

# Intraflex

**NIA 6 Monthly Project Progress Report**  
October 2020 to March 2021



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# Contents

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|   |    |
|---|----|
| 1. Executive Summary                              | 4  |
| 2. Project Manager's Report                       | 7  |
| 3. Progress against Budget                        | 23 |
| 4. Progress towards Success Criteria              | 24 |
| 5. Learning Outcomes                              | 25 |
| 6. Intellectual Property Rights                   | 26 |
| 7. Risk Management                                | 27 |
| 8. Consistency with Project Registration Document | 30 |
| 9. Accuracy Assurance Statement                   | 31 |
| Glossary  | 32 |



# 1. Executive Summary

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The IntraFlex project is funded through Ofgem's Network Innovation Allowance (NIA). IntraFlex was registered in October 2019 and will be complete by November 2021.

The IntraFlex project aims to understand how to deliver a link between Distribution Network Operator (DNO) procurement activity and Balance Responsible Party (BRP) imbalance positions. It will test a short-term market for DNO flexibility which actively accounts for the imbalance it creates in the electricity market. The project is looking to lower supplier exposure to imbalance costs and decrease the costs of providing flexibility in the long run.

Whilst this is primarily a technology and process trial, it is initially focusing on areas where Constraint Management Zone (CMZ) procurement is already underway. This should maximise any network benefit and facilitate any potential roll out to Business as Usual (BaU).

The project is using a market platform developed and operated by NODES. This has and will continue to be developed as the trial continues. In addition, Western Power Distribution (WPD) developed a link between the platform and existing metering functionality.

This report details progress of the project, focusing on the last six months, October 2020 to the end of March 2021.

## 1.1. Business Case

The current method of procuring DNO flexibility services does not actively account for the imbalance caused by the action. This simplifies procurement from the perspective of the buyer of flexibility but adds complexity on the seller side.

For many participants this isn't managed directly and is accounted for through loose supply contracts, pushing a poorly quantified risk to the Balance Responsible Party (BRP). Whilst volumes of flexibility have been low this has been seen as a viable method of managing the risk. However, as volumes increase, the associated risk also increases.

There is a risk that reflecting the true cost further increases the costs of flexibility in the short term, as costs that are currently borne by BRPs across whole portfolios are allocated to specific actions. However, this should create a more cost reflective system that reduces overall risk for participants which should in turn reduce costs in the long run.

If the problem were solved, the risk associated with the provision of flexibility services could be reduced. In the long run we would expect to see increased liquidity within DNO Demand Side Response (DSR) markets and a corresponding reduction in pricing.

This project is seeking to provide better tools for managing the imbalance risk, via a direct rebalancing tool (via integration to the intraday markets) as well as information sharing at the day ahead stage. This should minimise the risk (at the intraday timescale) or provide the means for mitigation (at the day-ahead timescale) for the BRP. Reducing this risk should encourage participation from BRPs, as well as make it easier for non-BRPs to work alongside the BRP.

It is anticipated that the value of DNO DSR could reach £12.1m/year by the end of ED1 (£3.38m/year within WPD). If the increased liquidity drove a 10% saving in this value, the savings would be £340k/year across WPD or £1.21m/year across the UK.

- Base cost = 12.1m/year
- Method cost =  $12.1 * 0.9 = £10.9\text{m/year}$
- Financial benefits = £1.21m/year



The costs of roll out across the UK would be limited. This would simply require each DNO licencing the required platform which is a commercial product from NODES.

## 1.2. Project Progress

This is the third progress report covering progress from October 2020 to March 2021. This phase has focussed on the identifying the learnings from the first phase of the live trials then developing the improvements and sub tests designs for the Phase 2 of the live trials during spring/summer 2021.

This can be broken down into the below tasks (and is further detailed in section 2.2);

**Phase 1 Trial Learnings and Dissemination;** Review and understand the learnings achieved during the phase 1 live trials. Stakeholder and participant communication and feedback on learnings and proposals for the Phase 2 live trials.

**Audit Targeting;** Commence some internal validation of what might be needed in terms of an audit process for measurement of events. We intend to provide some reflections on this as part of project closure as it is part of existing work being undertaken as part of business as usual under Flexible Power.

**Phase 2 Live Trials Design;** Develop the phase 2 live trials, identify and implement system improvements needed and implementation of UCR compliance.

The next tasks for the project during spring and summer 2021 is to launch and implement the more detailed Phase 2 Live trials with the aim of procuring flexibility intraday.

## 1.3. Project Delivery Structure

### 1.3.1. Project Review Group

The IntraFlex Project Review Group meets on a bi-annual basis. The role of the Project Review Group is to:

- Ensure the project is aligned with organisational strategy.
- Ensure the project makes good use of assets.
- Assist with resolving strategic level issues and risks.
- Approve or reject changes to the project with a high impact on timelines and budget.
- Assess project progress and report on project to senior management and higher authorities.
- Provide advice and guidance on business issues facing the project.
- Use influence and authority to assist the project in achieving its outcomes.
- Review and approve final project deliverables; and
- Perform reviews at agreed stage boundaries.

### 1.3.2. Project Resource

The original project scope was proposed by NODES building on their experience in other European countries. WPD subsequently formed a project team led by NODES to deliver the IntraFlex project, with the assistance of Smart Grid Consultancy (SGC) who are assisting with the Project management aspects of the project and providing subject matter expertise.

One key subcontractor continued to be used in this phase of the project: Kiwi Power to help manage the integration with existing Flexible Power metering systems.



## Project Partners

|   |   |
|---|---|
|  | <p><b>NODES</b> developed and deployed the platform. This is based on their experience of delivering flexibility markets across Europe. Platform improvements developed as part of their existing R&amp;D program and will not be funded under the NIA.</p> |
|  | <p><b>Smart Grid Consultancy:</b> provided detailed technical assistance on service design, building on previous trial learning and participant recruitment support.</p>  |
| <h2>Project Sub Contractors</h2>  |   |
|   | <p><b>Kiwi:</b> Delivered the system build requirements for baselining, metering and links to the NODES system.</p>   |

### 1.4. Procurement

No procurement of project partners was carried out for the project delivery.

We have however completed 224 trades procuring 45.32 ½ hourly MW volume of flexibility with offers from 3MW down to 10kW and traded at prices £180 down to £120/MW/HH via the NODES marketplace.

### 1.5. Project Risks

A proactive role in ensuring effective risk management for IntraFlex is taken. This ensures that processes have been put in place to review whether risks still exist, whether new risks have arisen, whether the likelihood and impact of risks have changed, reporting of significant changes that will affect risk priorities and deliver assurance of the effectiveness of control.

Contained within Section 7 of this report are the current top risks associated with successfully delivering IntraFlex as captured in our Risk Register. Section 7.2 provides an update on the most prominent risks identified at the project bid phase.

### 1.6. Project Learning and Dissemination

Project lessons learned and what worked well (and less so) are captured throughout the project lifecycle. These are captured through a series of on-going reviews with stakeholders and project team members and will be shared in lessons learned workshops at the end of the project. These are reported in Section 5 of this report.

The key dissemination activities held in this reporting period have focussed on communicating the learnings and gaining participants feedback from the Phase 1 live trials. We have also engaged the potential Phase 2 participants with the proposed design of the Phase 2 live trials and commenced on-boarding.

These activities were:

- Phase 1 Live Trials
  - IntraFlex Stakeholder end of trials feedback roundtable
  - Completion of Phase 1 via LinkedIn, Email, Websites, Energyst
  - IntraFlex Phase 1 Learning Webinar
  - IntraFlex presentation WPD's Innovation Showcase and at Solar Storage Live
- Phase 2 Live Trials
  - Webinar - stakeholder design review and feedback.
  - Webinar - detailed trials plans stakeholder cascade.
  - Expressions of Interest Communication, LinkedIn, Email, Websites, Energyst.
  - Phase 2 Tests NODES Platform development demo to stakeholders
- Ongoing 1 on 1 FSP conversations guiding participants through the onboarding process and
- Industry wide promotion of the trials, via LinkedIn, email distribution lists, industry newsletters and targeted communications.



## 2. Project Manager’s Report

### 2.1. Project Background

IntraFlex aims to understand how to deliver a link between DNO procurement activity and Balance Responsible Party (BRP) imbalance positions.

As such the project is looking to trial a short-term marketplace for the procurement of DNO flexibility. The original plan was to trial an active rebalancing link to the Nord Pool intraday market as well as an information exchange with day-ahead markets. As detailed in the previous report the active rebalancing link was removed from the scope of this project due to feedback from market participants and the perception that at the moment it would be of limited value.

The value of procuring services in the short term is also being investigated, as it is hoped this can facilitate the participation of new assets.

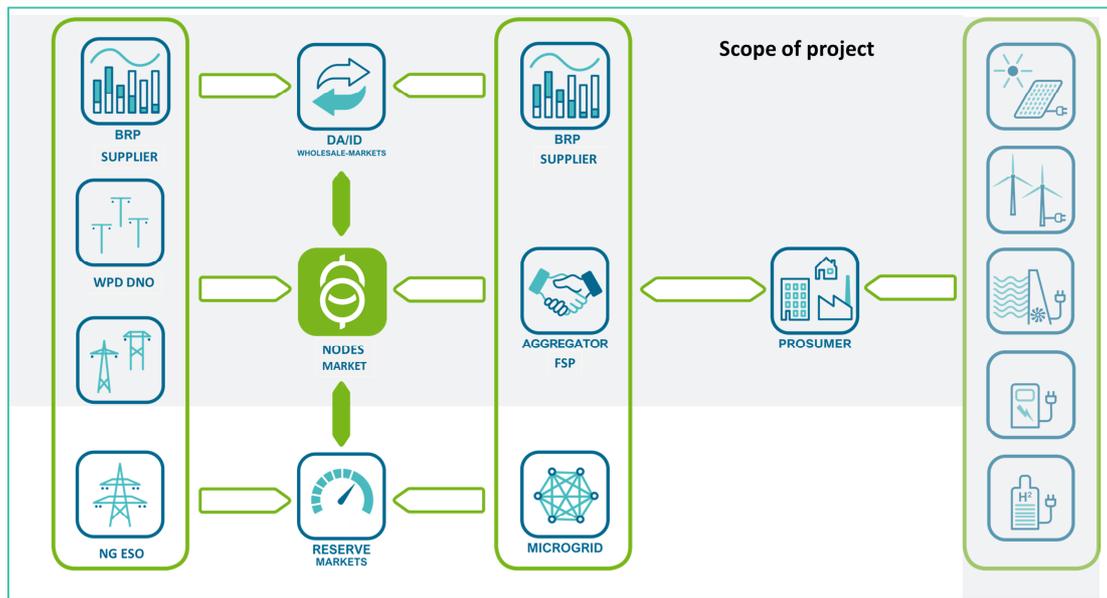


Figure 2-1: Scope of IntraFlex

The trial is broken into five work packages based around two trials. These trials will consist of an initial test of NODES' ShortFlex service for DNO flexibility, followed by a more comprehensive trial with flexibility requirements being signposted then subsequently confirmed Intraday.

