading Platform Mapping of 'user journeys' showing data exchange interfaces. <p>Phase 2 report: Technical Specification</p> <ul style="list-style-type: none"> Gap analysis to understand; <ul style="list-style-type: none"> How much of the required functionality already exists in-house? How much functionality is still required? Technical specification for the IT systems necessary to fill the gaps required to enable the FUSION trial. Procurement 'road-map' suggesting the route of least-regret investment that would enable agile trials to commence as early as possible whilst future-proofing the specification to accommodate changes that might arise from; <ul style="list-style-type: none"> <u>USEF Implementation Plan</u>; the completion of which will take into account the findings of the USEF Public Consultation that concluded in August 2019. Ongoing <u>Joint Procurement Discussions</u> with TEF Other uncertainties 	<p>Both reports required comprehensive stakeholder engagement with a SPD staff from across the business.</p> <p>This was a very valuable exercise in promoting the FUSION project internally and ensuring that the whole business was actively being consulted in specifying a solution that would work for the FUSION trial and that could be adopted into BaU.</p> <p>The elaboration of these two reports provided an auditable and objective analysis of the FUSION IT requirements, which culminated in a Technical Specification that has business sign-off.</p>
2	Procurement Plan	<p>With the 'Platform Specification' and 'Procurement Road-Map' both now ratified internally by the SPD business, a 'Procurement Plan' was drafted to outline;</p> <ul style="list-style-type: none"> The proposed steps that would be necessary in order to procure the IT solution via a competitive tender process. 	<p>By articulating the step-by-step procurement process that FUSION seeks to implement – this plan provides an excellent basis for</p>

		<ul style="list-style-type: none"> The timelines associated with that tender process <p>The plan is designed to allow for the 'Best and Final Offers' (BAFO's) from tendering parties to be received in time for the Common Stage Gate review in February 2020.</p> <p>No platform procurement is allowed to take place prior to the completion of the Common Stage Gate, but the aim of the procurement plan is to bring the FUSION project to the position whereby once the Common Stage Gate review is completed – the IT Solution can be procured rapidly to enable the earliest commencement of trials.</p>	<p>discussions with SSEN to explore the potential for Joint Procurement exercises between FUSION and TRANSITION.</p> <p>The tender responses anticipated in Q1 of 2020 will also provide valuable learnings for reflection upon during the February Common Stage Gate.</p>
3	Joint Procurement (TEF)	<p>SPEN and SSEN meet regularly to discuss the potential for Joint Procurement of the Trading Platforms required for their respective trials.</p> <p>These discussions are ongoing, and the development of the Technical Specification and associated Procurement Plan for FUSION Platform provides a significant aid to that dialogue by helping to;</p> <ol style="list-style-type: none"> Identify the extent of overlap between the technical requirements of the two projects (via review of the roadmap). Visualise the planned procurement process that FUSION seeks to implement and consider the potential for any joint exercises with SSEN. 	<p>Sharing redacted versions of the SPEN reports described above has helped both parties to understand the extent of overlap of our respective technical requirements and procurement processes.</p> <p>Several face to face Joint Procurement meetings have been held already and more are planned.</p>
3	EFFS forecasting discussions	<p>SPEN have attended various workshops, provided network data and responded to multiple consultations on the EFFS forecasting tool.</p> <p>This has been primarily with the aim of ensuring, where practicable, that;</p> <ul style="list-style-type: none"> the FUSION Platform will be able to adopt the algorithms used by the EFFS forecasting tool the EFFS forecasting tool is designed to be relevant to the needs of FUSION 	<p>Regular workshop attendance & correspondence with WPD.</p> <p>SPEN personnel are currently trialling the deployment of the EFFS forecasting tool in-house to assess its ease of use on our systems.</p>

Table 13: Learning Outcomes - WP4

WP5 - Trial			
Ref	Activity Summary	Further Detail	Value Delivered
1	Identify 2 trial locations	<p>The trials will seek to alleviate constraint of the following Primary Sub-stations;</p> <ul style="list-style-type: none">▪ St. Andrews Primary▪ Leuchars Primary <p>We therefore have certainty that the trial locations will focus on those areas served by the above Primary Sub-stations;</p>	Network layout maps have been provided which define the extents of the areas served by these Primaries and inherently define extents of the trial areas.

