

ELEXON

BSC SANDBOX FINAL REPORT FOR CENTRICA

Final Report to the Authority
of the BSC derogation
requested by Centrica

Public

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Introduction

This report to the Authority applies to BSC Sandbox Application 2021-01, by Centrica. The report includes a summary of consultation responses, the relevant BSC objectives and the impact on other BSC parties. The report also includes the views and recommendations of the BSC Panel.

This report should be considered in conjunction with the original Sandbox application, and the risk and impact assessments prepared by Elexon for the BSC Panel. In particular, these documents provide an overview of the trial proposed by the applicant.

Briefly, the applicant proposes to trial participation in the Balancing Mechanism of Half-Hourly measured assets operated by a Virtual Lead Party where the assets are located on non Half-Hourly settled sites. This is currently prohibited by BSC rules, which require the assets to be located on Half-Hourly settled sites.

Consultation responses

There were 4 responses to the consultation, from two Suppliers, NGENSO and a third party organisation with relevant experience. In general the responses highlighted the need for appropriate controls and reporting on the trial, and the key points are set out below.

Key points of consultation responses

One of the consultations was submitted by a Performance Assurance Board (PAB) member, and many of the points of their response are reflected in the below section 'Views of the Performance Assurance Board'. The points below represent other issues raised in the consultation responses.

- At the end of the trial the following items should be included in the reporting for the derogation;
 - Number of instructions;
 - Value to NGENSO;
 - Delivered vs expected results;
 - Learnings about controllability of assets;
 - Adaptations to dynamic parameters for the assets in question; and
 - Cost of the derogation.
- Sites taking part in the trial should be communicated, to improve the ability for Suppliers to identify sites with a Virtual Lead Party operating.
- The impact of shifting load to a more expensive tariff rate and of imbalance and network costs for the boundary Supplier should be reviewed after the trial.
- Restrictions on bid/offer acceptance should be should be reflected in the dynamic and technical parameters of the Balancing Mechanism Units (BMUs) participating in the trial.
 - This has been discussed with NGENSO and is now resolved.
- There needs to be additional consideration of how 'unwinding' of bids/offers occurs on BMUs participating in the trial.
 - This has been discussed with NGENSO and is now resolved.
- The operation of the trial may reduce the incentive to transfer from NHH to HH settlement.
- The substitution of boundary meter data for validation may introduce potentially unlimited settlement errors.

A number of other points were raised relating to the accuracy of the delivered volumes and the subsequent risk of incorrect values being submitted into settlement. As the actual consumption volumes are being measured in real time

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at the asset by Code of Practice 11 compliant measuring devices, we feel these points are inherently addressed by the application.

Elxon view on consultation responses

The consultation responses raise a number of valid points, and we recommend that the derogation takes them into account. In particular, we suggest that the reporting plan includes the points raised above. We also suggest that the derogation is conditional on agreement from NGENSO in respect of the dynamic and technical parameters submitted for the BMUs and unwinding Bid-Offer Acceptances.

We understand that the trial has protections to avoid shifting load from less expensive to more expensive tariffs, and suggest that Centrica keep this under review to avoid any inadvertent load shifting to more expensive tariff times. Ofgem may wish to consider whether any additional consumer protections may be necessary to grant the derogation.

We agree that this trial may reduce incentives for customers to transition from NHH to HH settlement. However, our understanding is that there are relatively few opportunities for the average domestic customer to influence whether their existing Supplier uses elective HH processes.

Views of the Performance Assurance Board

In addition to consulting on the application, we sought the views of the Performance Assurance Board (PAB) on Centrica's application. They were interested in the following areas, and we have summarised a response under each;

- Will the Delivered Volumes be accurate? Are they actual data (from non-Settlement asset metering), or just estimated?

The delivered volumes will be measured at asset level by Code of Practice (CoP) 11 compliant metering, as will be required by BSC Modification P375 once it is implemented. This means the delivered volumes will be based on accurate actual data from the assets, rather than being estimated.

- Given that storage heaters generally charge at night, will the VLP only be able to submit Offers during that time (when there will be less need for flexibility)? Or will they end up making Offers at other times when they can't actually deliver?

