Decision

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Isle of Skye - Decision on the project's Initial Needs Case and on its suitability for competition

Subject	Details
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This document sets out our key findings and decisions from the Isle of Skye project's Initial Needs Case following our consultation on 16 December 2021.

Contents

Executive summary

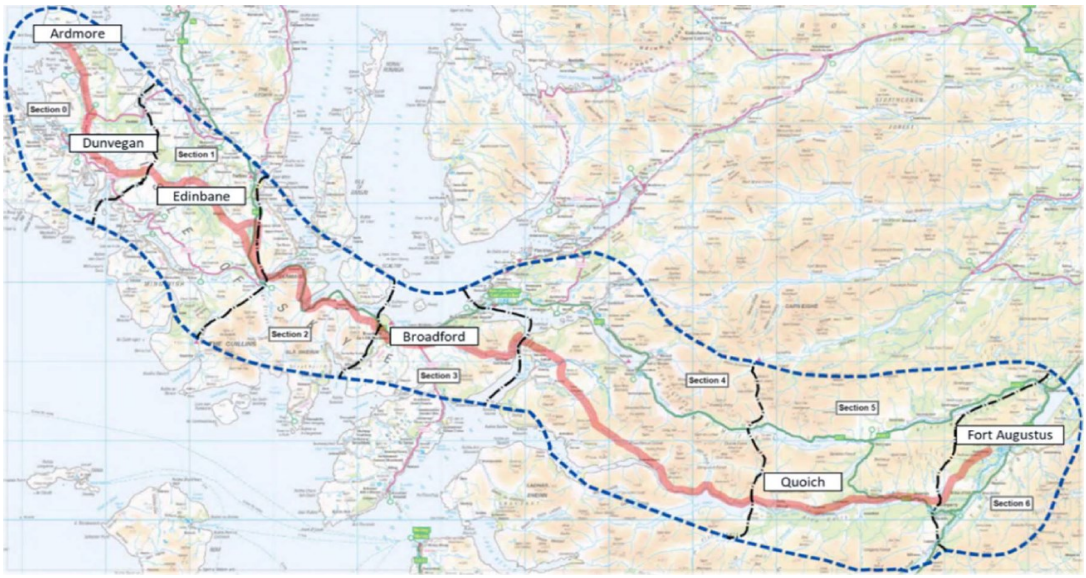
The Isle of Skye project and what this document covers

In December 2021 we consulted on our minded to position in relation to the Initial Needs Case (INC) submission from Scottish & Southern Electricity Networks (trading as Scottish Hydro Electric Transmission plc) (SHET), who own and operate the transmission network in the north of Scotland, regarding the proposed 'Skye 132kV Reinforcement' (Skye) project. The Skye project was submitted for our consideration under our Large Onshore Transmission Investment (LOTI) mechanism. The full consultation and stakeholder responses can be found here[1].

Skye is an electricity transmission infrastructure project that proposes to replace the existing single 132kV overhead line (OHL), as per figure 1, spanning 160km between the Fort Augustus 400kV substation on the mainland to Ardmore on the Isle of Skye. The Skye project is mainly driven by the need to address the condition of current assets (non-load related intervention); however, the proposed designs include an upgrade[2] to the OHL to enable future additional renewable generation (load related intervention) in the Skye area to be connected. SHET estimates that the Skye project will cost around £400m and will be completed[3] by 2026.

Figure 1: The Skye 132kV transmission line

[1] Isle of Skye project – Initial Needs Case consultation
[2] The existing Skye 132kV transmission circuit has a summer rating of 67MVA. It is a single circuit construction consisting of a steel lattice tower and wood poles. The proposed upgrade, a double circuit steel lattice construction, will increase the summer rating to 348MVA per circuit from Fort Augustus to Edinbane. Cable sections identified on the route will match the OHL ratings. The section between Edibane and Ardmore, a single circuit wood pole design, will have summer rating of 176MVA
[3] See Appendix 1 for project milestones. Note: use Ctrl+Click to follow the link (hold down the Ctrl key and press the left mouse button). You can then return to this section of the document by using the Alt+LeftArrow combination (hold down the Alt key and press the Left Arrow key)



In accordance with our RIIO-2 price control arrangements, we have assessed the need for the Skye project under our LOTI re-opener mechanism[4] and its suitability for delivery through a competition model.

This document sets out our key findings and decisions in relation to the Initial Need Case (INC) assessment and next steps for the project.

Large Onshore Transmission Investment (LOTI) Initial Needs Case assessment

We are satisfied that there is sufficient evidence of a clear needs case for the Skye project. Having taken into consideration the fourteen consultation responses received, we are satisfied that SHET has made the case that asset intervention is required and that replacement rather than refurbishment is the most cost-effective solution for Skye. We have not identified any material changes to the evidence underpinning the needs case through the consultation responses we received and as such, this decision confirms our proposed decision on the INC assessment as set out in our December 2021 consultation.

We consider that the cost benefit analysis (CBA) undertaken by SHET as part of the INC submission is robust and supports the need for the Skye project. We are also satisfied that the CBA has considered the most relevant technical options.

[4] Special Condition 3.13 of the Electricity Transmission Licence

We agree that at this point the preferred option put forward by SHET is reasonable and is likely to provide the optimal solution given the background generation assumptions that underpin the CBA. However, given the sensitivity of the CBA to background generation assumptions, we cannot at this stage disregard option 1b which addresses both the condition of the assets and provides increased capacity to the 'Skye circuit' (the circuit) for additional future generation, albeit at a lower level of capacity than the preferred option put forward by SHET.

