Question No.	From	Proforma section	Criteria	Question	Date question asked	Date response required	Date received	Follow up to Question #
1	NC	7	Robust Methodology	Please provide such information as is sufficient to discharge the requirements of paragraphs 5.13 and 5.14 (pg30) of the Governance Document in relation to derogations.	07 August 2018	09 August 2018	09 August 2018	
2	NC	3	Innovative	2. Please explain how the proposed project exceeds what the ESO has committed to deliver using business as usual funding in its Black Start strategy where it says it will investigate: a. Distributed Energy Resources: Generation embedded within the DNO networks has the potential to provide a restoration service, depending on the level at which it is embedded into the network and the ability to control restoration at this point. National Grid SOF had undertaken a piece of work to explore alternative methods of "Black Start from distribution networks ". This report also detailed the current challenges in place and National Grid is looking to further explore technical solutions to these and the commercial viability	07 August 2018	09 August 2018	09 August 2018	
3				Confidential				
4				Confidential				
5				Confidential				
6	NC	n/a	Value for Money	Please explain why the project costs are focussed on procedural and commercial arrangements as well as desktop exercising rather than testing the demonstrating (or not) the feasibility of DER to provide black start services. Is there the potential that this investment could be wasted if it is not technically feasible to use DER to black start some of the system.	07 August 2018	09 August 2018	09 August 2018	
7	NC	n/a	Innovative	Please explain how the CEGB would have fulfilled this function prior to the advent of large centralised generating plant.	07 August 2018	09 August 2018	09 August 2018	
8								
9	NC	2	Innovative	At what scale have DDG power islands been demonstrated to your knowledge in GB and how does this project compare in scale.	09 August 2018	13 August 2018	13 August 2018	
10	LH	n/a	Value for Money	Please explain why the investigation of an alternative to costly feasability studies for DER black start services provision (p90) cannot be otherwise funded outside of the NIC.	14 August 2018	16 August 2018	16 August 2018	8
11	LH	n/a	Value for Money	Please provide further detail, including timescales and summaries of realised or expected outcomes, of the complementary NIA projects referred to throughout your submission.	14 August 2018	16 August 2018	16 August 2018	
12	LH	n/a	Innovative	Please provide further information on what wider studies on black start from DERs were used to inform the project (p25).	14 August 2018	16 August 2018	16 August 2018	
13	NC	7	Demonstration of a Robust Methodology	The Governance Document states: "If a Network Licensee considers that there is any possibility that it will require a derogation or exemption, either as a known requirement or as a contingency, from any of the regulatory arrangements then it must state this in the Full Submission. It must also provide, as part of its Full Submission, the evidence that it would put forward as part of its subsequent formal request to seek a derogation or exemption from those arrangements (should the Project be awarded funding), as well as details as to how and when it would apply for such a derogation." You have not provided all of this information, please do so. Stating that any derogation requests will follow the latest Ofgem guidance available at the time is insufficient.	16 August 2018	20 August 2018	20 August 2018	1
14	NC	2	Innovative	It is not clear that your proposal to 'develop' and 'demonstrate' the proposed method exceeds the commitment in your Black Start Strategy to 'explore' Black Start from distribution networks.	16 August 2018	20 August 2018	20 August 2018	2
15	NC	n/a		In various documents you acknowledge the Grid Code places an obligation on the ESO to procure Black Start services. In your submission you say: The results of both simulations and real-world tests will be of immense value to industry and will have a profound impact in maintaining efficient and economical Black Start services in the medium- to long-term as the energy system decarbonises and decentralises. The implication of this statement is that in your view the current approach will not be economic and efficient in the future. Section 9 A of the Electricity Act places an obligation on licensees to "to develop and maintain an efficient, co-ordinated and economical system of electricity transmission". If this project is not funded please explain how you will discharge the obligations placed on you by Section 9A of the Act.	16 August 2018	20 August 2018	20 August 2018	

16				Confidential				
17	EP	G	n/a	P81 – stability of power islands will critically depend on the ability of the generation to accommodate the dynamic nature of the demand. What controls are being implemented on the load banks to simulate appropriate demand behaviour in a black start situation?	21 August 2018	23 August 2018	23 August 2018	
18				Confidential				
19	EP	4	Innovative	P21 – what is different about the large scale wind envisaged by 2025 cf to that already connected? ie what is different in the future from today save the volumes of penetration?	21 August 2018	23 August 2018	23 August 2018	
20	EP	4	n/a	P21 – why does 1MW need 3MW?	21 August 2018	23 August 2018	23 August 2018	
				Confidential				
22	EP	7	n/a	P42 – third para – please explain in what relevance P2 has here.	21 August 2018	23 August 2018	23 August 2018	
23	CO	Section 4: Benefits, timeliness, and partners	a) Low carbon/environment and net financial benefits	Is the intention for the new Black Start market to be annual, seasonal, or even based on shorter periods? Shorter period contracts may be able to capitalise on seasonal variations in the generation mix. Was this considered?	21 August 2018	23 August 2018	23 August 2018	