The proposed trial will involve the assets participating usually but not necessarily exclusively during the Economy 7 period, to maintain existing benefits to customers from the Economy 7 tariffs. Offers will only be submitted for assets that are consuming, which will normally be during the night. If this concept were to be expanded to other types of assets following a Modification then there would be a greater range of time for participation.

- Will these NHH customers be isolated in specific Secondary BM Units, or will they be in the same Secondary BM Unit as HH customers (in which case the risks to Settlement from the inaccurate HH metered data will be larger)

These NHH customers will be isolated in a specific Secondary BM Unit or Units. A process will be put in place to move customers that become HH from the Secondary BMU(s) to HH BMU(s), this will be done periodically.

- How will affected Suppliers know that they are affected?

Per the usual P344 process, affected Suppliers won't know in advance. They will receive BMU-level details of the adjustments made to them, but won't know these relate to the trial. Affected Suppliers may or may not receive MSID-level details of Delivered Volumes, depending on the consent flag.

The aggregated impact will be reported in the annual reporting to prove there is limited to no impact.

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- Will the customers be in one GSP Group, or will they be spread across many?

The customers have not been identified ahead of the successful outcome of this derogation request. If there are customers in multiple GSP Groups, these will be placed in different Secondary BMUs.

- If the trial is approved, what information will be made available about how it went, and the learnings from it?

There will be annual reporting about the progression of the trial and the success or not of the operations. Of particular relevance to the BSC are learnings about whether there will any adverse impact on Suppliers and Balancing Services Use of System (BSUoS) charge calculations from the participation of these assets in the BM.

Sandbox Eligibility Criteria

We have considered and made an assessment against the Sandbox Eligibility criteria set out in the BSC Sandbox Procedure and are satisfied it meets the criteria, set out below.

The BSC Objectives

We believe the Derogation will better facilitate BSC Objective (c);

- Promoting effective competition in the generation and supply of electricity and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity.

We believe BSC Objective (c) is better facilitated because the trial aims to improve access to the BM for assets which are not located on HH settled sites. Increasing the range of assets able to generate and supply electricity is likely to improve competition in those markets.

Risk to Settlement

Our initial consideration of the risk to settlement is contained in the attached risk assessment, but we also make reference to additional analysis performed for the BSC Panel below. We retain the ability to audit volumes submitted in respect of the assets participating in the trial, and in respect of the Boundary Point Metering Systems participating in the trial, and of Centrica's HHDA submissions throughout the duration of the trial. We believe overall risk posed to Settlement from the trial is small.

Material impact on other BSC Parties

Our initial assessment determined that the direct impact on other BSC Parties is hard to characterise, as the effects were dependent on average deviation from profiles and should in theory average to zero across a large enough portfolio, resulting in the same impact as if the sites were settled Half-Hourly. More details can be found in the attached Impact Assessment document.

There is an indirect impact on all Suppliers due to the effect operating the assets will have on GSP Group Take, and the GSP Group Correction Factor. Group Take is the net volume by GSP Group, which will be altered by the utilisation of assets in a GSP Group. More information on this is provided in the later section on this analysis.

The minimum scope and timeline required

Centrica has requested that the trial operate for a minimum of 2 years, as the assets will only operate for a portion of the year (from October to April) with the majority of accessible volume concentrated in just a few months of the year. We believe this is a reasonable assessment of the minimum timelines.

The trial seeks to use the enrolled assets to participate in the Balancing Mechanism, which has a minimum participation volume of 1MW. The nature of the assets means that not all of the assets enrolled will be available at full capacity at the same time, so the BSC Panel have proposed a total capacity limit of 2.5MW apply to assets enrolled in the trial. We believe this is a reasonable limit, striking the balance between ability to operate the trial while minimising the potential impact on other BSC Parties.

Similarity to existing derogations

This derogation request is not similar to the existing BSC Derogation awarded on behalf of Emergent Energy (2020-01)

Imminent BSC changes of interest

BSC Changes P375, P376 and P419 will affect VLP operation. However, none impact on the ability of a VLP to provide services to customers on NHH settled sites. We do not believe that the implementation of any of these Modifications would impact on the operation of this derogation if it were to be granted.