We are engaged in ongoing dialogue with SHET to work towards agreeing a suitable FNC submission date to aid timely delivery of the Skye project. As part of the FNC process, we expect SHET to update their generation and demand forecast based on the latest developments, particularly with regards to the progress of locally proposed generation. We also expect an updated CBA as well as any further information and evidence that becomes available during our assessment process to enable us to assess whether the case for their preferred option remains economic and efficient. We anticipate SHET will monitor development of the Holistic Network Design (under the 'Pathway to 2030' workstream of the Offshore Transmission Network Review) and carefully consider any interactions or implications for the Skye project to ensure that the local network is designed efficiently.

We expect our focus at the FNC stage to be on assessing updates to the generation forecast and that any changes in technical scope, design, or cost estimates relative to the INC are fully understood and justified.

Assessment of suitability for late competition models

As the Skye project is being considered under the LOTI mechanism as part of the RIIO-2 price control, we have, in line with our Final Determinations for the RIIO-2 period, assessed the suitability of the Skye project for 'late model' competition[5]. Our view is that the Skye project would meet the criteria for delivery via a late model competition[6].

[5] 'Late model' competition refers to the late models of competition (i.e. run for delivery once a project is sufficiently developed) identified for consideration for LOTI projects within the RIIO-2 period (the Competitively Appointed Transmission Owner (CATO) model, the Special Purpose Vehicle (SPV) model, and the Competition Proxy Model (CPM)). For further information, see RIIO-2 Final Determinations, Core Document (REVISED), chapter 9

[6] The criteria are new, separable, and high value (£100m or above)

We have decided to retain the Skye project within the LOTI mechanism as part of the RIIO-2 framework and not use a late competition delivery model. Given further clarity on the timings for the main procurement stage of the Skye project, we cannot envisage either the CATO or SPV models being implemented without causing material project delay. In addition, the indicative results of our CPM analysis do not provide sufficient confidence that CPM would deliver material consumer benefits for the Skye project.

In the event that the Invitation to Tender (ITT) stage of the project is materially delayed, however, we may revisit this decision and consider whether to apply a late competition model.

Large project delivery

In our RIIO-2 Final Determinations[7] we set out our approach to late delivery of large projects (>£100m) with the aim to ensure companies do not benefit from the delay and to protect consumers from the impact of such a delay.

We said in our consultation that we will set our minded to position on which large project delay mechanism(s) to apply to the Skye project as part of the FNC.

We are engaging with SHET and other TOs to review implementation of the LPD policy. To ensure we consult fully on the most appropriate LPD policy to apply, we anticipate that our minded to position will now be set out at the Project Assessment (PA) stage rather than the FNC stage. In the meantime, we welcome SHET's continued engagement on the matter.

[7] RIIO-2 Final Determinations, ET Annex (REVISED), page 32 onwards

1. Introduction

Context

1.1. The GB onshore electricity transmission network is currently planned, constructed, owned, and operated by three Transmission Owners (TOs): National Grid Electricity Transmission (NGET) in England and Wales, Scottish Power Transmission (SPT) in the south of Scotland, and Scottish Hydro Electric Transmission (SHET) in the North of Scotland. We regulate these TOs through the RIIO price control framework. For offshore transmission, we appoint offshore transmission owners (OFTOs) using competitive tenders.

1.2. The incumbent onshore TOs are currently regulated under the RIIO-2 price control, which started on 1 April 2021 and will run for 5 years. Under this price control, we developed a reopener mechanism for assessing the need for, and efficient cost of, large and uncertain electricity transmission reinforcement projects: the Large Onshore Transmission Investments (LOTI) reopener. Once the need for and costs of projects have become more certain, the TOs bring forward construction proposals and seek funding for them. As explained in Chapter 9 of our RIIO-2 Final Determinations – Core document[8], all projects that come forward for assessment via the LOTI reopener during the RIIO-2 period will be considered for their suitability for delivery through one of the late competition models.

1.3. Network investment is informed by the Future Energy Scenarios (FES)[9], and the Network Options Assessment (NOA)[10], which are developed and published annually by the Electricity System Operator (ESO)[11]. A key focus of the FES is the inclusion of the legally binding[12] UK Government Net Zero targets, to be achieved by 2050. The transition to a Net Zero economy will see increased demand on transmission boundary capability, which will need to be facilitated by critical network reinforcements.

Overview of the LOTI reopener mechanism

[8] RIIO-2 Final Determinations, Core Document (REVISED)
[9] The FES is the ESO's representation of a range of different, credible ways to decarbonise the energy system to strive towards the 2050 target
[10] The NOA is the ESO's recommendation for which reinforcement projects should receive investment during the coming year
[11] In April 2019 National Grid ESO became a legally separate business within National Grid plc
[12] The Climate Change Act 2008 (2050 Target Amendment) Order 2019

1.4. The LOTI re-opener mechanism provides TOs with a route to apply for funding for large investment projects that can be shown to deliver benefits to consumers, but that were uncertain or not sufficiently developed at the time we set costs and outputs for the RIIO-2 price control period. The LOTI mechanism provides us with a robust assessment process through which we can ensure that TO proposals represent value for money for present and future consumers.

1.5. To qualify for the LOTI mechanism TO proposals must meet the following criteria:

a) are expected to cost £100m or more of capital expenditure; and
b) are, in whole or in part, either;
    i. load related; or
    ii. related to a shared-use or sole-use generator connection project[13].

1.6. We are satisfied that the Skye project meets these criteria and is therefore eligible as a LOTI project. We are therefore assessing the Skye project in accordance with the LOTI process, as detailed in the LOTI Guidance[14].

Stages of our LOTI assessment

1.7. Following the approval of eligibility, our LOTI assessment process is made up of three main stages:

1. **Initial Needs Case (INC)** - The usual focus of our assessment at this stage is to review the technical and/or economic requirement for the Skye project, the technical options under consideration, and the TO's justification for taking forward its preferred option for further development.