24	CO	DERs – a large and growing opportunity for a Black Start market of dwindling providers	a) Low carbon/environment and net financial benefits	Is there a target for the synchronous/asynchronous ratio making up the Black Start mix in an area?	21 August 2018	23 August 2018	23 August 2018	
25	CO	Project Methodology	a) Low carbon/environment and net financial benefits	Is there a maximum number for the DERs that can participate in this project and is there any thought yet on the number of DERs that can provide these services for an operational scheme?	21 August 2018	23 August 2018	23 August 2018	
26	CO	Project Methodology	a) Low carbon/environment and net financial benefits	What is the minimum level of participation required in this project (number of DERs and total power delivered) for the results to be significant?	21 August 2018	23 August 2018	23 August 2018	
27	CO	Project Methodology	a) Low carbon/environment and net financial benefits	At this stage only thermal power stations, small hydro stations, wind farms and small gas or diesel stations will be allowed to participate. Why only these generators?	21 August 2018	23 August 2018	23 August 2018	
28	CO	Project Methodology	a) Low carbon/environment and net financial benefits	What is the current criteria for generators to participate in this project based on size and generation type?	21 August 2018	23 August 2018	23 August 2018	
29	CO	Project Methodology	a) Low carbon/environment and net financial benefits	Will a minimum reactive power capability (as a p.f.) be specified for participation?	21 August 2018	23 August 2018	23 August 2018	
30	CO	Project Methodology	a) Low carbon/environment and net financial benefits	How will the NIA project on the types of generation to be used feed into this project and will there be a late opportunity for additional generators to participate?	23 August 2018	28 August 2018	28 August 2018	

31	CO	Project Methodology	a) Low carbon/environment and net financial benefits	DERs implies batteries and DSR schemes. Will these be able to participate?	23 August 2018	28 August 2018	28 August 2018	
32				Confidential				
33				Confidential				
34				Confidential				
35				Confidential				
37	CO	Appendix D – Risk Register and Contingency Plan	g) Robust methodology and ready to implement	Risk 3: What mitigation has been put in place? If it turns out that this is the case for all the test areas how will the tests be carried out? Should this be a red risk?	23 August 2018	28 August 2018	28 August 2018	
38	CO	Appendix D – Risk Register and Contingency Plan	g) Robust methodology and ready to implement	Risk 4: What mitigation has been put in place? If it turns out that this is the case for all the test areas how will the tests be carried out? Should this be a red risk?	23 August 2018	28 August 2018	28 August 2018	
39	CO	Appendix D – Risk Register and Contingency Plan	g) Robust methodology and ready to implement	Risk 7 and 8: No cost risk is provided for participant costs. Challenging the participant costs elsewhere may provide an answer to this.	23 August 2018	28 August 2018	28 August 2018	
40	CO	Appendix D – Risk Register and Contingency Plan	g) Robust methodology and ready to implement	Why is poor recruitment of project participants not listed as a Risk?	23 August 2018	28 August 2018	28 August 2018	
41	NC	9	Deliverables	Please provide information explaining how you have ensured that the level of funding requested against each of the Project Deliverables is appropriate.	30 August 2018	03 September 2018	03 September 2018	
42	NC	9	Deliverables	Please provide additional information explaining how you decided the proposed level of evidence proposed for each project deliveralbe is appropriate. For example, for some deliverables you could have proposed commisioning documentation as part of the evidence.	30 August 2018	03 September 2018	03 September 2018	
43	NC	2	Robust Methodology	Please explain how many generators will require physical trials within the project to demonstrate to provide meaningful learning regaridng the ability of the SO to procure Black Start services from DER? How will you ensure that sufficient DERs are recruited to participate in the project?	30 August 2018	03 September 2018	03 September 2018	
44	CO	2	Robust Methodology	Can you please provide a physical definition of the proposed trials, e.g. what voltage will the DER be at, how many voltage levels above that will be back energised, other than loadbanks what demand will be supplied, will there be synchronisation back onto the system and will this be one of the existing DNO/TO interfaces.	30 August 2018	03 September 2018	03 September 2018	
45	CO	2	Robust Methodology	What will the hardware-in-the loop testing entail? (p.12 of proposal)	30 August 2018	03 September 2018	03 September 2018	
46	EP	Appendix A	a) Low carbon/environment and net financial benefits	Please explain why the carbon cost of the method is forecast to be zero (Table A.3, page 51) if DERs in the method case are expected to include gas or diesel stations (page 45).	06 September 2018	10 September 2018	10 September 2018	

47		Section 4: Benefits, timeliness, and partners	b) Value for money	While there are significant differences in the type of services to be procured, the commercial and interface processes of procuring Black Start services from DERs and potentially enacting them through the DSOs has similarities with those proposed in Power Potential and EFCC projects. For example, in the case of Black Start and EFCC there is a few-to-many step up in the number of service providers. In Black Start and Power Potential there is a need to engage with the DNOs/DSOs to ensure that the services are executed and a protocol for how they will be planned for in the short-term and despatched. For the Black Start Project and, where appropriate, for DER Black Start BaU, can you please explain <u>what learning there has been from these two projects</u> (EFCC and Power Potential) with regard to: 1. How the interactions with the DNOs/DSOs will be managed in terms of (a) overall coordination of the services (i.e. how delivery of the services are planned for at the outset and procurred) and (b) confirmation by the DNOs of availability of service providers based on the state of their network on a daily, weekly, etc. basis. 2. How the markets or bi-lateral commercial interactions with many parties (compared to the number of existing Black Start providers) will be managed. If applicable, also explain why the learning from those projects do not apply to Black Start from DER.	06 September 2018	10 September 2018	10 September 2018	