Provisions of the BSC to be derogated

The derogation is requested against the following sections in so far as required to achieve the objectives of the derogation:

- BSC Section K8.1.2(b) – to enable a Secondary BM Unit to comprise of Plant and Apparatus whose Imports and Exports are not measured by Half Hourly SVA Metering System(s). In particular, enabling a Secondary BM Unit to comprise of Plant and Apparatus whose Imports and Exports are measured by Non Half-Hourly SVA Metering System(s).
- BSCP503 3.4.2.3B – to enable Centrica's HHDA to submit 0kWh volumes on receipt of a D0354 for the affected metering systems in place of the Metering System Half Hourly Volume required by the BSCP.
- BSC Section S10.4.3 – to enable the SVAA to notify Centrica's HHDA instead of the relevant HHDA, which does not exist for the Metering Systems in the trial.

Assessment of fees

Our service providers have not indicated that there will be any material costs relating to the operation of this derogation, provided there are a low number of MPANs participating (fewer than 100 per submission, however multiple submissions may be possible). Therefore, we do not believe any fees should be paid in association with the granting of the derogation. In the event our service providers do indicate material costs relating to the operation of the derogation, we may need to reconsider the impact on BSC Parties.

Transition plan

The assets will be participating in the BM via a remotely operated, cloud based system. In the event of the trial ending for whatever reason, the BM participation functionality will be turned off and the heaters will revert to their standard

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mode of operation. There will be no further impact on volumes at the sites once this occurs. The MSIDs would also be deregistered from the relevant Secondary BMU.

Reporting plan

Centrica would provide a report to Elexon annually on the process including the following information;

- i Number of instructions;
- ii Value to NGESO;
- iii Delivered vs expected results;
- iv Learnings about controllability of assets;
- v Adaptations to dynamic parameters for the assets in question;
- vi Cost of the derogation; and

Elexon will also review delivery of the derogation with Centrica after the first Winter Period (Q1 2023), providing information to the BSC Panel.

Views of the BSC Panel

A Panel Member queried how the Physical Notification (PN) baseline would be established to work out what the delivered volume would be on a bid or offer. Centrica advised that the delta delivered would be based on the actual meter and what enters Settlement would be based on the profile.

A Panel Member queried how often Centrica intended to read the Meter. Centrica advised that it intended to read the Meter every minute. Elexon also noted that the Settlement actions for the Boundary Point would be separated from Settlement actions for the delivery of the service. A Panel Member also confirmed that the HH customers could be from any customer in the market not just British Gas. Centrica clarified that they would not be the Supplier of the asset but would be the provider of a flexibility service. A Consumer Panel Member believed there to be a gap with the rollout of smart Meters so was of the view that this was a good way to use flexibility services, which is a known issue.

A Panel Member queried whether this would use P375 Asset Metering or baseline P344 process. Centrica confirmed that the trial would only commence with Code of Practice 11 compliant Meters once P375 had been implemented in June 2022. However, the trial would not look to commence until September 2022 as during the summer months, the assets do not use energy.

A Panel Member observed Ofgem's clear policy view to move to MHHS and observed that as this was a trial, Centrica could raise a Modification in the future if it needed to. A Panel Member expressed strong discomfort with granting the derogation until they had received satisfactory reassurance of Settlement risk from both Centrica and Elexon. Elexon therefore agreed to share Centrica's modelling with the Panel as soon as possible to demonstrate the impact on Settlement accuracy. Further, Elexon had also liaised with Ofgem on a separate Sandbox application to do with GCF so could also combine Centrica's information with this analysis and share with the Panel. The Panel suggested that this would be a sensible approach. We have attached this analysis in the next section of this document.