2. **Final Needs Case (FNC)** – Following the securing of all material planning consents for the Skye project the TO will then need to submit a FNC (unless we specify alternative timing). The focus of our assessment at this stage is to

[13] As a result of a licence modification, which came into effect on 24 July 2021, the part of the criteria relating to "shared-use or sole-use generator connection project" no longer applies. However, this does not impact the project as this is in part a load related project. For further information on the licence modification, see the Decision on the proposed modifications to the RIIO-2 Transmission, Gas Distribution and Electricity System Operator licence conditions
[14] Large Onshore Transmission Investments (LOTI) Re-opener Guidance

confirm the need for the Skye project, by checking that there have been no material changes in technical and/or economic drivers that were established at INC.

3. **Project Assessment (PA)** – If the FNC is approved, the TO will then need to apply for a Project Assessment Direction. The focus of our assessment at this stage is the assessment of the proposed costs and delivery plan that the TO has in place for the Skye project, with a view to potentially specifying in the TO's licence a new LOTI Output, a LOTI Delivery date, and setting the efficient cost allowances that can be recovered from consumers for delivery of the Skye project.

1.8. SHET submitted the INC for the Skye project in July 2021. We consulted on our assessment of the INC in December 2021.

1.9. All non-confidential responses to our consultation are published on our website alongside the decision.

Related publications

1.10. Isle of Skye project – Initial Needs Case consultation: Ofgem.gov.uk/publications/isle-skye-project-initial-needs-case-consultation

1.11. RIIO-2 Final Determinations: Ofgem.gov.uk/publications/riio-2-final-determinations-transmission-and-gas-distribution-network-companies-and-electricity-system-operator

1.12. LOTI Re-opener Guidance: Ofgem.gov.uk/publications/large-onshore-transmission-investments-loti-re-opener-guidance

2. Skye Initial Needs Case initial views and overview

Section summary

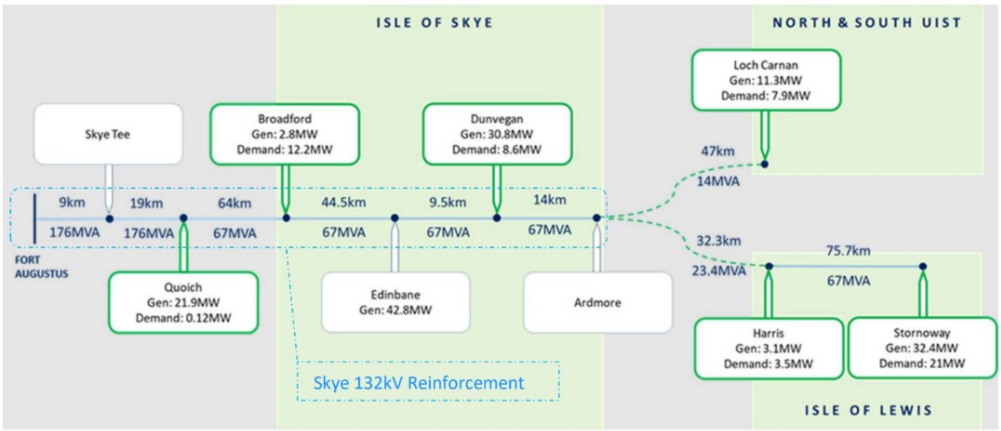
This chapter summarises the key design choices SHET has made to date on the Skye project and the Cost Benefit Analysis (CBA) underpinning the need for, and design of, the Skye project. It sets out our views on these as presented in our December 2021 consultation and summarises the key consultation responses. Finally, it sets out our decision to approve the INC and our reasons for that decision.

Overview of SHET's proposal

2.1. SHET's project proposal to reinforce the current existing 160km Skye 132kV transmission network is mainly driven by the condition of current assets. The proposed design also includes an upgrade to the OHL to enable future additional renewable generation as well as maintain security of supply. The project is supported by a CBA carried out by the ESO.

2.2. SHET estimates the Skye project will cost around £400m and be completed by 2026. The current existing Skye 132kV transmission network and surrounding area network is as per figure 2, with the proposed Skye 132kV reinforcement shown in the dotted blue box.

Figure 2: Existing Skye 132kV Transmission Network & proposed reinforcement[15]



[15] Green boxes signify points where generation comes on and demand is taken off the OHL

2.3. The existing transmission network is a single circuit operating at 132kV, starting at the Fort Augustus substation on the Scottish mainland before crossing west onto the Isle of Skye. The circuit continues northwest onto Ardmore substation. The OHL utilises steel lattice towers and wood pole designs throughout its length. Fort Augustus to Skye Tee (9km) is rated at 176MVA[16], Skye Tee to Quoich (19km) is rated at 176MVA, and Quoich to Ardmore (132km) is rated at 67MVA.

2.4. Appendix 2 of this document replicates the information provided in our December 2021 consultation on why the project has been brought forward, how SHET arrived at its preferred option for reinforcement, and the options that were considered in the CBA. The result of the CBA is also included, along with justification for SHET's proposed position.

Our conclusion on the Skye project

2.5. Fourteen stakeholders responded to our Isle of Skye INC consultation[17]. The respondents included network companies, private and community-based generation developers, one environmental group, and local residents.

Non-load, load, and security of supply drivers

Consultation position

(i) Non-load related driver

2.6. We agreed that the Skye project has several clear asset health drivers requiring intervention.

(ii) Load related driver

2.7. We agreed that additional capacity is likely to be needed to allow new generation to connect to the Skye network. We noted that at the stage of INC assessment there was still

[16] MVA is Mega Volt Amperes (MVA) power which is a unit used for measuring the total current and voltage in an electrical circuit. Mega = 1,000,000
[17] Isle of Skye project – Initial Needs Case consultation

significant uncertainty over the level of generation that will end up connecting to the transmission network.