Table 14: Learning Outcomes - WP5

WP6 - Dissemination			
Ref	Activity Summary	Further Detail	Value Delivered
1	FUSION Launch event in St. Andrews	Public event with circa 30 attendees. Presentations were provided from Project Partners to help educate stakeholders on the aims and objectives of the FUSION Trials and how they could participate.	Increased awareness of the Project, especially amongst local stakeholders. Introduced the exciting concept of flexibility trading and the benefits that it could offer to participants and local customers.
2	3 x draft sector-specific reports quantifying flexibility in North East Fife	These reports, though not yet complete, provide some indication of the extent of flexibility available in the study area. Initial findings are due to be discussed with project Partners in Q4 2019. This qualitative analysis of existing available flexibility (albeit still draft) will inform the design of the FUSION trial.	Once approved, these reports will be published on the FUSION website to inform the market.
3	USEF Due Diligence Report	This report investigates what barriers might impede the adoption of USEF in GB.	This analysis has been published on the FUSION website for free download & comment.
4	USEF Consultation Document & Public Workshops	By preparing & publishing this Consultation Report on the FUSION website as part of an 8-week Public Consultation, FUSION has allowed the public to be consulted on the key questions surrounding USEF's suitability for adoption in GB.	With the consultation now successfully concluded – the responses received are being reviewed and analysed for feedback and incorporation into the USEF Implementation Plan
6	Technical Specification of FUSION platform	This has been developed following a comprehensive review of; <ul style="list-style-type: none"> ▪ The requirements of USEF ▪ SPD's existing IT and OT capabilities and aspirations ▪ TEF outputs and potential for joint procurement 	The articulation of this specification 8months ahead of schedule provides a useful basis to help inform discussions with TEF partners to explore joint procurement opportunities.

Table 15: Learning Outcomes - WP6

11 IPR

Project FUSION complies with the Ofgem default position regarding the IPR ownership and no further IPR has been generated 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. This is regularly updated during our weekly progress calls, which have been undertaken since the start of project. This approach allows new risks to be highlighted and managed in a timely and efficient manner.

12.1 Technical Risks

12.2 Procurement Risks

12.3 HSE and Operational Risks

12.4 Project Management Risks

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:  JAMES

Name (Print): James Yu

Title: Future Networks Manger

Date: 27th September 2019

Signature: 

Name (Print): Ehsan Mian

Title: Senior Innovation Engineer

Date: 27th September 2019

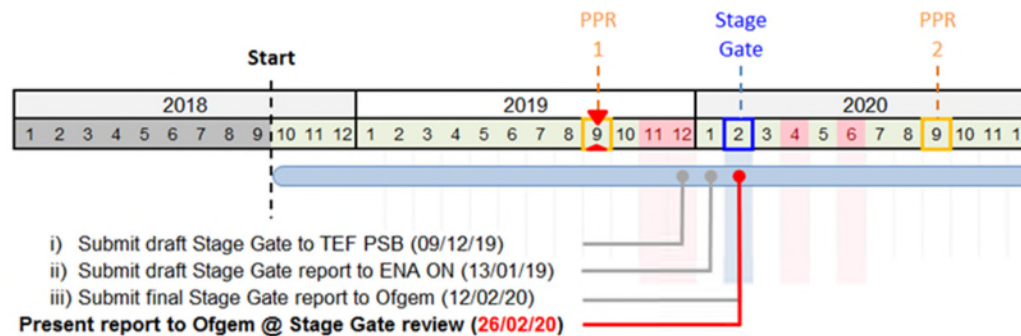
14 Material Change Information

During the reporting period, there weren't any material changes identified to the project.

15 Other

15.1 TEF Collaboration

Collaboration with TEF Partners has been progressing well and all three Licensees are currently drafting a formal report for submission to the Regulator in advance of the TEF Stage Gate Review due in February 2020. The figures below indicate the timescale for the completion of that report and the Stage Gate criterion that it will report upon.



Appendix 1 - Project Budget

Appendix 2 - Monthly Expenditure