A Panel Member queried what the volume would increase to from 1MW over the course of the trial as there may be consequential effects on other parties. Centrica noted that they had proposed to start with 1MW (minimum requirement in the BM) but recognised that limiting the number of MSIDs in the trial was necessary. Centrica therefore proposed that the total volume be capped to 2.5MW, which would allow approximately 6000 assets. The Panel agreed that these volumes seemed sensible. The NGESO Panel Member suggested that any costs should be monitored and as such proposed that the costs be brought back to the Panel after the first Winter Period.

A Panel Member queried whether non-delivery charges would be applicable and if so, how these would be calculated. Elexon advised that the non-delivery charges would be calculated against the deviation from the PN; the Boundary Metered volume would normally only be used for a validation of delivery.

A Panel Member queried whether Centrica had carried out any simulation modelling or whether Centrica intended to use the trial to be able to do this. Centrica noted that as detailed in the application, simulations had been carried out on Profile Classes that already exist. Further, Centrica expects the impact to be minimal but with real customers and heating profiles, Centrica hoped to be able to prove that they were correct in their assumptions. Centrica also

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emphasised that the storage heaters are technology-enabled and therefore ready to be used in a real-life scenario. Centrica therefore hoped to demonstrate real-world flexibility with real customers from September 2022.

In communications relating to ex-committee approval of this derogation request, a Panel member reiterated the concern that Elexon capture the data outlined in the reporting section and use this data to quantify risk to settlement accuracy.

Additional analysis on request of the BSC Panel

The BSC Panel requested that prior to making their decision, Elexon provided an assessment of the potential distortion the trial could cause to GSP Group Take volumes. Elexon circulated the following analysis to BSC Panel members on 23 December 2021.

Summary

In a typical scenario for an average GSP Group, assuming an aggressive trading strategy with all volumes delivered in a GSP Group with average GSP Group take, Centrica's average dispatched volumes could represent up to 0.05% of average GSP Group Take for an average settlement period in a given month, averaging 0.03% across all Settlement Periods with activations. For the same time frame across all GSP Groups, the dispatched volumes would be equivalent to up to 0.91% of an average Group Correction Factor, averaging 0.49% across all Settlement Periods with activations. The total dispatch volumes over the year (665MWh) are equivalent to 0.10% of the total absolute GCF adjustment volumes for an average GSP Group, or 0.38% of an average GSP Group's total absolute GCF adjustment volume over the Settlement Periods affected.

In a worst case scenario, assuming an aggressive trading strategy with all volumes delivered in GSP Group P, Centrica's average dispatched volumes could represent up to 32.73% of average GSP Group Take for a Settlement Period in a given month, averaging 2.23% across all Settlement Periods with activations. However, for the same time frame and GSP Group the average dispatched volumes would be equivalent to up to 10.82% of an average Group Correction factor, averaging 2.15% across all Settlement Periods with activations. The total dispatch volumes over the year (665MWh) are equivalent to 0.42% of the total absolute GCF adjustment volumes for GSP Group P, or 1.35% of GSP Group P's total absolute GCF adjustment volume over the Settlement Periods affected.

Details

Centrica have provided daily forecast dispatch volumes (in MWh) by hour, which we have averaged to per Settlement Period volumes (SP) for the duration of the trial, assuming an aggressive trading strategy with competitively priced assets [Table 1].

Table 1: Forecast daily dispatch volumes (MWh)

SP:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
January	0.28125	0.28125	0.283266	0.283266	0.295363	0.295363	0.296371	0.296371	0.270161	0.270161	0.275202	0.275202	0.114919	0.114919
February	0.297991	0.297991	0.313616	0.313616	0.30692	0.30692	0.25558	0.25558	0.261161	0.261161	0.174107	0.174107	0.018973	0.018973
March	0.309476	0.309476	0.309476	0.309476	0.302419	0.302419	0.280242	0.280242	0.232863	0.232863	0.070565	0.070565	0.001008	0.001008
April	0.292708	0.292708	0.290625	0.290625	0.251042	0.251042	0.123958	0.123958	0.005208	0.005208	0	0	0	0
May	0.243952	0.243952	0.248992	0.248992	0.090726	0.090726	0.001008	0.001008	0	0	0	0	0	0
October	0.315524	0.315524	0.299395	0.299395	0.27621	0.27621	0.056452	0.056452	0	0	0	0	0	0
November	0.295833	0.295833	0.29375	0.29375	0.294792	0.294792	0.278125	0.278125	0.272917	0.272917	0.104167	0.104167	0.00625	0.00625
December	0.324597	0.324597	0.315524	0.315524	0.318548	0.318548	0.277218	0.277218	0.303427	0.303427	0.303427	0.303427	0.127016	0.127016

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By multiplying the SP daily dispatch volume by the number of days in each month, this table gives a total forecast annual dispatch volume of 665MWh.