(iii) Security of Supply

2.8. We stated that we do not entirely agree with the security of supply driver put forward by SHET. From a demand perspective, we noted that Skye is secured by several diesel generators and by the distribution network. We note that there are no plans to remove the diesel generators from the distribution network, so demand is currently secure. From a load or transmission access perspective, we noted that the existing Skye OHL is oversubscribed, and a derogation is currently in place to address SQSS[18] non-compliance. We recognised that to enable the connection of future generation, reinforcement of the circuit will be required.

Consultation responses and our consideration of them

2.9. Ten stakeholders agreed with our initial conclusion on the three drivers. Four expressed no view.

2.10. SHET stated the importance of a long-term view of renewable generation and building a solution that does not require additional future works. They disagreed with our security of supply position stating that given the OHL asset health condition, any reinforcement will improve security of supply by improving the OHL's reliability and reducing the reliance on diesel generators.

2.11. One respondent queried why there are no plans to remove the diesel generators.

2.12. One respondent noted that renewable generation and security of supply drivers could be further strengthened by reference to Net Zero objectives and the long-term benefits of providing security of supply to 32,000 affected homes and businesses in the region.

[18] The National Electricity Transmission SQSS sets out the criteria and methodology for planning and operating the GB transmission system

2.13. We acknowledge that given the OHL asset health condition, any reinforcement will improve security of supply. Nevertheless, since there are no plans to remove the diesel generators, we maintain the point that demand is currently secure.

2.14. We queried Scottish Hydro Electric Power Distribution plc (SHEPD) as to why there are no plans to remove the diesel generators. Their rationale is that the diesel generators are being kept in case of major events such as extreme weather. The recent storms across the UK have highlighted the importance of backup options. Given SHEPD's justification that the use of these diesel generators would be minimal, we are comfortable with SHEPD's response considering security of supply, particularly in view of the Isle of Skye's remote location.

Decision

2.15. For the reasons set out above, we remain satisfied that the three key drivers (non-load, load and security of supply) underpin the need for the project.

Technical options

Consultation position

2.16. We deemed that an appropriate range of options were considered to address the non-load and load related drivers for the Skye project, noting that all options provided a SQSS compliant solution. We were also comfortable with the options taken forward for assessment in terms of their technical solution.

Consultation responses and our consideration of them

2.17. Seven stakeholders agreed with our initial conclusion on the technical options considered. Two flagged concerns around the technical options put forward. Five expressed no view.

2.18. Two respondents stated that the connection needs of Western Isles generators and, specifically, of Western Isles community generators should be considered in assessing the Skye upgrade. They flagged two concerns where the need to improve the Western Isles resilience was not considered as part of the Skye submission:

i. They expected a report to be completed by SHET in relation to the connection needs of Western Isles generators that would provide additional technical options for the Skye project. They stated that this report was not completed and therefore all technical options have not been considered; and
ii. They were concerned about whether the new cable from Uist to Skye, which has now been committed to as part of the SHEPD's RIIO-ED2[19] plans, has been factored into the planning stages for the new Skye link.

2.19. We queried SHET about the report referred to in the first bullet above. SHET pointed out that the report was in relation to the distribution network and that conversations were held between the respondents and SHEPD, not SHET. We have engaged with electricity distribution colleagues who have noted that the connection needs and resilience of the Western Isles are currently under review as part of the RIIO-ED2 process. Our colleagues are also in dialogue with SHEPD to address the respondent's concerns.

2.20. Regarding Skye, we do not believe that the report would have had any influence over the technical options put forward as SHET has considered a range of technical options, all of which provide a significant increase in power transfer capability over the existing onshore circuit rating. The future developments on Skye will not limit the power transfer from either Uist or Harris based upon the existing transfer capability of the subsea cables between the Isles. There are several circuit limitations when considering the power transfer from the Western Isles to Skye. There is, based upon the design options presented by SHET, capability on the onshore network for an increase in power transfer using either one of the preferred solutions. It must be noted that any increase in generation over the present values may trigger the need for further intervention such as a new HVDC connection, an increase in AC subsea cable ratings, or additional subsea cable circuits. These aspects have been considered during our assessment and the preferred option remains 4a or 4a01.

Decision

2.21. For the reasons set out above, we remain satisfied that SHET has considered a suitable range of technical options.

[19] Network price controls 2021-2028 (RIIO-2) - About RIIO-ED2

Overall view and preferred CBA option

Consultation position

2.22. We considered that the preferred option put forward by SHET (option 4a or 4a01) is reasonable and likely to provide the optimal solution given the combination of non-load and load related drivers, and the background generation assumptions that underpin the CBA.

2.23. We agreed that options 0 and 5a were not likely to deliver the best outcomes for consumers.

2.24. We noted that option 1b could be the most appropriate solution if less generation comes forward. The CBA showed that, where no more than 561MW of generation comes forward, then option 1b would be the preferred solution according to the CBA's Least Worst Regret[20] (LWR) assessment. We noted that although future potential renewable capacity growth for the Skye area over the upcoming decades may exceed this value, it cannot be ruled out at the INC consultation stage. As such, we noted that the Probability of Generation Assessment Tool (PGAT)[21] used by SHET to estimate potential future generation has an element of subjectivity to it which can lead to different sets of generation scenarios. Given the sensitivity of the CBA to these weightings within the PGAT, we therefore could not disregard option 1b as it addresses both the condition of the assets and provides additional capacity for future generation, albeit at a lower level of capacity than the preferred option put forward by SHET.