| Activity  | Timeline |        |        |        |        |        |        |        |        |        |        |        |        |
|---|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|   | Oct-19   | Nov-19 | Dec-19 | Jan-20 | Feb-20 | Mar-20 | Apr-20 | May-20 | Jun-20 | Jul-20 | Aug-20 | Sep-20 | Oct-20 |
| WP1 PM and reporting                                  |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP2 Detailed Stakeholder Engagement and Market Design |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP3 NODES Build                                       |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP4 WPD Build   |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP5 Trial   |          |        |        |        |        |        |        |        |        |        |        |        |        |
|   | Nov-20   | Dec-20 | Jan-21 | Feb-21 | Mar-21 | Apr-21 | May-21 | Jun-21 | Jul-21 | Aug-21 | Sep-21 | Oct-21 | Nov-21 |
| WP1 PM and reporting                                  |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP2 Detailed Stakeholder Engagement and Market Design |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP3 NODES Build                                       |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP4 WPD Build   |          |        |        |        |        |        |        |        |        |        |        |        |        |
| WP5 Trial   |          |        |        |        |        |        |        |        |        |        |        |        |        |

Figure 2-2: Project Timeline

The objectives of the project are to develop learning on;



- The operability of short-term flexibility markets
- The value of increased information at the day ahead stage to suppliers
- The value of an integrated link for rebalancing in the intra-day market.

The success criteria of the project are;

- Development of a UK Market design for short term flexibility market that reflects imbalance costs
- WPD access to ShortFlex products that have the potential to benefit the distribution network
- Procurement of ShortFlex via the NODES platform
- Demonstration of services linked to the ShortFlex market that limit supplier exposure to imbalance costs
- Delivery of the project on time and on budget.

The work packages are:

### **WP1 Project Management and Reporting**

Led by SGC, this work package will covers the management of the project and includes the maintenance of the necessary logs as well as the project reporting. This runs throughout the project. NODES and WPD will feed into this work package.

The key outputs include monthly project management reports (including the latest logs), 6 monthly project progress reports, project review groups and the final closedown report.

### **WP2 Detailed Stakeholder Engagement & Market Design**

This joint work package was aimed at specifying and verifying the market design for the project and is primarily aimed at understanding current processes for the handling of imbalance risk as well as the systems in place to mitigate them.

The verification has been via extensive engagement with potential stakeholders to refine the proposed market design and validate assumptions and value flows.

The key outputs of this work package included:

- 1) An initial market design document,
- 2) Detailed feedback on this design
- 3) A final Market design and technical requirement specification documents.
- 4) Expressions of interest for participation
- 5) There was a go/no-go stage gate at the end of this work package which will consider the viability and potential value of the market design proposed.

### **WP3 NODES System & Process Build**

This work package was led by NODES and built out the technology platform to help deliver the trial. It is split into 3 phases.

- WP3a – Implementation of ShortFlex at WPD
- WP3b – Implementation of Wholesale Intraday rebalancing
- WP3c – Investigation into ESO integration



## **WP4 WPD System & Process Build**

This work package is led by SGC and aimed to ensure that WPD has the required systems and processes to utilise the NODES marketplace effectively. Including the design of new Payment Mechanics, the build of a link between the NODES platform and WPD dispatch processes, a review of procurement law and analysis on the ability to target future audits with existing WPD data.

The outputs of the work package will include a defined contractual relationship with NODES and participants, a live working link to the NODES platform, a procurement review document highlighting the viability of a short-term marketplace and an audit targeting tool. As detailed above this is part of some ongoing work in business as usual and we will report back on this as part of the closure of the project with some initial thoughts.

## **WP5 Trial**

This work package will be led by SGC and is aimed at delivering a trial of the developed tools. The trial will actually be split into two sub-trials: an initial Phase 1 - ShortFlex trial and a more comprehensive Phase 2 - intraday trial.

Alongside each trial, significant stakeholder engagement will be required and following each trial, a summary learning report will be produced.

## **2.2. Project Progress**

### **2.2.1. Work Package 1- Project Management and Reporting**

#### **Progress within this Reporting Period**

This work package runs for the duration of the project and looks to ensure the project is running smoothly and is progressing adequately. This also looks to track and manage risks to maximise the change of successful delivery. Key elements of this are mentioned in Sections 3-7.

#### **Next steps**

This work package will continue for the duration of the project.

### **2.2.2. Work Package 2: Detailed Stakeholder Engagement & Market Design**

#### **Progress within this reporting period**

This work package has now completed with the key outputs including; completion of the final [Market Design](#) document and [Technical Requirement Specification](#) document.

Both of these documents were reviewed during the Phase 1 learnings stage with no adjustments seen to be required.

### **2.2.3. Work Package 3: NODES System & Process Build**

#### **Progress within this reporting period**

The first phase of this work package has now been completed with the live market platform used during the Phase 1 live trials. WPD were able to procure flexibility closer to real-time than the current Flexible Power process.

This work package has now moved on to the development and implementation of the improvements identified as part of the learnings from the phase 1 live trials.



**NODES MARKET PLATFORM**  
**Project specific development work for Phase 2**

During Phase 1 participants suggested a number of platform improvements. WPD/SGC also identified a number of platform features that would be needed to support the Phase 2 trial. The features developed by NODES for Phase 2 are listed below.

| Platform Area              | Development  |
|----------------------------|--|
| Posting orders             | Ability to post multiple orders at once  |
|                            | An all or nothing order type   |
|                            | Ability to edit an existing order  |
|                            | Restriction so that it is possible to place orders only in an orderbook that corresponds to a congestion zone where the flexibility service provide has assets |
|                            | Restriction so that orders can only be placed for periods where a baseline is available  |
| Notifications              | Notifications sent via the platform to users, when WPD posts/edits bids or publishes information required by the UCR   |
| Settlement                 | Pricing on an hourly basis rather than half hourly   |
| Filtering orders and trade | Ability to “jump” to a selected day when viewing market orders   |
|                            | Ability to sort the order/trades by date, volume, price in ascending/descending order  |
|                            | View that displays all orders in all zones   |
| Market opening time        | Setting that can be altered by WPD, enabling Phase 2 opening 7 days ahead  |
| Statistics for WPD         | Statistics (anonymous and aggregated) to enable WPD to assess the effectiveness of notifications   |

Table 2-1: Development work for Phase 2

NODES also implemented a number of process improvements, in response to Phase 1 participant suggestions and WPD needs for Phase 2. These included:

- Alignment of participant onboarding steps and terms and conditions (NODES Rulebook) with UCR requirements
- More frequent settlement reports
- Streamlined and standardised communication to platform users in the event of unplanned downtime
- Clarifications where detail was missing in operational guidance documentations, including on time zones and dispatch notifications

**Next steps**

Conclude the development of the initiatives identified by participants during phase 1 live tests and the features required by WPD for the Phase 2 trials and rollout to the live market platform.



## 2.2.4. Work Package 4: WPD System & Process Build

### Progress within this reporting period

The first phase of this work package has now been completed with the metering API, Baseline and Payment Mechanics developed and in use by participants in conjunction with the NODES Market Platform.

This work package has now moved on to develop and implement the improvements identified as part of the learnings from the Phase 1 live trials and to reflect the design of the Phase 2 live trials.

### Project Specific Development work

WPD development work is focussing less on participant interface, and more on how WPD interacts with the marketplace. For this phase it includes the building of an API to allow easier provision of multiple daily interactions to the NODES market platform.

In simple terms this API will enable the batch upload of multiple daily bids at differing volumes and values by utilising the ability to link cloud-based data to the NODES platform reducing the number of man hours needed to manage the trial.

### Next steps

Completion of the bidding AI development and user testing in readiness for the Phase 2 Live trials commencing at the start of May 2021.

## 2.2.5. Work Package 5: Trial

### Progress within this reporting period

The first live trial phase of this work package was completed at the end of October 2020. The project has now moved into the scoping, designing, developing updated systems and communicating the second phase live trials which are due to commence during May 2021.

Having now established the technical robustness of the software and demonstrated the ability of FSPs to set up and use it, the Phase 2 tests will seek to determine the optimal usage patterns to encourage trading of flexibility and grow the liquidity on offer. For this reason, we will be attempting to encourage FSPs to make proactive offers on the platform as opposed to relying on them being able to respond to bids placed by WPD.

The following information, pertaining to what has been delivered during this reporting timescale, will be broken into two high level sections.

- Phase 1 Live Trials – Sub Tests, FSP Participation & Flexibility procured and dissemination.
- Phase 2 Live Trials planning.

### Phase 1 Live Trials - Sub Tests

**Test 0 Technical Proving;** This initial 'pre-trial' test was intended to facilitate non-market responses to the system to ensure that everything was set up correctly and working as intended. This test was compulsory for all participating FSPs and required an individual test for each to be scheduled at a mutually convenient time.

To ensure that this could be achieved without other FSPs seeing the published requirement and bidding it was necessary for each FSP to submit an on offer against which WPD bid. In order to facilitate this, each FSP confirmed when they were ready to undertake a test and correspond with the team running the trial to agree a set period along with price and capacity. Once matched on the system the FSP completed the event to ensure end to end test including settlement and payment.



This successfully ran for 2 weeks with some API & metering issues identified by FSP's with the main learning being that we needed to be more prescriptive with the drop-dead date for completing this test with the FSPs.

**Test 1 Basic Function and FSP Interaction;** The first full test simply aimed to confirm that the FSPs who have enrolled are comfortable with the platform and the procedure to submit an offer, and that the assumptions around baselines etc. work as intended.

We carried out analysis to inspect the relationship between forecast and actual baselines at the event start, as well as the delivery performance from participants and systems function fitness for purpose.

This test was live for 2 weeks with WPD publishing 7.3MW of ½ hourly flexibility requirements and successfully trading 4.9MW of ½ hourly flexibility, 2.4MW of ½ hourly flexibility was not taken up. It was seen that requirements over 2MW cleared quickly.

**Test 2 – Speed of response to order requirements;** Based on the assumption that £300 MWh would be an acceptable incentive then this test was intended to see how quickly we got responses or whether we ended up with some requirements expiring on the system unfulfilled.

These tests were published competitively and offers matched with WPD bids on a first come first served basis. All FSPs had equal opportunity to respond to WPD bids as a notification of the bid being published on NODES was issued via a group email dispatch.

It was desirable to WPD to see responses from multiple FSPs to ensure that it is fit for purpose across the wider participation group rather than just one or two.