For this analysis we demonstrate a 'worst case scenario' by assuming that customers recruited for the trial are all located in the GSP Group with the lowest average GSP Group Take per settlement period in Winter 20/21 (GSP Group P, North Scotland). We have overlaid Centrica's modelled dispatch volumes with average GSP Group Take in GSP Group P. GSP Group P also has the lowest average Group Correction Factor (GCF) of any GSP Group.

The analysis shows that during the Settlement Periods where Centrica would be dispatching volumes, the volumes represent up to 32.73% of the GSP Group Take volume in GSP Group P [Table 2]. However, the average volume as a percentage of GSP Group Take over the time is 2.23%.

Table 2: Forecast daily dispatch volumes as percentage of average GSP Group P GSP Group Take per Settlement Period per month

SP:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
January	0.40%	0.49%	0.52%	0.53%	0.59%	0.42%	0.31%	0.32%	0.32%	0.30%	0.29%	0.26%	0.09%	0.08%
February	3.73%	1.97%	1.66%	1.94%	1.76%	6.63%	1.24%	1.84%	6.91%	4.50%	3.38%	0.98%	0.06%	0.04%
March	32.73%	3.22%	4.85%	9.22%	6.26%	2.21%	0.75%	0.87%	1.33%	1.66%	0.52%	0.32%	0.00%	0.00%
April	0.40%	0.33%	0.33%	0.37%	0.31%	0.27%	0.13%	0.12%	0.00%	0.00%				
May	0.20%	0.18%	0.19%	0.20%	0.07%	0.07%	0.00%	0.00%						
October	2.05%	1.83%	2.82%	9.26%	15.87%	7.66%	0.69%	1.38%						
November	0.41%	0.41%	0.36%	0.32%	0.31%	0.42%	0.44%	0.40%	0.33%	0.39%	0.17%	0.24%	0.03%	0.35%
December	1.65%	1.42%	1.08%	0.85%	0.87%	2.46%	4.21%	27.91%	3.21%	5.34%	3.66%	5.44%	0.57%	0.32%

We have also compared the average dispatched volumes per SP to the average GCF volume per SP per month. This shows that even as a percentage of GCF GSP Group P, where the GCF volumes are unusually small, the volumes instructed during the trial will usually be small at 2.15% on average, peaking at 10.82% [Table 3].

Table 3: Forecast daily dispatch volumes as percentage of GSP Group P average absolute GCF volume per Settlement Period per month

SP:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
January	3.20%	1.52%	1.95%	3.82%	2.60%	1.52%	2.88%	3.67%	4.28%	3.31%	2.09%	1.91%	0.67%	0.43%
February	2.57%	1.42%	1.83%	3.22%	2.43%	1.77%	3.45%	4.17%	5.67%	6.20%	1.85%	1.93%	0.18%	0.10%
March	3.13%	2.79%	2.82%	2.63%	2.69%	2.40%	1.70%	1.74%	1.58%	1.35%	0.31%	0.33%	0.00%	0.00%
April	1.61%	4.44%	3.50%	1.74%	1.87%	1.32%	0.39%	0.47%	0.04%	0.04%				
May	1.40%	2.66%	1.99%	1.13%	0.48%	0.36%	0.00%	0.00%						
October	4.47%	10.82%	6.57%	3.08%	3.45%	2.90%	0.36%	0.39%						
November	2.30%	4.69%	4.29%	2.11%	2.22%	1.70%	1.01%	1.05%	1.90%	1.67%	0.62%	0.69%	0.03%	0.03%
December	4.89%	2.57%	3.30%	4.38%	4.77%	3.73%	1.73%	1.49%	1.27%	1.23%	1.05%	1.16%	0.56%	0.50%