2.25. We stated that we would expect SHET to update its generation and demand forecast at the FNC stage based on the latest developments, particularly with regards to the progress of locally proposed generation. We also noted that we expect SHET to monitor development of the Holistic Network Design (under the 'Pathway to 2030' workstream of

[20] LWR is a decision-making tool that makes recommendations based on which options/strategy produce the least 'regret' across all analysed scenarios. We are aware of some limitations of the LWR analysis in practice. LWR results are determined by the balance between the least and most onerous case for development which could lead to spurious investment recommendations if scenarios are not 'credible'. To minimise this risk, the ESO's NOA results are reviewed by the NOA committee who use the latest market intelligence to test the plausibility of the results, and sensitivity analysis is undertaken to look at how robust recommendations are to scenario changes

[21] SHET contracted Gutteridge Haskins & Davey Limited to develop a 'probability of generation assessment tool' (PGAT) to determine how much generation would likely ultimately come forward (i.e. be built). The PGAT "scored" twenty-five projects using six criteria, weighted differently, as per Appendix 6. The result was used to identify where a project's MW generation value would fall within four possible renewable generation scenarios

the Offshore Transmission Network Review) and to carefully consider any interactions or implications for the Skye project in order to ensure that the local network is designed efficiently onshore and offshore.

Consultation responses and our consideration of them

2.26. We identified five overarching themes from respondent replies:

i. CBA options;
ii. FNC submission timeline;
iii. Socio-economic benefits;
iv. Whole system improvements; and
v. Community owned generation projects.

CBA options

2.27. Seven stakeholders agreed with our initial conclusion on the CBA and appropriateness of the option taken forward. Two disagreed. Five expressed no view.

2.28. Three respondents supported SHET's 'do it once, do it right' approach given Skye's environment and scenic backdrop.

2.29. Two respondents were not supportive of option 4a01 going ahead given the five years additional time required for project delivery compared to option 4a.

2.30. Four respondents stated that option 1b should not be progressed as it would result in an oversubscribed circuit and effectively restrict new renewable generation.

2.31. SHET stated that it will update its generation forecast ahead of FNC and monitor development of offshore generation which it believes will conclusively demonstrate that option 4a is the most appropriate option.

2.32. One respondent supported the view that SHET should provide an update to its generation forecast at the FNC stage before deciding between option 4a and option 1b.

2.33. With regards SHET's proposal to keep option 4a01 option at this stage. we recognise that option 4a01 requires an additional five years until completion compared to option 4a. We also note that the option with the LWR in the CBA is option 4a; however, given that the

regret between options 4a and 4a01 is not significant enough to warrant discounting option 4a01 at this stage, we believe SHET's intention to keep both options under consideration until the FNC stage is prudent.

2.34. We note the respondents' view that option 1b should not be progressed. However, as set out in our consultation, the generation scenarios used to underpin the CBA results have an element of subjectivity to them. Given this subjectivity we are reluctant to rule out option 1b at this stage, particularly since it would address the asset health situation and provide some level of additional capacity for future generation.

2.35. We note that SHET has agreed to update its generation forecast for the FNC submission and believes that this will conclusively demonstrate that option 4a as the most appropriate option to take forward. We welcome receiving this clarity at the FNC stage, which will enable us to make a more informed decision for the benefit of consumers.

FNC submission timeline

2.36. One respondent flagged the need to align the FNC process to SHET's project management process to avoid any potential delay to project delivery.

2.37. One respondent asked for clarity regarding why SHET is submitting its FNC prior to securing all material planning consents. They noted that this is not in line with the LOTI guidance[22].

2.38. SHET stated that submitting the FNC and receiving a "subject to planning consents" decision from Ofgem ahead of receiving material planning consents is the most efficient way to mitigate potential connection and project delays. It noted that it has high confidence when it submits planning applications that consent will be granted and that any material changes to a proposed solution between application and consents being granted are very rare. Given this, SHET is asking Ofgem to: i) accept FNC submission at the point where it submits its planning application; and then ii) provide a 'subject to planning consents' decision on the FNC decision before the outcome of the planning consents process.

[22] Large Onshore Transmission Investments (LOTI) Re-opener Guidance, 29 March 2021, Table 1: Overview of timings of stages in the LOTI process, page 15

2.39. We recognise the need to allow flexibility to the LOTI process where appropriate to help a project meet its required delivery date. We are therefore willing to consider an early FNC submission for the Skye project before a decision on planning consent has been made; however, we would require the early FNC submission to be a full complete submission apart from the decision regarding planning consent. We would also be willing to consult on our assessment of an early FNC submission and to make a decision on it before the decision on planning consent was made; however, any decision taken at that stage would be made conditional on the outcome of the planning consent process for the Skye project. This is because it would not be appropriate for Ofgem to:

i. Pre-judge (or be seen to pre-judge) the outcome of the planning consent process, which is conducted by different parties and is entirely separate to the regulatory approval process; or
ii. Commit consumer funding to the construction of the Skye project before it has secured planning consent in case the planning consent process raises any material issues with the need for, or design of, the Skye project.

2.40. We are in dialogue with SHET and are working towards agreeing a suitable FNC submission date.

Socio-economic benefits

2.41. Two respondents requested Ofgem consider the ability to support Net Zero objectives.

2.42. One respondent mentioned that the INC assessment should be cognisant of the overall economic benefit to Skye that can be enabled by a capacity boosting reinforcement project.

2.43. One respondent requested that Ofgem look at broader factors that benefit the overall community such as renewable resource availability, ability and experience of community organisations to deliver projects, how supportive planning departments are, and the capability to support Net Zero objectives as opposed to only building the network to suit current demand.