This test was live for 2 weeks with adjustment in the way in which pricing was defined. WPD published 23.15MW of half hourly flexibility requirements and successfully traded 17.6MW of ½ hourly flexibility, 5.5MW of ½ hourly flexibility was not taken up.

There were 2 potential outcomes from the test:

- Outcome A – limited bids or no bids received. If this is the result, then we will commence to test 3.
- Outcome B – majority of capacity is fulfilled within 24 hrs of publication. If we find this happens, it would be reasonable to regard this as the limit of the learning for Test 2 and a successful result would enable advancing straight to test 4.

The outcome of this test was 'B' so the project progressed directly to test 4.

**Test 4 – Profiled Capacity linked to pricing;** By leading the market and publishing requirements WPD were looking to establish the principles through which FSP can respond to a meritocracy, linked to the network needs. The service pricing, instead of being linked to any time influence, showed different values on offer during each ½ hour directly correlating to the capacity needed.

During this test the volume posted at peak periods were initially placed at higher values and were then adjusted each time a partial offer was received. This in effect meant the price posted was adjusted down to reflect the reducing volume of the remaining capacity.

In theory if price is a critical sensitivity, then this method should fill the requirements quicker with the highest prices secured by first bids. While we anticipated that this would ultimately create a service that helped fulfil a profiled delivery over a day, we would have liked to have seen if there were any specific patterns in bidder behaviour.

This test was live for 2 weeks with variable pricing, with times of more volume attracting higher prices. Higher volumes were uploaded at more variable times to understand the flexibility of assets.



WPD published 112.88MW of ½ hourly flexibility requirements trading 22.49MW of ½ hourly flexibility with 90.41MW of ½ hourly flexibility not taken up.

Participants tended towards higher pricing (a greater number of higher priced bids were accepted than lower priced ones), other factors such as volume and timing seemed to be important. This would suggest that the reference price (300 GBP/MW/hour) around which WPD placed bids during the trial at most times met or exceeded the minimum price required by the various technologies that took part.

### **Phase 1 Live Trials – FSP Participation and Flexibility procured**

During the live trials we had 8 FSP’s registered to take part with 2 unfortunately needing to withdraw before the trials actually commenced. 6 FSP’s were therefore active at various times across the live trials successfully placing offers to WPD bids on the NODES market platform.

We completed 224 trades procuring circa 45MW (½ hourly) with offers from 3MW down to 10kW and traded at prices £180 down to £120/MW/HH.

Reviewing the number and volumes of bids posted by WPD that were fulfilled in Phase 1 it can be seen that overall (Table x below);

- 1/5th of the bids posted were fulfilled which equated to 1/3rd of the volume.
- There was greater take up of the bid volume bid bands
  - 10kW→49 kW,
  - 50kW→99kW,
  - 750kW→999 kW
  - above 2MW getting the most take up.
- There was average take up of the bid volume bands
  - 500kW→749kW
  - 1MW→2MW
- There was little interest in the following bid volume bands despite WPD posting over 110 bids
  - 100kW→249kW
  - 250kW→499kW

| Phase 1 Tests Bidding Outcomes       |                    |       |              |              |                   |                                       |            |                             |            |                              |
|--------------------------------------|--------------------|-------|--------------|--------------|-------------------|---------------------------------------|------------|-----------------------------|------------|------------------------------|
| Bid Size Band (kW)                   | No. of Bids Posted | %     | Min Bid (kW) | Max Bid (kW) | Total Volume (kW) | No. of Complete Volume Fulfilled Bids | %          | Total Volume Fulfilled (kW) | %          | No. of Partial Volume Offers |
| <10                                  | 5                  | ▼ 2%  | 2            | 7            | 25                | 1                                     | ▼ 20%      | 4                           | ▼ 16%      | 25                           |
| 10 - 49                              | 14                 | ▼ 5%  | 10           | 49           | 454               | 11                                    | ▲ 79%      | 387                         | ▲ 85%      | 111                          |
| 50 - 99                              | 19                 | ▼ 7%  | 50           | 94           | 1,609             | 3                                     | ▼ 16%      | 538                         | ► 33%      | 18                           |
| 100 - 249                            | 57                 | ▲ 21% | 100          | 231          | 8,675             | 1                                     | ▼ 2%       | 200                         | ▼ 2%       | 10                           |
| 250 - 499                            | 54                 | ▲ 19% | 250          | 480          | 19,879            | 7                                     | ▼ 13%      | 2,650                       | ▼ 13%      | -                            |
| 500 - 749                            | 45                 | ▲ 16% | 500          | 740          | 25,249            | 11                                    | ▼ 24%      | 5,950                       | ▼ 24%      | -                            |
| 750 - 999                            | 32                 | ► 12% | 750          | 975          | 27,187            | 10                                    | ▲ 31%      | 8,200                       | ▲ 30%      | -                            |
| 1,000 - 1,499                        | 33                 | ► 12% | 1,000        | 1,474        | 38,971            | 8                                     | ▼ 24%      | 9,993                       | ▼ 26%      | -                            |
| 1,500 - 1,999                        | 13                 | ▼ 5%  | 1,500        | 1,810        | 21,196            | 4                                     | ► 31%      | 6,400                       | ► 30%      | -                            |
| >= 2,000                             | 5                  | ▼ 2%  | 2,000        | 4,000        | 13,000            | 4                                     | ▲ 80%      | 11,000                      | ▲ 85%      | -                            |
| <b>Totals</b>                        | <b>277</b>         |       |              |              | <b>156,245</b>    | <b>60</b>                             | <b>22%</b> | <b>45,322</b>               | <b>29%</b> | <b>164</b>                   |
| <b>Total Number of Market Offers</b> |                    |       |              |              |                   |                                       |            |                             |            | <b>224</b>                   |

Table 2-2: Phase 2 Test Bid Outcomes



On reviewing the delivery windows, of the bids posted by WPD that were fulfilled in Phase 1, it can be seen that there were specific times of day when we achieved good fulfilment.

During phase 1 all delivery windows between 08:30 and 20:30 were signposted with circa 50% not receiving any take up.

| Time     | Average % Bid Filled |
|----------|----------------------|
| 9:00 am  | 50%                  |
| 9:30 am  | 25%                  |
| 10:30 am | 40%                  |
| 11:30 am | 50%                  |
| 1:00 pm  | 31%                  |
| 2:00 pm  | 20%                  |
| 5:00 pm  | 21%                  |
| 5:30 pm  | 46%                  |
| 6:00 pm  | 34%                  |
| 7:30 pm  | 40%                  |
| 8:30 pm  | 44%                  |

Figure 2-3: Phase 1 example average delivery take up

| Time     | Average % Bid Filled |
|----------|----------------------|
| 8:30 am  | 0%                   |
| 10:00 am | 0%                   |
| 11:00 am | 0%                   |
| 12:00 pm | 0%                   |
| 12:30 pm | 0%                   |
| 1:30 pm  | 0%                   |
| 2:30 pm  | 0%                   |
| 3:00 pm  | 0%                   |
| 3:30 pm  | 0%                   |
| 4:00 pm  | 17%                  |
| 4:30 pm  | 9%                   |
| 6:30 pm  | 17%                  |
| 7:00 pm  | 0%                   |
| 8:00 pm  | 0%                   |

Figure 2-4: Phase 1 example average delivery take up

Some of the interesting FSP behaviours seen were:

- Some bids (requirements) placed by WPD were matched by offers (from Participants) within 10 minutes of submission; others matched within 2 hours of real time.
- Participant behaviour varied over the trial with different levels of engagement. Some of this was to do with the limited nature of the trial.
- We also believe that annual leave and unprecedented disruption due to Covid-19 during the tests had an impact on the ability for participants to place offers.
- The participants with large generating assets appear to post offers in batches as soon as they can following the publishing of the Market Information email.
- The smaller generating asset participants with small batteries and or EV's are posting offers much closer to real time than the larger generating asset owners and are not necessarily reacting to the market emails.

### Phase 2 Live Trials - Planning

Phase 2 of this work package is ongoing with the team developing a Phase 2 Trial Summary and Sub tests Operations document. This document was cascaded using webinars at various stages to initially check the overarching designs then a more detailed review of each specific sub test details. The slides from the webinar can be found here: <https://www.westernpower.co.uk/downloads-view-reciteme/306337> .

### Information Service Relaunch

We have continued to seek feedback on the BRP Information Service. Feedback has included a suggestion that the recent BSC Code modification P375 could address some of the imbalance problem. (The modification enables Virtual lead parties (VLPs) to register asset level meters with Elexon and use these for settlement.) We will continue to discuss the impact of P375 on the need for the BRP Information service with IntraFlex participants during the latter part of March.



Leading up to Phase 2, NODES reviewed the functioning of the Information Service and developed a sign-up process for participating BRPs. A basic version is available of the platform. No BRPs that will participate in the trial have so far been identified.

**Phase 2 Trial Summary**

Phase 1 of the IntraFlex trial created a flexibility market that operated close to real time. This provided a unique opportunity to determine the veracity of a continuously clearing market where FSPs can place offers on the platform when it suited their own operational conditions, rather than in response to an arbitrary auction deadline. The week ahead model doesn't necessarily suit all FSPs as they may have other commercial services that they are engaged in or unsure about asset availability and baselines until closer to real time.

The Phase 2 tests will focus on:

- Driving closer to a BaU behaviours with focus on peak demand delivery windows.
- Longer duration trial with more value on the platform
- Increased liquidity and hence competition.
- Active bids from providers to create competition on price rather than just speed.
- Platform and process improvements to make things simpler and easier to scale.
- Re engaging the BRP Information Service.

During the phase 2 live tests we will be attempting to encourage FSPs to make proactive offers on the platform as opposed to relying on them being able to respond to bids placed by WPD. We will also be moving to confirming requirements at Intraday.

The overall structure of Phase 2 will initially require FSPs to complete a commissioning test (Phase 2 Test Zero (P2T0)) and thereafter will proceed through 6 test phases. Each of the 6 phases will include a variation on some key principles and different combinations to establish the most effective.

An effectiveness assessment will be carried out by the project team, incorporating feedback from FSPs and Stakeholders. The tests that are outlined are therefore indicative of what we intend to pursue but may be subject to some alteration based upon the learning and feedback we experience.