It should be noted that GSP Group _P is highly unusual, as the average GSP Group Take between 0000 and 0700 in Winter 20/21 is 36.1MWh per Settlement period, compared to an average GSP Group Take across all GSP Groups of 739.5MWh per Settlement Period over the same period. The GSP Group with the next lowest average consumption over the same time is GSP Group N (South Scotland) with an average consumption of 521.2MWh per SP between 0000 and 0700.

Repeating the analysis with average consumption across all GSP Groups (i.e. the typical impact the trial would have on a GSP Group) shows that the volumes represent 0.03% of the absolute GSP Group Take on average, or 0.05% at the peak [Table 4]. These volumes demonstrate a significantly lower impact than indicated by the worst case scenario analysis.

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Table 4: Forecast daily dispatch volumes as percentage of average GSP Group GSP Group Take per Settlement Period per month

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14
January	0.03%	0.03%	0.03%	0.03%	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%	0.03%	0.03%	0.01%	0.01%
February	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%	0.04%	0.04%	0.02%	0.02%	0.00%	0.00%
March	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%	0.01%	0.01%	0.00%	0.00%
April	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%	0.02%	0.02%	0.00%	0.00%				
May	0.04%	0.04%	0.04%	0.04%	0.01%	0.01%	0.00%	0.00%						
October	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.01%	0.01%						
November	0.04%	0.04%	0.04%	0.04%	0.04%	0.05%	0.04%	0.04%	0.04%	0.04%	0.02%	0.02%	0.00%	0.00%
December	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.02%	0.01%

And the analysis showing the size of the activations compared to the average GCF volume per SP per month across all SPs also demonstrates that the activations are small compared to the normal correction for a GSP Group, averaging 0.49% and at most 0.91% [Table 5].

Table 5: Forecast daily dispatch volumes as percentage of average GSP Group average absolute GCF volume per Settlement Period per month

SP:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
January	0.42%	0.57%	0.57%	0.61%	0.64%	0.64%	0.67%	0.71%	0.67%	0.70%	0.68%	0.78%	0.36%	0.22%
February	0.46%	0.58%	0.54%	0.60%	0.64%	0.68%	0.58%	0.60%	0.63%	0.59%	0.38%	0.43%	0.05%	0.04%
March	0.45%	0.58%	0.74%	0.73%	0.68%	0.67%	0.62%	0.62%	0.53%	0.57%	0.18%	0.19%	0.00%	0.00%
April	0.43%	0.44%	0.51%	0.59%	0.45%	0.46%	0.22%	0.21%	0.01%	0.01%				
May	0.38%	0.40%	0.39%	0.36%	0.11%	0.12%	0.00%	0.00%						
October	0.88%	0.88%	0.73%	0.76%	0.68%	0.65%	0.14%	0.14%						
November	0.45%	0.48%	0.57%	0.63%	0.56%	0.58%	0.58%	0.55%	0.52%	0.57%	0.23%	0.24%	0.02%	0.02%
December	0.49%	0.69%	0.79%	0.81%	0.78%	0.71%	0.59%	0.59%	0.66%	0.72%	0.82%	0.91%	0.40%	0.31%

Notes

We have assumed that the hourly profiles provided by Centrica are delivered equally across both SPs in the hour. Winter 20/21 is defined as 01 October 2020 to 31 May 2021, as Centrica forecast delivered volumes for these months. We have only provided data for settlement periods 1 to 14 as Centrica have not forecast any activations outside of these times.

The BSC Panel Decision

The BSC Panel made an ex-committee decision, with a majority of BSC Panel members confirming the following recommendation by 14 January 2022.

- a) Recommended **APPROVAL** of the derogation request from Centrica subject to the following conditions;
 - i A restriction on the total capacity of assets participating in the trial to 2.5MW;
 - ii Annual reporting of the information listed in the Reporting plan section of this document.