2.44. SHET noted that carbon displacement enables renewable generation to displace carbon-based energy generation sources and that the value of carbon has become a quantifiable metric due to BEIS carbon pricing development. Given the value to society of

displaced carbon and this being a material cost SHET indicated that it will include the calculation to represent this in its FNC submission. SHET also noted that socio-economic benefits are important too, such as the likelihood of creating benefits to the immediate economy and wider supply chains and therefore indicated that it will also include a socio-economic report in its FNC submission to demonstrate these wider benefits.

2.45. We consider that our assessment of the Skye project so far has appropriately taken Net Zero into account, alongside our other duties such as to protect consumers. The pathway to Net Zero is not clear (the location of new renewable generation is not clear for example), so we consider it prudent to check that forecasts of local generation are reasonable before committing consumers to significant additional network costs to connect that generation. Our consultation and this decision adhere to that principle in that they should provide SHET with sufficient comfort to progress its preferred option efficiently in the expectation that local generation may come forward, while also providing appropriate checks and balances that SHET should justify its preferred solution at the FNC stage if significantly less local generation comes forward than expected.

2.46. We welcome receipt of any robust additional information from SHET at the FNC stage to support its submission and which helps to creates a clearer picture of benefits and costs to GB consumers of the Skye project.

Whole system improvements

2.47. Two respondents stated that they urge SSE Group and Ofgem to review legislation and processes regarding grid connection and bespoke local whole system solutions in order to further encourage DNOs to explore and support opportunities for smarter whole system grid networks, battery, and other storage options. They also stated their view of the need to support community generation connections.

2.48. One respondent mentioned looking to make the distribution network as resilient as the transmission network by taking a holistic approach to improvement.

2.49. We agree that networks should be planned to appropriately consider local factors and new technologies and innovations. Our current view is that the above factors raised by respondents to our consultation relate primarily to the local electricity distribution network and don't materially impact on the needs case for the Skye project. However, we will keep this under review in terms of the Skye project and we will also take these responses into

account in the design and implementation of our new price control for the electricity distribution sector (RIIO ED2), which will be in place from April 2023.

Community owned generation projects

2.50. One respondent noted that the current process for assessing the need and economics for grid updates is discriminatory against community owned generation given the financial resources of large organisations. They believe that this is a major flaw in the current system and have requested Ofgem review the process to make it equitable.

We confirmed with SHET that the contracted generation (Appendix 5) contains both distribution and transmission level connected generation, and that it was included in the scope of generation scenarios used in the CBA. Given this, community owned generation has therefore been accounted for in the design and need for the Skye project.

Decision

2.51. For the reasons set out above, we remain satisfied that the range of options included in the CBA allowed for appropriate analysis to be carried out. We also remain satisfied that the preferred option put forward by SHET (option 4a or 4a01) is reasonable and likely to provide the optimal solution given the combination of non-load and load related drivers, and the background generation assumptions that underpin the CBA. However, for the reasons set out earlier in paragraph 2.34, we expect SHET to provide further evidence at the FNC stage to demonstrate why sufficient additional capacity for future generation is likely to come forward to justify the case for options 4a or 4a01 rather than option 1b.

3. Competition model considerations

Section summary

This chapter summarises if the Skye project meets the criteria for competition and whether to apply a late competition model. It sets out our views as presented in our December 2021 consultation and summarises the key responses to that consultation. Finally, it sets out our decision to retain the Skye project within the LOTI mechanism as part of the RIIO-2 framework.

Background

3.1. Competition in the design and delivery of energy networks is a central aspect of our RIIO-2 price controls. Competition has a key role to play in driving innovative solutions and efficient delivery that can help meet the decarbonisation targets at the lowest cost to consumers. We set out in our Final Determinations[23] for RIIO-2 that during the RIIO-2 period all projects that meet the criteria for competition and are brought forward under an uncertainty mechanism[24] will be considered for potential delivery through a late competition model. As explained in Chapter 1, the Skye project has been brought forward for assessment under the LOTI mechanism, which is an uncertainty mechanism within RIIO-2.

Does the Skye project meet the criteria for competition?

3.2. Our criteria for a project to qualify for late model competition[25] are as follows:

i. New
ii. Separable
iii. High value: projects of £100m or greater expected capital expenditure.

[23] RIIO-2 Final Determinations, Core Document (REVISED), chapter 9
[24] Large Onshore Transmission Investments (LOTI) Re-opener Guidance, 29 March 2021, pages 09-11
[25] Guidance on the criteria for competition

3.3. Appendix 3 of this document replicates the information provided in our December 2021 consultation which sets out an explanation of our late competition models.

Our conclusion on competition models

Consultation position

3.4. We stated that the current preferred option (4a or 4a01) for the Skye project meets all of the criteria as described in paragraph 3.2.

3.5. We explained that in line with the LOTI guidance[26], we intend to decide wherever possible on whether to apply a late competition model to a project at the INC stage of our assessment. In cases where that is not possible, we may give an initial view at the INC stage before confirming our view at the FNC stage.

3.6. We set out that we intend to reach a decision on use of the CATO model before SHET's invitation to tender stage of its major supply chain procurement, which is currently scheduled for September 2022. We also expressed that it would be important to get an understanding of the consumer impact of delay to delivery of the Skye project when reaching a decision about applying the CATO model.

3.7. We said that if we decided to not apply the CATO model, then we would reach a decision on whether to apply the Competition Proxy Model (CPM) at the FNC stage and that we would consult on its application at that stage.

Consultation responses and our consideration of them

3.8. Six stakeholders agreed with our initial conclusion of deciding on the use of the CATO model before the invitation to tender stage. One disagreed. Seven expressed no view.