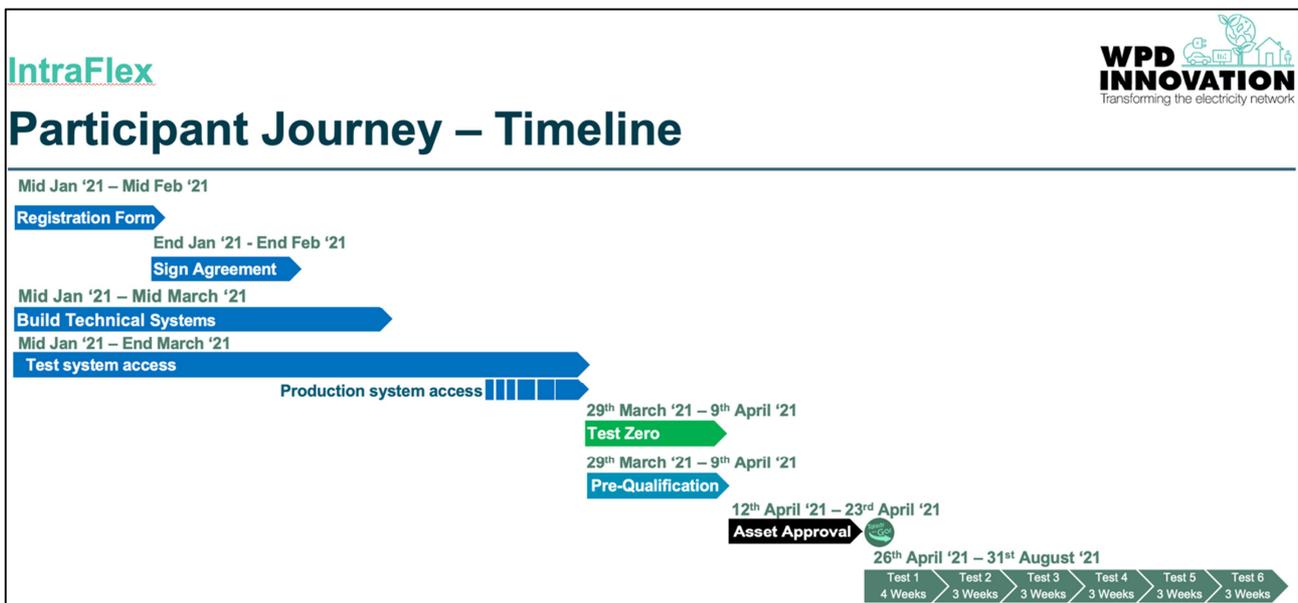


Figure 2-5: Participant Journey - Timeline



## **On-boarding**

Prior to the tests themselves any new participants will undergo the 'onboarding process' which is detailed separately in the Onboarding document, which is available to download from [IntraFlex Phase 2 Onboarding](#).

This includes.

1. Submitting Registration Forms
2. Signing Membership agreements
3. Completing relevant technical builds
4. Test Zero (End to End System testing)
5. Confirmation of Pre-Qualification
6. Asset Approvals

The first three steps need to be completed prior to the end of March in order to be ready for the end- to-end tests scheduled for April.

Any flexibility service providers who took part in Phase 1 do not need to re-register or re-sign the Membership Agreement with the updated Rulebook being circulated. Providers will be asked to confirm continued participation and participating assets via email to NODES.

## **Test Zero (End to End System testing)**

This test is to be carried out for one asset in an orderbook dedicated to testing and includes trade, dispatch and validation of delivery. The trade will be for a minimum of a half hour and maximum two hours at £300 per participant.

After delivery, NODES and WPD will validate delivery by comparing meter values to baselines and the FSP will receive confirmation that the test has been completed within a day or two.

## **Phase 2 Tests 1-6b Overview**

The market operation tests have been designed to help develop understanding and learning about the relative importance of various elements in the operation of a continuously clearing market. These start with a relatively simple example, with more features added as the trial develops.

The figure below highlights the basic bidding structure that is proposed for Test 1.



Figure 2-6: Basic Bidding Structure- Test 1

By the time we progress through to Test 6 we will introduce more advanced concepts such as variable pricing increments, intraday bids and how this interplays with weekends when the services are only expected to be required on weekdays.



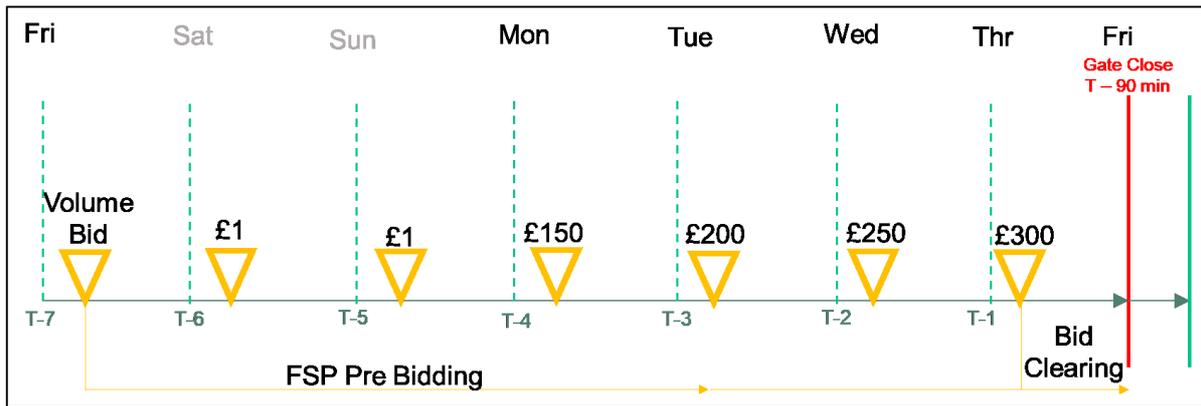


Figure 2-7: Test 6 – bidding structure

The Table below describes the evolution of the bidding mechanisms as the trial develops.

| Test | Market Opens | Gate Close | Bid Alerts | Bid Time | Bid Increment | Scarcity Pricing | Max Value | Weekend Offers | Weekend Bids |
|------|--------------|------------|------------|----------|---------------|------------------|-----------|----------------|--------------|
| 1    | 7 days       | 90 mins    | ✓          | 10am     | single        | ✗                | T-3 days  | ✓              | ✗            |
| 2    | 7 days       | 90 mins    | ✓          | 10am     | linear        | ✗                | T-3 days  | ✓              | ✗            |
| 3    | 7 days       | 90 mins    | ✓          | variable | variable      | ✗                | T-3 days  | ✓              | ✗            |
| 4    | 7 days       | 90 mins    | ✓          | 10am     | linear        | ✓                | T-3 days  | ✓              | ✗            |
| 5    | 7 days       | 90 mins    | ✓          | 10am     | linear        | ✗                | Intraday  | ✓              | ✗            |
| 6a   | 7 days       | 90 mins    | ✓          | 10am     | linear        | ✓                | intraday  | ✓              | ✗            |
| 6b   | 7 days       | 90 mins    | ✓          | variable | variable      | ✓                | intraday  | ✓              | ✗            |

Table 2-3: Bidding mechanism evolution

### Phase 2 - Sub Tests Operational Information

This phase is ongoing with the key outputs so far including completion of a Trial Summary and Sub Tests Operations January 2021 document and Bidding Strategy document. A subset of the information within these documents has been cascaded to the FSP’s for understanding and is summarised below.

Throughout the sub tests the following principles are being followed.

- A BID is placed by WPD and shows the volume of flexibility that is required for which ½ hour period.
- An OFFER is placed by the participants to show the time and volume of flexibility that they have available and the £value they would like to offer this at per MWh.
- T-x refers to the number of days before delivery (T-7 means 7 days before delivery, T-6 means 6 days before delivery and so on).
- All bids will be posted at T-7 with a nominal £value but will show the volume required in the ½ hour period. This shows participants where WPD will require flexibility as prompt for pre offers to be posted.
- Initial Market information bids placed 7 days ahead.
- Volume requirements communicated to participants
- Positive confirmation of network assessment
- Participants pre offer their volumes with prices or respond to bids posted.
- WPD submits value of bids closer to real time (to be discussed later)
- Bids clear
- Remaining volume stays

To help clarify what each sub test means for interaction with the NODES market platform, the below format of table has been developed. In the table the columns refer to the days and dates for the trial in question. The rows refer to the



actions that WPD will take on the NODES market. Within each box, at the intersection of the column and rows, the text relates to the delivery day and test wk # the action is being taken for.

For example,

The intersection of row “**Bids Zero Value (T-7)**” and the column “**Mon-26-Apr**” shows that the Bids posted on Monday 26<sup>th</sup> April will be for flexibility delivery on the Monday of test week 2.

The intersection of row “**Bids Bids Max @£300 (T-3)**” and the column “**Fri-30-Apr**” shows that the updated Bids posted on the Friday 30<sup>th</sup> April will be the T-3 price adjustment for flexibility delivery on the Monday of test week 2.

There will be no NODES Market interaction over the weekends therefore any bids that are timed to be adjusted on Saturday or Sunday will be brought forward to the Friday. Therefore, as can be seen from the table, the T-3 BIDS for Tue and Wed of wk. 2 will be posted on the Friday and this pattern will continue throughout the tests.

Greyed out boxes indicate no bids to be placed or adjusted.

It is shown in the table below that on Monday 3<sup>rd</sup> May that T-7 bids will be posted for flexibility delivery on the Monday of test week 3 and T-3 bids prices will be adjusted for flexibility delivery on the Thursday of test week 2

| PHASE 2 TEST 1        | P2 T1 Week 1 |            |            |            |            |            |            | P2 T1 Week 2 |            |            |            |            |            |            |
|-----------------------|--------------|------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|
|                       | Sun-25-Apr   | Mon-26-Apr | Tue-27-Apr | Wed-28-Apr | Thu-29-Apr | Fri-30-Apr | Sat-01-May | Sun-02-May   | Mon-03-May | Tue-04-May | Wed-05-May | Thu-06-May | Fri-07-May | Sat-08-May |
| Bids Zero Value (T-7) |              | Mon wk. 2  | Tue wk. 2  | Wed wk. 2  | Thur wk. 2 | Fri wk. 2  |            |              | Mon wk. 3  | Tue wk. 3  | Wed wk. 3  | Thur wk. 3 | Fri wk. 3  |            |
| Bids Max @£300 (T-3)  |              |            |            |            |            | Mon wk. 2  |            |              | Thur wk. 2 | Fri wk. 2  |            |            | Mon wk. 3  |            |
|                       |              |            |            |            |            | Tue wk. 2  |            |              |            |            |            |            | Tue wk. 3  |            |
|                       |              |            |            |            |            | Wed wk. 2  |            |              |            |            |            |            | Wed wk. 3  |            |
| Bid Delivery Day      |              | Mon wk. 1  | Tue wk. 1  | Wed wk. 1  | Thur wk. 1 | Fri wk. 1  |            |              | Mon wk. 2  | Tue wk. 2  | Wed wk. 2  | Thur wk. 2 | Fri wk. 2  |            |

