SHETL 2015 NIC submission: New Suite of Transmissions Structures (NeSTS)

ISP Questions 22 April 2015

Q1: Under criterion (a), please provide some quantification for how the project would deliver benefits that outweigh the costs.

A1: The NeSTS project is anticipated to deliver benefits in the following ways:

- The NeSTS design is smaller than conventional towers, requiring less steel and fewer foundations; reductions in the volumes of material needed lead to cost savings.
- Smaller civil engineering works will allow additional cost savings.
- The smaller size and foundations may mean that NeSTS tower builds are less contentious to community and environmental groups, and may proceed more quickly through planning, allowing network operators to save time and money at the planning stages.
- NeSTS tower structures are likely to offer reduced maintenance; for example, the use of insulated cross arms may lower requirements for painting.
- Should NeSTS be successful in trial deployment and is adopted across GB, there is the potential for economies of scale.

Each of these benefits will help to deliver savings to customers. Initial studies and early engagement with equipment suppliers and stakeholders have indicated that savings of up to XXXX percent may be achievable if the NeSTS approach is implemented. SHE Transmission will continue to develop and refine the business case for the project prior to full submission. It is anticipated that a 'Stage Gate' will be included prior to Phase 3 of the project to allow the benefits case to be further tested before the project moves to deployment.

The cost of the project is subject to confirmation and will be further refined as the project develops prior to full submission.

Q2: Under criterion (c), will there be any cross-over learning with any NIA projects/international projects?

A2: The NeSTS project is based upon the full scale testing, development and ultimate deployment of the structures which have been identified in the ongoing NIA project. In identifying these preferred structures the NIA project has considered learning from a wide range of other projects both from the UK and internationally, such as the IFI Insulated Cross Arms project led by SHE Transmission and Arago. If successful with the NeSTS project then SHE Transmission will continue to monitor other relevant projects and incorporate any learning which may be beneficial.

Q3: Under criterion (c), why have phases 1 and 2 not been completed under a NIA project?

A3: The objective of the NIC NeSTS project is to deploy the new tower designs on a proposed overhead line project. Phase 1 of the project tests prototypes of the new overhead line designs at scale; this is outwith the scope of the current NIA-SHET-0010 New Suite of Transmission Structures project. Phase 2 of the NIC project is intended to refine and produce an alternative design for a planned overhead line project utilising the new tower suite; this will be done in parallel with a design being produced using the traditional tower structures to ensure the overhead line project is not compromised

At the end of Phase 2 a 'Stage Gate' will be incorporated into the project where the 'innovative' and "traditional" designs will be compared and a decision made as to which option will proceed. The

project will then move **directly** into the deployment stage, with construction of the new overhead line. The planned overhead line project has a committed programme with obligatory scheduling of seeking consent, construction and commissioning. This will be driven by a number of factors including proposed outage windows, customer requirements and sensitive environmental factors, such as breeding seasons for local wildlife.

If Phases 1 and 2 of the NeSTS project were to be completed under NIA, then a future NIC submission would be required to fund Phases 3 to 5. The timeframes and uncertainty associated with any future NIC submission would result in a significant delay between the end of Phase 2 and the start of Phase 3. This delay and uncertainty would result in an unacceptable level of risk for the proposed overhead line project, and use of a conventional structure would be necessary.

NIC funding is necessary from the start of the project to provide SHE Transmission with the necessary confidence to develop the new structures and proceed with them. NIC funding is needed to allow comprehensive knowledge capture and dissemination to other licensees incrementally throughout the project; this in turn allows widespread adoption of the solution and subsequent economies of scale.

Q4: Under criterion (d), what voltage will the new structures be used for?

A4: The proposed designs identified in the NIA project are primarily focused at 275kV; however, the learning may be applicable to both 132kV and 400kV installations.