3.9. Five respondents welcomed late model competition as long as it does not result in project delay.

[26] Large Onshore Transmission Investments (LOTI) Re-opener Guidance, 29 March 2021, sections 4.13-4.14, page 23

3.10. SHET disagreed with late model competition. They stated that the CATO model will cause project delay and that the CPM is currently underdeveloped. They also noted that the CATO model will lead to fragmentation of responsibility. Finally, they highlighted that there will be an increase in risk associated with multiple partners delivering a single project and then operating it versus a single entity doing so.

3.11. We queried SHET if they had quantified the cost associated with project delay. They stated that they had not done so; however, they reiterated their view of the delay associated with project delivery though the CATO model based on primary and secondary legislation being finalised, then the process for competitive tendering[27] commencing, and finally the construction phase being completed. SHET also highlighted that project delay would increase the security of supply risk for the existing infrastructure and prevent them from meeting customers' contractual connection dates.

3.12. We appreciate that there is a balance to strike between providing SHET with sufficient certainty to allow the project to progress on time while also realising potential consumer savings through competition models such as CATO.

3.13. We recognise the risks highlighted by SHET. In particular, the combination of the condition of Skye's existing infrastructure and the timeline required to deliver the project through the CATO model.

Decision on models

CATO model

3.14. The high-level delivery plan for Skye as presented by SHET in its submission indicates that construction of the project will need to commence in late 2023 to meet the required delivery dates. The government has set out its intention to introduce the required legislation but it is currently difficult to determine when it will be in place and whether this would support timely delivery of the Skye project by a CATO.

3.15. For construction to commence in late 2023 the high-level delivery plan for Skye suggests that the Invitation to Tender (ITT) stage, where the main procurement process

[27] Competition in onshore electricity networks, 03 August 2021, page 19 (see the 'Documents' section to open the file)

formally starts, will likely need to start by the end of 2022. As we explained in our consultation, we consider that the ITT stage is the critical point by which a delivery model decision should be made to ensure that the project can progress with clarity on the delivery model for the TO and prospective bidders before they start spending significant money preparing their bids.

3.16. We consider it unsatisfactory that SHET has emphasised the need to avoid consumer detriment from delays to the Skye project without being able to articulate the quantification of this potential detriment. However, on balance we recognise that the condition of the existing infrastructure that is to be replaced appears to be driving the delivery schedule and ITT timing.

3.17. Based on increased confidence that the ITT process will start by the end of 2022, we recognise that a decision to apply CATO at this point to the Skye project is likely to lead to a material delay to the upgrading of infrastructure that needs replacing. We have concluded that this would not be in the interest of consumers and therefore that the CATO model should be ruled out for this project unless the ITT stage is materially delayed.

SPV model

3.18. Given the additional work needed to finalise the SPV model, and the close proximity of the ITT stage for the Skye project, we do not consider that the SPV model can be applied to this project without being likely to lead to delays. For this reason we consider that the SPV model is not an appropriate model to utilise for this project.

CPM

3.19. In the RIIO-2 Final Determinations[28] we explained that due to recent market conditions and our allowed financing arrangements for RIIO-2, we may not be able to have sufficient confidence that the application of the CPM to projects that need to start construction at the start of RIIO-2 would deliver benefits to consumers. This position was informed by the positions determined in the May 2020 Hinkley-Seabank project[29].

[28] RIIO-2 Final Determinations, Core Document (REVISED), section 9.8, page 119
[29] Hinkley - Seabank: Updated decision on delivery model, chapter 3

3.20. Since our decision on Hinkley-Seabank and RIIO-2 Final Determinations in 2020, we have seen some variability in the cost of debt benchmarks used to set the financing arrangements under CPM. However, we have not seen movements that would indicate we are able to be confident that CPM is likely to deliver a benefit to consumers relative to the counterfactual LOTI arrangements under RIIO-1. In our recent FNC consultation for the EHVDC project[30], we explained that this was backed up by the indicative comparative analysis of the consumer impact of applying CPM to the EHVDC projects rather than the RIIO counterfactual arrangements.

3.21. At this stage of the Skye project there remains uncertainty around the final costs associated with the options. There is also scope for potential market movements between now and the point at which the financing arrangements would be finalised for CPM, in parallel to the final setting of the cost allowances for the project. Those uncertainties notwithstanding, however, we consider that we do not have sufficient confidence that application of the CPM to the Skye project would deliver benefits to consumers.

Decision

3.22. Given that we cannot envisage implementing either the CATO model or SPV model for the Skye project without causing material delay, and given the indicative results of the CPM analysis, our decision is to retain the Skye project within the LOTI mechanism as part of the RIIO-2 framework. In the event that the ITT stage of the project is materially delayed, we may revisit that decision and consider whether it would be appropriate to apply a late competition model. We would consult on any subsequent proposal.

[30] Eastern HVDC - Consultation on the project's Final Needs Case and Delivery Model, sections 4.19-4.21, pages 40-41

4. Large project delivery

Section summary

This chapter sets out our views as presented in our December 2021 consultation on large project delivery options for the Skye project (i.e. the arrangements we might put in place should SHET deliver the Skye project late) and summarises the consultation responses. It sets out our decision to continue to engage with SHET on large project delivery and, in a change to our consultation position, to delay finalising the LPD arrangements beyond the FNC, until the PA stage.

Background

4.1. In our RIIO-2 Final Determinations[31] we set out our approach to late delivery of large projects (>£100m) by TOs. We said that we will ensure TOs will not benefit from delay to delivery of those projects by using one of the following options:

i. If a project is delivered late, we will re-profile the allowances to reflect actual expenditure to avoid the network company benefitting from the time value of money; or
ii. Milestone-Based Approach – we will set project allowances based on the delivery of specific, pre-agreed, milestones. The allowances would only be granted following confirmation that a milestone had been delivered.

4.2. We also said that we will ensure consumers are protected from delay in delivery. We said we may therefore set a pre agreed Project Delivery Charge (PDC) for each day a project is delivered late.