Table 2-4: Example Test Plan Detail

### Phase 2 Tests 1-6b Detail

#### Test 1 (P2-T1) Simple Bidding 3 weeks

- Retain a predictable timing for all actions
- Rather than email notice of requirements bids only reflect volume
- System notifications of any activity
- Initial bid at T – 7 days with just volume at 10:00
- FSP submit offers when they are ready with baseline and asset availability
- Max bid value published at T - 3 days ahead at 10:00
- Uncleared bids remain to T – 90mins
- No Weekend Bids



| PHASE 2 TEST 1        | P2 T1 Week 1 |            |            |            |            | P2 T1 Week 2 |            |            |            |            | P2 T1 Week 3 |            |            |            |            | P2 T1 Week 4 |            |            |            |            |            |            |                 |                |               |               |               |            |
|-----------------------|--------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|-----------------|----------------|---------------|---------------|---------------|------------|
|                       | Sun 25-Apr   | Mon 26-Apr | Tue 27-Apr | Wed 28-Apr | Thu 29-Apr | Fri 30-Apr   | Sat 01-May | Sun 02-May | Mon 03-May | Tue 04-May | Wed 05-May   | Thu 06-May | Fri 07-May | Sat 08-May | Sun 09-May | Mon 10-May   | Tue 11-May | Wed 12-May | Thu 13-May | Fri 14-May | Sat 15-May | Sun 16-May | Mon 17-May      | Tue 18-May     | Wed 19-May    | Thu 20-May    | Fri 21-May    | Sat 22-May |
| Bids Zero Value (T-7) |              | Mon wk 2   | Tue wk 2   | Wed wk 2   | Thu wk 2   | Fri wk 2     |            |            | Mon wk 3   | Tue wk 3   | Wed wk 3     | Thu wk 3   | Fri wk 3   |            |            | Mon wk 4     | Tue wk 4   | Wed wk 4   | Thu wk 4   | Fri wk 4   |            |            | Mon P2T2 wk 1   | Tue P2T2 wk 1  | Wed P2T2 wk 1 | Thu P2T2 wk 1 | Fri P2T2 wk 1 |            |
| Bids Max @£300 (T-3)  |              |            |            |            |            | Mon wk 2     |            | Thur wk 2  | Fri wk 2   |            |              | Tue wk 3   | Wed wk 3   |            | Thur wk 3  |              | Fri wk 3   |            |            | Mon wk 4   |            |            | P2 T1 Thur wk 4 | P2 T1 Fri wk 4 |               |               |               |            |
| Bid Delivery Day      |              | Mon wk 1   | Tue wk 1   | Wed wk 1   | Thu wk 1   | Fri wk 1     |            |            | Mon wk 2   | Tue wk 2   | Wed wk 2     | Thu wk 2   | Fri wk 2   |            |            | Mon wk 3     | Tue wk 3   | Wed wk 3   | Thu wk 3   | Fri wk 3   |            |            | Mon wk 4        | Tue wk 4       | Wed wk 4      | Thu wk 4      | Fri wk 4      |            |

Table 2-5: Test 1 Plan

### Test 2 (P2-T2) Introducing Increments 3 weeks

- Retain a predictable timing for all actions
- Initial bid at T – 7 days
- System notifications of any activity
- Fixed schedule for bid increments each day at set time
- Fixed increase in bid price increments.
- Max bid value reached by 3 days ahead
- No Weekend Bids

| PHASE 2 TEST 2               | P2 T1 Week 4 |                 |                |               |               | P2 T2 Week 1  |            |            |               |               | P2 T2 Week 2  |               |               |            |            | P2 T2 Week 3  |               |               |               |               |               |            |               |               |               |               |               |            |
|------------------------------|--------------|-----------------|----------------|---------------|---------------|---------------|------------|------------|---------------|---------------|---------------|---------------|---------------|------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|------------|
|                              | Sun 16-May   | Mon 17-May      | Tue 18-May     | Wed 19-May    | Thu 20-May    | Fri 21-May    | Sat 22-May | Sun 23-May | Mon 24-May    | Tue 25-May    | Wed 26-May    | Thu 27-May    | Fri 28-May    | Sat 29-May | Sun 30-May | Mon 31-May    | Tue 01-Jun    | Wed 02-Jun    | Thu 03-Jun    | Fri 04-Jun    | Sat 05-Jun    | Sun 06-Jun | Mon 07-Jun    | Tue 08-Jun    | Wed 09-Jun    | Thu 10-Jun    | Fri 11-Jun    | Sat 12-Jun |
| Bids Zero Value (T-7)        |              | Mon P2T2 wk 1   | Tue P2T2 wk 1  | Wed P2T2 wk 1 | Thu P2T2 wk 1 | Fri P2T2 wk 1 |            |            | Mon P2T2 wk 2 | Tue P2T2 wk 2 | Wed P2T2 wk 2 | Thu P2T2 wk 2 | Fri P2T2 wk 2 |            |            | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 | Thu P2T2 wk 3 | Fri P2T2 wk 3 |               |            |               |               |               |               |               |            |
| Bids Incremental @£75 (T-6)  |              |                 | Mon P2T2 wk 1  | Tue P2T2 wk 1 | Wed P2T2 wk 1 | Thu P2T2 wk 1 |            |            |               | Mon P2T2 wk 2 | Tue P2T2 wk 2 | Wed P2T2 wk 2 | Thu P2T2 wk 2 |            |            |               | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 | Thu P2T2 wk 3 |               |            |               |               |               |               |               |            |
| Bids Incremental @£150 (T-5) |              |                 |                | Mon P2T2 wk 1 | Tue P2T2 wk 1 | Wed P2T2 wk 1 |            |            |               |               | Mon P2T2 wk 2 | Tue P2T2 wk 2 | Wed P2T2 wk 2 |            |            |               |               | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 |               |            |               |               |               |               |               |            |
| Bids Incremental @£225 (T-4) |              |                 |                |               | Mon P2T2 wk 1 | Tue P2T2 wk 1 |            |            |               | Fri P2T2 wk 1 |               | Mon P2T2 wk 2 | Tue P2T2 wk 2 |            |            |               |               | Fri P2T2 wk 2 |               | Mon P2T2 wk 3 | Tue P2T2 wk 3 |            |               |               |               | Fri P2T2 wk 3 |               |            |
| Bids Max @£300 (T-3)         |              | P2 T1 Thur wk 4 | P2 T1 Fri wk 4 |               |               | Mon P2T2 wk 1 |            |            | Thu P2T2 wk 1 | Fri P2T2 wk 1 |               |               | Mon P2T2 wk 2 |            |            | Thu P2T2 wk 2 | Fri P2T2 wk 2 |               |               | Mon P2T2 wk 3 |               |            | Thu P2T2 wk 3 | Fri P2T2 wk 3 |               |               |               |            |
| Bid Delivery Day             |              | Mon P2T1 wk 4   | Tue P2T1 wk 4  | Wed P2T1 wk 4 | Thu P2T1 wk 4 | Fri P2T1 wk 4 |            |            | Mon P2T2 wk 1 | Tue P2T2 wk 1 | Wed P2T2 wk 1 | Thu P2T2 wk 1 | Fri P2T2 wk 1 |            |            | Mon P2T2 wk 2 | Tue P2T2 wk 2 | Wed P2T2 wk 2 | Thu P2T2 wk 2 | Fri P2T2 wk 2 |               |            | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 | Thu P2T2 wk 3 | Fri P2T2 wk 3 |            |

Table 2-6: Test 2 Plan

### Test 3 (P2-T3) Variable increments at variable timing 3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

- Initial bid at T – 7 days
- System notifications of any activity
- ✗ Fixed schedule for bid increments each day at set time
- ✗ Fixed increase in bid value.
- Max bid value reached by 3 days ahead
- No Weekend Bids



| PHASE 2 TEST 3          | P2 T2 Week 3 |               |               |               |               |               | P2 T3 Week 1 |               |               |               |               |               | P2 T3 Week 2  |               |               |               |               |               | P2 T3 Week 3  |               |               |               |               |               |               |               |            |            |
|-------------------------|--------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|------------|
|                         | Sun 06 Jun   | Mon 07 Jun    | Tue 08 Jun    | Wed 09 Jun    | Thu 10 Jun    | Fri 11 Jun    | Sat 12 Jun   | Sun 13 Jun    | Mon 14 Jun    | Tue 15 Jun    | Wed 16 Jun    | Thu 17 Jun    | Fri 18 Jun    | Sat 19 Jun    | Sun 20 Jun    | Mon 21 Jun    | Tue 22 Jun    | Wed 23 Jun    | Thu 24 Jun    | Fri 25 Jun    | Sat 26 Jun    | Sun 27 Jun    | Mon 28 Jun    | Tue 29 Jun    | Wed 30 Jun    | Thu 01 Jul    | Fri 02 Jul | Sat 03 Jul |
| Bids Zero Value (T-7)   |              | Mon P2T3 wk 1 | Tue P2T3 wk 1 | Wed P2T3 wk 1 | Thu P2T3 wk 1 | Fri P2T3 wk 1 |              |               | Mon P2T3 wk 2 | Tue P2T3 wk 2 | Wed P2T3 wk 2 | Thu P2T3 wk 2 | Fri P2T3 wk 2 |               |               | Mon P2T3 wk 3 | Tue P2T3 wk 3 | Wed P2T3 wk 3 | Thu P2T3 wk 3 | Fri P2T3 wk 3 |               |               |               |               |               |               |            |            |
| Bids Incremental random |              |               | Mon P2T3 wk 1 | Tue P2T3 wk 1 | Wed P2T3 wk 1 | Thu P2T3 wk 1 |              |               | Mon P2T3 wk 2 | Tue P2T3 wk 2 | Wed P2T3 wk 2 | Thu P2T3 wk 2 |               |               | Mon P2T3 wk 3 | Tue P2T3 wk 3 | Wed P2T3 wk 3 | Thu P2T3 wk 3 |               |               |               |               |               |               |               |               |            |            |
| Bids Incremental random |              |               |               | Mon P2T3 wk 1 | Tue P2T3 wk 1 | Wed P2T3 wk 1 |              |               |               | Mon P2T3 wk 2 | Tue P2T3 wk 2 | Wed P2T3 wk 2 |               |               |               | Mon P2T3 wk 3 | Tue P2T3 wk 3 | Wed P2T3 wk 3 |               |               |               |               |               |               |               |               |            |            |
| Bids Incremental random |              |               |               |               | Mon P2T3 wk 1 | Tue P2T3 wk 1 |              |               | Fri P2T3 wk 1 |               |               | Mon P2T3 wk 2 | Tue P2T3 wk 2 |               |               | Fri P2T3 wk 2 |               |               | Mon P2T3 wk 3 | Tue P2T3 wk 3 |               |               |               | Fri P2T3 wk 3 |               |               |            |            |
| Bids Max @£300 (T-3)    |              |               |               |               | Mon P2T3 wk 1 | Tue P2T3 wk 1 |              |               | Thu P2T3 wk 1 | Fri P2T3 wk 1 |               |               | Mon P2T3 wk 2 | Tue P2T3 wk 2 |               |               | Thu P2T3 wk 2 | Fri P2T3 wk 2 |               | Mon P2T3 wk 3 | Tue P2T3 wk 3 |               |               |               | Thu P2T3 wk 3 | Fri P2T3 wk 3 |            |            |
| Bid Delivery Day        |              | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 | Thu P2T2 wk 3 | Fri P2T2 wk 3 |              | Mon P2T2 wk 1 | Tue P2T2 wk 1 | Wed P2T2 wk 1 | Thu P2T2 wk 1 | Fri P2T2 wk 1 |               |               | Mon P2T2 wk 2 | Tue P2T2 wk 2 | Wed P2T2 wk 2 | Thu P2T2 wk 2 | Fri P2T2 wk 2 |               |               | Mon P2T2 wk 3 | Tue P2T2 wk 3 | Wed P2T2 wk 3 | Thu P2T2 wk 3 | Fri P2T2 wk 3 |            |            |

Table 2-7: Test 3 Plan

### Test 4 (P2-T4) Scarcity Pricing model 3 week

A further reduction again in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system.