48		DERs – a large and growing opportunity for a Black Start market of dwindling providers	a) Low carbon/environment and net financial benefits	Have you determined the maximum ratio of asynch/synch generation for normal operation in each region? Will this influence the ratio of asynch to synch providers of Black Start services in each region?	06 September 2018	10 September 2018	10 September 2018	
49				Confidential				
50				Confidential				
51				Confidential				
52				Confidential				
53				Confidential				
54				Confidential				
55				Confidential				
56	EP	Appendix G		Further to Q17 and the discussion on this point at the Expert Panel meeting on 5 September, please elaborate on the research that should be done (as part of this project) to establish how the temporal behaviour of the demand comprising block loading should be characterized. This needs to be done in a meaningful way so that both simulations and physical tests present loading patterns that are reflective of real world conditions. In particular explain how the stability of DER will be established and demonstrated in the face of block loading profiles for which there does not appear to be any empirical GB data, and which can be expected to be volatile..	13 September 2018	17 September 2018	17 September 2018	17
57				Confidential				
58	CO	Appendix H - Summary of Necessary Innovations	**(b)** Value for r	How will the results from Black Start feed into BaU as opposed into an innovation programme, i.e. what undertaking is there that the outcome of this project will not only serve to inform a furthet innovaion project rather than leading to BaU.	18 September 2018	20 September 2018	20 September 2018	

59	CO	Section 4.(a) Benefits	**(b)** Value for r	A significant benefit of Black Start may be quicker restoration of local demand but this has not been claimed as a benefit. With this in mind, can you say: i. Compared to the licence conditions, what is the current target lapsed time for (a) restoration of individual GSP Groups and (b) the system as a whole following a complete loss of the system. ii. By which year do you think this target will be affected by the retirement or partial availability of the current Black Start fleet iii. What targets have been set for retsoration of (a) individual GSPs and (b) the system as a whole once the system has a significant dependence on DER for black start, say in 2035 and 2050.	18 September 2018	20 September 2018	20 September 2018	
60				Confidential				
61				Confidential				
62	CO	Appendix 3 Workstream 3	**(g)** Robust me	In addition to the response in Q9 and the details provided in the Case Studies, can you please confirm that you aim to establish pilot islands that are able to maintain internal stability for each of the Case Study areas and can you provide a map or list of potential DER driven power islands across the country	18 September 2018	20 September 2018	20 September 2018	9
63				Confidential				
64	CO	Appendix D	**(g)** Robust me	Even for the larger DER such as those proposed for this project, there may be a lack of technical skills in the genetaror's core organisation that could delay the project, increase its costs or creat operation risks. How has this been captured or is it captured in Risks 1 and 4?	18 September 2018	20 September 2018	20 September 2018	
65	NC	2	**(b)** Value for money	Please provide a detailed description of the outputs you expect to gain from the 'desktop exercising' described within your submission.	27 September 2018	02 October 2018	02 October 2018	
66	NC	2	**(g)** Robust me	Please provide a detailed description of what is within scope of the process development work you will undertake as part of the project. Will you for example include power flow analysis?	27 September 2018	02 October 2018	02 October 2018	
67				Confidential				
68	EP		Robust Methodology	To what extent is the detailed project plan and testing regime for this project dependent on the NIA project. How can the Panel understand the efficacy and value for money of the proposed NIC project without sight of the output of the NIA project? Given this, please justify the timing of this NIC application.	02 October 2018	04 October 2018	04 October 2018	
69	EP			What learning do you need to gain from the Case Studies to be confident that you can undertake a trial that will, at a ***minimum,*** be able to back energise a 132kV line? Please give the Panel confidence that if you are going to undertake a live trial you will commit to a practical demonstration of such a minimum arrangement.	02 October 2018	04 October 2018	04 October 2018	
70	EP			If no trial is undertaken how can the Panel be assured that additional customer funded innovation monies will not be required to ensure the ESO can procure Black Start services from DER as BAU, given your statement of readiness for BAU in the first bilateral.	02 October 2018	04 October 2018	04 October 2018	
71	EP			Given the expectation that the outputs of the project will be ready for BAU application, please explain why the Panel should have confidence that you have sufficiently considered the strategic needs for the Black Start compliant communications to relevant parties involved in the process.	02 October 2018	04 October 2018	04 October 2018	
72	EP			ESO is funded to deliver Black Start under its current settlement. Please explain what additional benefits NIC funders receive from funding this Black Start trial project as distinct from those arising out of a BAU approach.	02 October 2018	04 October 2018	04 October 2018	