- Initial bid at T – 7 days
- System notification of bid activity
- Price increments relative to volume requirement
- Max bid value reached by 3 days ahead
- No Weekend Bids

| PHASE 2 TEST 4                             | P2 T3 Week 3 |               |               |               |               |               | P2 T4 Week 1 |               |               |               |               |               | P2 T4 Week 2  |               |               |               |               |               | P2 T4 Week 3  |               |               |               |               |               |               |               |            |            |
|--|--------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|------------|
|  | Sun 27 Jun   | Mon 28 Jun    | Tue 29 Jun    | Wed 30 Jun    | Thu 01 Jul    | Fri 02 Jul    | Sat 03 Jul   | Sun 04 Jul    | Mon 05 Jul    | Tue 06 Jul    | Wed 07 Jul    | Thu 08 Jul    | Fri 09 Jul    | Sat 10 Jul    | Sun 11 Jul    | Mon 12 Jul    | Tue 13 Jul    | Wed 14 Jul    | Thu 15 Jul    | Fri 16 Jul    | Sat 17 Jul    | Sun 18 Jul    | Mon 19 Jul    | Tue 20 Jul    | Wed 21 Jul    | Thu 22 Jul    | Fri 23 Jul | Sat 24 Jul |
| Bids Zero Value (T-7)                      |              | Mon P2T4 wk 1 | Tue P2T4 wk 1 | Wed P2T4 wk 1 | Thu P2T4 wk 1 | Fri P2T4 wk 1 |              |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 | Wed P2T4 wk 2 | Thu P2T4 wk 2 | Fri P2T4 wk 2 |               |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 | Wed P2T4 wk 3 | Thu P2T4 wk 3 | Fri P2T4 wk 3 |               |               |               |               |               |               |            |            |
| Bids Incremental 1 (T-6)                   |              |               | Mon P2T4 wk 1 | Tue P2T4 wk 1 | Wed P2T4 wk 1 | Thu P2T4 wk 1 |              |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 | Wed P2T4 wk 2 | Thu P2T4 wk 2 |               |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 | Wed P2T4 wk 3 | Thu P2T4 wk 3 |               |               |               |               |               |               |               |               |            |            |
| Bids Incremental 2 (T-5)                   |              |               |               | Mon P2T4 wk 1 | Tue P2T4 wk 1 | Wed P2T4 wk 1 |              |               |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 | Wed P2T4 wk 2 |               |               |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 | Wed P2T4 wk 3 |               |               |               |               |               |               |               |               |            |            |
| Bids Incremental 3 (T-4)                   |              |               |               |               | Mon P2T4 wk 1 | Tue P2T4 wk 1 |              |               | Fri P2T4 wk 1 |               |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 |               |               | Fri P2T4 wk 2 |               |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 |               |               |               | Fri P2T4 wk 3 |               |               |            |            |
| Bids Max according to scarcity model (T-3) |              |               |               |               | Mon P2T4 wk 1 | Tue P2T4 wk 1 |              |               | Thu P2T4 wk 1 | Fri P2T4 wk 1 |               |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 |               |               | Thu P2T4 wk 2 | Fri P2T4 wk 2 |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 |               |               |               | Thu P2T4 wk 3 | Fri P2T4 wk 3 |            |            |
| Bid Delivery Day                           |              | Mon P2T3 wk 3 | Tue P2T3 wk 3 | Wed P2T3 wk 3 | Thu P2T3 wk 3 | Fri P2T3 wk 3 |              | Mon P2T4 wk 1 | Tue P2T4 wk 1 | Wed P2T4 wk 1 | Thu P2T4 wk 1 | Fri P2T4 wk 1 |               |               | Mon P2T4 wk 2 | Tue P2T4 wk 2 | Wed P2T4 wk 2 | Thu P2T4 wk 2 | Fri P2T4 wk 2 |               |               | Mon P2T4 wk 3 | Tue P2T4 wk 3 | Wed P2T4 wk 3 | Thu P2T4 wk 3 | Fri P2T4 wk 3 |            |            |

Table 2- 8: Test 4 Plan

### Test 5 (P2-T5) Intraday with Predictable Increments 3 weeks

This is the first test delivering intraday confirmation of flexibility required.

- Initial bid at T – 7 days
- System notification of bid activity
- Fixed schedule for bid increments each day at set time
- Fixed increase in bid value.
- **Max bid value only reached Intraday**
- Bids will be focussed on early afternoon and evening
- No Weekend Bids



| PHASE 2 TEST 5                                     | P2 T4 Week 3 |            |            |            |            |            | P2 T5 Week 1 |            |            |            |            |            | P2 T5 Week 2 |            |            |            |            |            | P2 T5 Week 3 |            |            |            |            |            |            |            |            |            |
|--|--------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|  | Sun-18-Jul   | Mon-19-Jul | Tue-20-Jul | Wed-21-Jul | Thu-22-Jul | Fri-23-Jul | Sat-24-Jul   | Sun-25-Jul | Mon-26-Jul | Tue-27-Jul | Wed-28-Jul | Thu-29-Jul | Fri-30-Jul   | Sat-31-Jul | Sun-01-Aug | Mon-02-Aug | Tue-03-Aug | Wed-04-Aug | Thu-05-Aug   | Fri-06-Aug | Sat-07-Aug | Sun-08-Aug | Mon-09-Aug | Tue-10-Aug | Wed-11-Aug | Thu-12-Aug | Fri-13-Aug | Sat-14-Aug |
| Bids Zero Value (T-7)                              |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Incremental Bid 1 @€60/MWh                         |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Incremental Bid 2 @€120/MWh                        |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Incremental Bid 3 @€180/MWh                        |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Incremental Bid 4 @€240/MWh                        |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Final Max Bid at Intraday (Before 10:00) @€300/MWh |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |
| Bid Delivery Day                                   |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |              |            |            |            |            |            |            |            |            |            |

Table 2-9: Test 5 Plan

At the end of this test, it will be decided whether to implement test 6a or test 6b

### Test 6 (P2-T6a) Intraday Scarcity Bids 3 weeks

- Initial bid at T – 7 days
- System notification of bid activity
- Fixed schedule for bid increments each day at set time
- ~~✗ Fixed increase in bid value~~
- Max bid value only reached Intraday
- No Weekend Bids

| PHASE 2 TEST 6a  | P2 T5 Week 3 |            |            |            |            |            | P2 T6a Week 1 |            |            |            |            |            | P2 T6a Week 2 |            |            |            |            |            | P2 T6a Week 3 |            |            |            |            |            |            |            |            |
|--|--------------|------------|------------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|------------|------------|------------|
|  | Sun-08-Aug   | Mon-09-Aug | Tue-10-Aug | Wed-11-Aug | Thu-12-Aug | Fri-13-Aug | Sat-14-Aug    | Sun-15-Aug | Mon-16-Aug | Tue-17-Aug | Wed-18-Aug | Thu-19-Aug | Fri-20-Aug    | Sat-21-Aug | Sun-22-Aug | Mon-23-Aug | Tue-24-Aug | Wed-25-Aug | Thu-26-Aug    | Fri-27-Aug | Sat-28-Aug | Sun-29-Aug | Mon-30-Aug | Tue-31-Aug | Wed-01-Sep | Thu-02-Sep | Fri-03-Sep |
| Bids Zero Value (T-7)  |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Incremental Bid 1 @ €/MWh Set by scarcity model                        |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Incremental Bid 2 @ €/MWh Set by scarcity model                        |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Incremental Bid 3 @ €/MWh Set by scarcity model                        |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Incremental Bid 4 @ €/MWh Set by scarcity model                        |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Final Max Bid at Intraday (Before 10:00) @ €/MWh Set by scarcity model |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |
| Bid Delivery Day   |              |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |               |            |            |            |            |            |            |            |            |

Table 2-10: Test 6a Plan

### Test 6 (P2-T6b) Intraday Scarcity Bids 3 weeks

- Initial bid at T – 7 days
- System notification of bid activity
- ~~✗ Fixed schedule for bid increments each day at set time~~
- ~~✗ Fixed increase in bid value.~~
- Max bid value only reached Intraday
- No Weekend Bids



| PHASE 2 TEST 6b  | P2 T6a Week 3 |                |                |                |                | P2 T6b Week 1  |            |                |                |                | P2 T6b Week 2  |                |                |            |            | P2 T6b Week 3  |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
|--|---------------|----------------|----------------|----------------|----------------|----------------|------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|  | Sun-08-Aug    | Mon-09-Aug     | Tue-10-Aug     | Wed-11-Aug     | Thu-12-Aug     | Fri-13-Aug     | Sat-14-Aug | Sun-15-Aug     | Mon-16-Aug     | Tue-17-Aug     | Wed-18-Aug     | Thu-19-Aug     | Fri-20-Aug     | Sat-21-Aug | Sun-22-Aug | Mon-23-Aug     | Tue-24-Aug     | Wed-25-Aug     | Thu-26-Aug     | Fri-27-Aug     | Sat-28-Aug     | Sun-29-Aug     | Mon-30-Aug     | Tue-31-Aug     | Wed-01-Sep     | Thu-02-Sep     | Fri-03-Sep     | Sat-04-Sep     |                |                |                |
| Bids Zero Value (T-7)  |               | Mon P2T6b wk 1 | Tue P2T6b wk 1 | Wed P2T6b wk 1 | Thu P2T6b wk 1 | Fri P2T6b wk 1 |            |                | Mon P2T6b wk 2 | Tue P2T6b wk 2 | Wed P2T6b wk 2 | Thu P2T6b wk 2 | Fri P2T6b wk 2 |            |            | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 | Fri P2T6b wk 3 |                |                |                |                |                |                |                |                |                |                |                |
| Random Incremental Bid @ £/MWh Set by scarcity model                   |               |                | Mon P2T6b wk 1 | Tue P2T6b wk 1 | Wed P2T6b wk 1 | Thu P2T6b wk 1 |            |                | Fri P2T6b wk 1 | Mon P2T6b wk 2 | Tue P2T6b wk 2 | Wed P2T6b wk 2 | Thu P2T6b wk 2 |            |            | Fri P2T6b wk 2 | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 |                |                |                | Fri P2T6b wk 3 |                |                |                |                |                |                |                |
| Random Incremental Bid @ £/MWh Set by scarcity model                   |               |                |                | Mon P2T6b wk 1 | Tue P2T6b wk 1 | Wed P2T6b wk 1 |            |                | Thu P2T6b wk 1 | Fri P2T6b wk 1 | Mon P2T6b wk 2 | Tue P2T6b wk 2 | Wed P2T6b wk 2 |            |            | Thu P2T6b wk 2 | Fri P2T6b wk 2 | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 |                |                |                | Thu P2T6b wk 3 | Fri P2T6b wk 3 |                |                |                |                |                |
| Random Incremental Bid @ £/MWh Set by scarcity model                   |               |                |                |                | Mon P2T6b wk 1 | Tue P2T6b wk 1 |            |                | Wed P2T6b wk 1 | Thu P2T6b wk 1 | Fri P2T6b wk 1 | Mon P2T6b wk 2 | Tue P2T6b wk 2 |            |            | Wed P2T6b wk 2 | Thu P2T6b wk 2 | Fri P2T6b wk 2 | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 |                |                | Wed P2T6b wk 3 | Thu P2T6b wk 3 | Fri P2T6b wk 3 |                |                |                |                |
| Random Incremental Bid @ £/MWh Set by scarcity model                   |               |                |                |                | Mon P2T6b wk 1 |                |            |                | Tue P2T6b wk 1 | Wed P2T6b wk 1 | Thu P2T6b wk 1 | Fri P2T6b wk 1 | Mon P2T6b wk 2 |            |            | Tue P2T6b wk 2 | Wed P2T6b wk 2 | Thu P2T6b wk 2 | Fri P2T6b wk 2 | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 |                |                | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 | Fri P2T6b wk 3 |                |                |
| Final Max Bid at Intraday (Before 10:00) @ £/MWh Set by scarcity model |               |                |                |                |                |                |            | Mon P2T6b wk 1 | Tue P2T6b wk 1 | Wed P2T6b wk 1 | Thu P2T6b wk 1 | Fri P2T6b wk 1 | Mon P2T6b wk 2 |            |            | Mon P2T6b wk 2 | Tue P2T6b wk 2 | Wed P2T6b wk 2 | Thu P2T6b wk 2 | Fri P2T6b wk 2 | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 |                |                | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 | Fri P2T6b wk 3 |
| Bid Delivery Day   |               | Mon P2T5 wk 3  | Tue P2T5 wk 3  | Wed P2T5 wk 3  | Thu P2T5 wk 3  | Fri P2T5 wk 3  |            |                | Mon P2T6b wk 1 | Tue P2T6b wk 1 | Wed P2T6b wk 1 | Thu P2T6b wk 1 | Fri P2T6b wk 1 |            |            | Mon P2T6b wk 2 | Tue P2T6b wk 2 | Wed P2T6b wk 2 | Thu P2T6b wk 2 | Fri P2T6b wk 2 |                |                |                |                |                | Mon P2T6b wk 3 | Tue P2T6b wk 3 | Wed P2T6b wk 3 | Thu P2T6b wk 3 | Fri P2T6b wk 3 |                |

Table 2-11: Test 6b Plan

**Next steps**

Completion of the onboarding window and system builds. This will be followed by the implementation of Test Zero and then the live subtests will commence at the start of May 2021 with completion planned for the end of August 2021.



### 3. Progress against Budget

| Spend Area             | Budget(£k)      | Expected Spend to Date (£k) | Actual Spend to Date (£k) | Variance to expected (£k) | Variance to expected % |
|------------------------|-----------------|-----------------------------|---------------------------|---------------------------|------------------------|
| WPD Project Management | £101,435        | £86,805                     | £60,186                   | -£26,619                  | -26%                   |
| Contractors            | £573,294        | £450,748                    | £312,248                  | £138,500                  | --24%                  |
| Payments to Users      | £100,000        | £50,000                     | £8,478                    | -£41,522                  | -42%                   |
| Dissemination          | £30,000         | £20,000                     | £20,000                   | £0                        | 0.0%                   |
| Contingency            | £116,473        |                             |                           |                           |                        |
| <b>TOTAL</b>           | <b>£921,202</b> | <b>£407,864</b>             | <b>£384,552</b>           | <b>-£23,312</b>           | <b>-3%</b>             |

Table 3-1: Progress against Budget

#### Comments around variance

Project Management - Less time was used than expected earlier in the project. Dissemination also cost less than expected.

Contractors- Development costs allocated to solution developer were not required. These will though be needed for the API build for Phase 2.

Payments to Users -Costs from Phase 1 were lower than expected due to small bid sizes. The unused value has been rolled over into the Phase 2 trials and team tasked with spending under spend as far as possible.



## 4. Progress towards Success Criteria

| Objectives  | Status   |
|---|--|
| The operability of short-term flexibility markets                       | <b>In progress:</b> This is being tested through the trials. Initial views seem positive; however this will be refined in the Phase 2 trial.   |
| The value of increased information at the day ahead stage to suppliers  | <b>In progress:</b> Initial stakeholder feedback clearly indicated that this could be a valuable service for suppliers. However there has been no take up of this service within the Phase 1 trial. This is probably due to the disconnect between the party needing action (the FSP) and the beneficiary (the BRP). .                     |
| The value of an integrated link for rebalancing in the intra-day market | <b>Complete:</b> During the ongoing review of the potential to develop this service, the feedback from the current participants and stakeholders, has very clearly informed the project team that this auto rebalancing service is of no interest at current market volumes. The costs and risk of such a system far outweigh any benefit. |

Table 4-1: Objectives and Progress

| Success Criteria  | Status  |
|---|---|
| Development of a UK Market design for short term flexibility market that reflects imbalance costs | <b>In progress:</b> The development has been completed as part of work package 2 and is now being validated via the trials.                                     |
| WPD access to ShortFlex products that have the potential to benefit the distribution network      | <b>In progress:</b> Currently being validated as part of the phase 1 trials with further learnings to be identified from Phase 2 Spring 2021                    |
| Procurement of ShortFlex via the NODES platform   | <b>In progress:</b> Shortflex is currently being procured as part of the phase 1 trials and will be procured again in Phase 2.                                  |
| Demonstration of ShortFlex products that limit supplier exposure to imbalance costs               | <b>In progress:</b> To be validated via the phase 2 trials. This will be limited to the information service as the auto-rebalancing service has been de-scoped. |
| Delivery of the project on time and on budget.  | <b>In progress:</b> During the first year both timescales and overall budget have been adhered to.  |

Table 4-2: Success Criteria and Progress



## 5. Learning Outcomes

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Within this reporting period we have focused building the systems and operating the marketplace. Therefore our key learnings are as follows:

- Converting a platform designed for market wide transactions to a platform based on locality of transactions requires detailed design of user documentation.
- BRPs do not currently see DNO imbalance as having a material impact on business costs
- BRPs do not currently support other entities automatically rebalancing their positions.
- BRPs do see benefit in an information system that helps them act on imbalance created.
- FSPs have so far not expressed that they see the benefit to signing up for the information service. Potentially, ongoing industry development, including the BSC Mod P375, could at least partially address the issue, in cases where the FSP has signed up to the BSC as a VLP.
- The onboarding process benefitted greatly from having defined and regularly communicated deadlines for participants to act by. • Bids are being accepted at a lower volume than expected when taking into account known system sizes. This may be being influenced by there being no penalty for over delivery.
- Participants are interested in discussing baseline clarification post-delivery. This needs to be thought through especially the need for the "Burden of proof" that would be needed to enable this.
- Clarity should be given on the use of MWh or MW when procuring flexibility.
- We should be clear, at the outset of such trials, about the quantum of volumes we would be looking to trade thus avoiding signed up participants being unable to offer flexibility due to size of the asset.
- Metering captured via existing Flexible Power standards appears to maintain a low technical barrier to entry
- Most participants required multiple meetings in order to address their queries and ensure that they were correctly enrolling onto the system.
- Participants were requested to complete a questionnaire after each trial phase but in spite of multiple prompts and requests, the response level was less than 50%
- Participants typically appointed one person internally to manage the trial, so when on holiday, absent or too busy there was a direct impact on the trial response levels
- There is a need to give FSPs the greatest possible opportunity to respond to bids of volume needed.
- There is a need to give FSPs the greatest possible opportunity to respond to bids of volume needed.
- When transposing energy minute by minute granularity data to 1/2 hourly ensure the amount used in the 1/2 hour is allocated in a consistent manner (i.e. energy used from 19:00 to 19:29 inclusive is shown as 19:00 or 19:30 consistently)
- During Phase 2 stakeholder engagement it was determined that there is no need to place Bids on the platform during weekends to avoid driving additional workload and complexity for the trial participants bearing in mind FSP don't have active weekend desks
- Stakeholders very positive in relation to the price discovery and moving closer to real-time; creating a level playing field for less predictable baselines and capacities e.g. EV's and domestic sites.



## 6. Intellectual Property Rights

A complete list of all background IPR from all project partners has been compiled. The IP register is reviewed on a quarterly basis.

| IPR  | Category            | Owner        | Progress  |
|--|---------------------|--------------|---|
| NODES Platform                                   | Background          | NODES        | Developed before the project  |
| NODES Intraday link                              | Foreground          | NODES        | No longer being developed   |
| NODES day ahead information                      | Foreground          | NODES        | First version has been developed                                      |
| Flexible Power documentation and Processes       | Background          | WPD          | Developed before the project  |
| Audit Targeting                                  | Relevant Foreground | WPD          | Still to be developed   |
| UCR review                                       | Relevant Foreground | WPD          | In development  |
| Link to FP dispatch                              | Relevant Foreground | WPD          | Developed   |
| UK Market design                                 | Relevant Foreground | All partners | First version developed and published. To be revised following trials |
| NODES Market design                              | Background          | NODES        | Developed before the project  |
| UK Market design technical adaption white paper. | Relevant Foreground | All partners | Still to be developed   |

Table 6-1: IPR Register



## 7. Risk Management

Our risk management objectives are to:

- Ensure that risk management is clearly and consistently integrated into the project management activities and evidenced through the project documentation;
- Comply with WPDs risk management processes and any governance requirements as specified by Ofgem; and
- Anticipate and respond to changing project requirements.

These objectives will be achieved by:

- ✓ Defining the roles, responsibilities and reporting lines within the Project Delivery Team for risk management;
- ✓ Including risk management issues when writing reports and considering decisions;
- ✓ Maintaining a risk register;
- ✓ Communicating risks and ensuring suitable training and supervision is provided;
- ✓ Preparing mitigation action plans;
- ✓ Preparing contingency action plans; and
- ✓ Monitoring and updating of risks and the risk controls.

### 7.1. Current Risks

The IntraFlex risk register is a live document and is updated regularly. There are currently 25 live project related risks. Mitigation action plans are identified when raising a risk and the appropriate steps then taken to ensure risks do not become issues wherever possible.

In Table 7 1 we give details of our top five current risks by category. For each of these risks, a mitigation action plan has been identified and the progress of these are tracked and reported.

| Details of the Risk   | Risk Rating | Mitigation Action Plan  | Progress   |
|---|-------------|---|--|
| Recruitment risk - Cannot recruit enough flex providers trial Phase 2   | Major       | Ongoing reach out communications, and spreading the net wider                                   | Bi Weekly prompts to network will be continued until latest possible date. |
| WP5 – Longer to onboard/contract participants Phase 2   | Major       | Detailed engagement with stakeholders early in the onboarding process                           | Ongoing for the Phase 2 Trials   |
| Phase 2 Trials - API Design and delivery to manage the Phase 2 tests is not on time or is not able to fulfil the required interface actions | Major       | Semi-automatic/manual method to manage the Phase 2 test to be developed using CSV's if possible | Ongoing conversations and planning for Phase 2                             |
| WP3 - Phase2 Scale of work to deliver more than anticipated   | Major       | Early engagement with stakeholders and participants   | Cascade events held to ensure understanding of scope.                      |
| WP5 - Closer to real time creates operational issues - Speed of interaction could this cause operational difficulties                       | Major       | Development of API being progresses to avoid this.  | API in development for Phase 2   |

Table 7-1: Top five current risks (by rating)



Table 7-2 provides a snapshot of the risk register, details graphically, to provide an on-going understanding of the projects' risks.

|                                      |  |   |   |   |   |   |
|--------------------------------------|--|---|---|---|---|---|
| Likelihood = Probability x Proximity | Certain/imminent (21-25)                                       | 0   | 0   | 0   | 0   | 0   |
|                                      | More likely to occur than not/Likely to be near future (16-20) | 0   | 0   | 0   | 0   | 0   |
|                                      | 50/50 chance of occurring/Mid to short term (11-15)            | 0   | 0   | 2   | 9   | 0   |
|                                      | Less likely to occur/Mid to long term (6-10)                   | 0   | 0   | 7   | 14  | 7   |
|                                      | Very unlikely to occur/Far in the future (1-5)                 | 0   | 0   | 2   | 10  | 9   |
|                                      |  | 1. Insignificant changes, re-planning may be required | 2. Small Delay, small increased cost but absorbable | 3. Delay, increased cost in excess of tolerance | 4. Substantial Delay, key deliverables not met, significant increase in time/cost | 5. Inability to deliver, business case/objective not viable |
|                                      |  | <b>Impact</b>   |   |   |   |   |

|               | Minor | Moderate | Major | Severe |                        |
|---------------|-------|----------|-------|--------|------------------------|
| <b>Legend</b> | 2     | 26       | 32    | 0      | <b>No of instances</b> |
| <b>Total</b>  | 60    |          |       |        | No of live risks       |

Table 7-2: Graphical view of risk register

Table 7-3 provides an overview of the risks by category, minor, moderate, major and severe. This information is used to understand the complete risk level of the project.

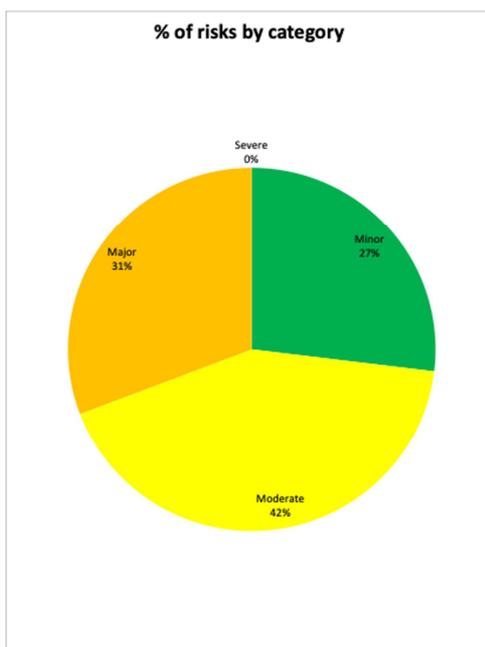


Table 7-3: Percentage of risk by category



## 7.2. Update for risks previously identified

Descriptions of the most significant risks, identified within the previous report are provided in Table 7 4 with updates on their current risk status.

| Details of the risk  | Previous risk rating | Current risk rating | Mitigation Action Plan  | Progress   |
|--|----------------------|---------------------|---|--|
| Budget available for platform trades is exhausted quicker than anticipated                             | Major                | Minor               | Budget tracker compiled   | Weekly budget meeting is being held to review the tracker. |
| Lack of submitted baselines impacts ability to confirm flexibility procurement and subsequent payments | Major                | Minor               | Platform being updated to not allow offers to be placed if no baseline exists | Update to be implemented for Phase 2                       |
| Technical failure of FSP systems due to communication and or metering failures.                        | Major                | Minor               | Continual contact with the FSP providers.                                     | Ongoing conversations with each FSP are taking place       |
| Technical failure of NODES Platform  | Major                | Minor               | Technical support team on hand from both NODES                                | NODES early alert system has been put in place             |
| Technical failure of WPD Platform  | Major                | Minor               | Technical support team on hand from both SGC (WPD)                            | SGC and Kiwi alert system is in place                      |

Table 7-4: Risks identified in the previous progress report



## 8. Consistency with Project Registration Document

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There have been a number of changes to the project as it has progressed. These have been logged within WPD's Change Management process and are all aimed at maximising the value of the project and limiting any development of services with limited ongoing value.

In addition to the changes mentioned in the previous report, this month, following the BRP survey we decided to de-scope the auto-rebalancing services. With consistent feedback that it provided little value, and no feedback to the contrary, building and testing such a service would not have provided good value for money. Instead, the project has focussed more on the information service.



## 9. Accuracy Assurance Statement

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This report has been prepared by the SGC IntraFlex Project Manager (David Penfold), reviewed by the WPD Project Manager (Stuart Fowler) and approved by the Innovation Team Manager (Yiango Mavrocostanti).

All efforts have been made to ensure that the information contained within this report is accurate. WPD confirms that this report has been produced, reviewed and approved following our quality assurance process for external documents and reports.



## Glossary

| Abbreviation | Term   |
|--------------|--|
| ABSVD        | Applicable Balancing Services Volume Data - The data representing volume of Active Energy associated with Applicable Balancing Services.   |
| API          | Application Programming Interface - API is the acronym for Application Programming Interface, which is a software intermediary that allows two applications to talk to each other. Each time you use an app like Facebook, send an instant message, or check the weather on your phone, you're using an API.   |
| BaU          | Business as Usual  |
| BEIS         | Department for Business, Energy and Industrial Strategy  |
| BM           | Balancing Mechanism - The balancing mechanism is used to balance supply and demand in each half hour trading period of every day.  |
| BRP          | Balance Responsible Party – Are financially responsible for maintaining the balance between supply and demand of energy within their portfolio.  |
| BSP          | Balancing Service Provider - Balancing Service Providers (BSPs) are remunerated for balancing services provided to the System Operator (SO). The balancing energy costs are allocated to the Balance Responsible Parties (BRPs) in the form of imbalance costs.  |
| CMZ          | Constraint Management Zone - This is a geographic region served by an existing network where network requirements related to network security of supply are met through the use of flexible services, such as Demand Side Response, Energy Storage and stand-by generation.  |
| COVID-19     | 2019 Novel Coronavirus   |
| DNO          | Distribution Network Operator - Any Electricity Distributor in whose Electricity Distribution Licence the requirements of Section B of the standard conditions of that licence have effect (whether in whole or in part).  |
| DA/ID        | Day Ahead/ Intra Day   |
| DSO          | Distribution System Operator - Are the operating managers of energy distribution networks, operating at low, medium and high voltage levels (LV, MV). Transmission grids transport large quantities of high (and extreme high) voltage (HV, EHV) electricity across vast distances, often from large power plants to the outskirts of large cities or industrial zones, where it is transformed into lower voltages distributed to all end-users through the distribution network. Over-head and underground cables leading to your home or business are operated by DSOs. |
| DSR          | Demand Side Response- Is the modification of   |



|           |   |
|-----------|---|
|           | consumer demand for energy through various methods such as financial incentives and behavioural change through education.   |
| EOI       | Expressions of Interest   |
| ESO       | Electricity System Operator - is an entity entrusted with transporting electrical power on a national or regional level, using fixed infrastructure.  |
| FSP       | Flexibility Service Provider  |
| GUI       | Graphical User Interface - is a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation.  |
| IPR       | Intellectual Property Rights - All industrial and intellectual property rights including patents, utility models, rights in inventions, registered designs, rights in design, trademarks, copyrights and neighbouring rights, database rights, moral rights, trade secrets and rights in confidential information and know-how (all whether registered or unregistered and including any renewals and extensions thereof) and all rights or forms of protection having equivalent or similar effect to any of these which may subsist anywhere in the world and the right to apply for registrations of any of the foregoing. |
| ISP       | Imbalance Settlement Period   |
| kW        | Kilowatts   |
| LongFlex  | Long Term Flexibility (before day ahead timeframe)  |
| MW        | A megawatt (MW) is a unit of electric capacity or electric load. A MW is equal to 1,000 kilowatts (kW).   |
| MWh       | A megawatt hour (Mwh) is equal to 1,000 Kilowatt hours (Kwh). It is equal to 1,000 kilowatts of electricity used continuously for one hour.   |
| NIA       | Network Innovation Allowance  |
| OFGEM     | Office of Gas and Electricity Markets   |
| SAT       | Site Acceptance Test - is a useful tool to determine the functionality of the equipment at the user site before its installation  |
| ShortFlex | Short Term Flexibility (on a day ahead or intra-day timeframe)  |
| UCR       | Utilities Contracts Regulations   |
| WP#       | Work Package  |



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