Our conclusion on large project delivery

Consultation position

[31] RIIO-2 Final Determinations, ET Annex (REVISED), page 32 onwards

4.3. We said that consideration would be given to the LPD mechanism that best suits this project and that we would provide an indication of the mechanism and the level of the PDC at the FNC stage. We also welcomed early engagement with SHET on setting the PDC. In setting the level of the PDC we set out that we would be looking to understand what the impact of any delay would be in terms of costs to consumers.

Consultation responses and our consideration of them

4.4. Three stakeholders responded to the impact of delivery delay and how that detriment could be quantified. Eleven expressed no view.

4.5. SHET pointed out that consumer detriment could be used to calculate the level of a PDC. They also noted that the PDC mechanism is still subject to policy debate and that they would welcome further discussion and clarity around how and when PDCs will apply.

4.6. One respondent noted the difficulties of quantifying the impact of delay and suggested possibly measuring the effects on local businesses or logging school closures could be used as possible measurements of the impacts on consumers.

4.7. One respondent mentioned that having an unstable electricity supply would have a negative impact on low carbon technology initiatives such as electric cars and heat pumps but did not suggest a way to quantify those impacts.

Decision

4.8. We acknowledge that there is still work to be done, including stakeholder engagement, to finalise the detailed arrangements that will implement the LPD policy. We are engaging with SHET and the other TOs to address the concerns they have raised in relation to the implementation of the policy, specifically around the assessment of the PDC.

4.9. We recognise that, ahead of the final policy decision, the impact of the policy in relation to Skye cannot be fully assessed. Following our engagement with the TOs we are of the view that our final policy decision on the LPD will require further work and that will mean that it is more likely out decision on the LPD in relation to Skye will be set at the Project Assessment stage, rather than at the FNC stage as we had originally anticipated.

4.10. We will continue to engage with SHET to agree an appropriate revised timeline to set the LPD mechanism and level of PDC for Skye. In line with the LOTI guidance, we will set the LPD no later than the PA stage.

5. Next steps

Section summary

This chapter sets out the next steps in our assessment of the Skye project under the LOTI mechanism, particularly the specific areas of focus for the FNC.

5.1. The next stage of our assessment will be the FNC, which we understand SHET expects to submit during Q2 2022. As set out in paragraph 2.40, we will continue to discuss with SHET the most appropriate FNC submission date and corresponding consultation and decision dates in the context of the planning consent process for Skye.

5.2. As part of the FNC submission we expect to receive further evidence from SHET demonstrating the continued progression of new local generation and an updated CBA to reflect up-to-date information. Our FNC assessment is expected to focus on ensuring a robust delivery plan is in place to deliver the Skye project on time. We will also seek to ensure that any material changes in technical scope, design, or cost relative to the INC stage are fully understood and justified. As part of the FNC assessment we will also carry out a more detailed assessment of the cost assumptions associated with SHET's proposed option.

5.3. As set out in chapter 4, we will continue to engage with SHET to agree an appropriate revised timeline to set the LPD mechanism and level of PDC for Skye. In line with the LOTI guidance, we will set the LPD no later than the PA stage.

Appendices

Appendix 1 – SHET's Skye project milestones

Milestone	Estimated Completion
Initial Needs Case submission	Jul 2021
Environmental impact final report	Jul 2022
Final Needs Case submission	Q2 2022
Invitation to tender stage of major supply chain procurement	Aug 2022
Material planning consents secured	Jul 2023
Supply chain major contracts awarded	Jul 2023
Project assessment submission	Jul 2023
Construction starts	Sep 2023
Energisation	Dec 2025
Construction completed (inc. decommissioning works)	Jul 2026

Appendix 2 – SHET's justification of Skye's needs case

Why the Skye project has been brought forward

5.4. SHET detailed three key drivers for the Skye project in its INC submission:

i. Asset condition (non-load related driver);
ii. Need for additional capacity to allow new generation to connect (load related driver); and
iii. Security of supply to maintain normal electrical supply to the residents of Skye and the Western Isles.

(i) Non-load related driver

5.5. The existing Skye 132kV OHL is fast approaching the end of its economic and operational life as most of it was built in the late 1970s. The locality, challenging terrain, and severity of environmental exposure has led to faster than normal asset deterioration (Appendix 4). For example, steel towers with the greatest environment exposure have suffered a near complete loss of galvanisation and the presence of white rot fungi on wood poles have been identified, which is a form of wood decay that results in significant structural strength loss. Some sections were replaced in recent years to reduce the risk of potential OHL failure. SHET's continued assessment of asset health has highlighted what it considers to be the need to urgently intervene to continue to safely operate the OHL.

5.6. Components requiring intervention include fittings, earth-wires, tower steelwork, wood pole replacement, and the replacement of phase conductors. This intervention is needed across most of the circuit.

5.7. A 9km section of 132kV OHL single circuit trident wood pole construction from Fort Augustus to the Skye Tee point was replaced and completed in June 2017. There is no asset health driver for this section of the OHL; intervention would be driven by the load element.

5.8. A 19km section of 132kV OHL single circuit trident wood pole construction from Skye Tee to Quoich was replaced and completed in 2021. This section replaced what was originally single circuit steel lattice towers strung with a single circuit 132kV conductor, constructed in the 1950s. There is no asset health driver for this section of the OHL; intervention would be driven by the load element.

5.9. A 64km section of double circuit consisting of steel lattice towers, strung with a single circuit 132kV OHL, from Quoich to Broadford was constructed between 1979 and 1980. This section would require intervention due to asset health.

5.10. A final 68km section of 132kV OHL single circuit trident wood pole from Broadford to Ardmore was constructed in 1989. This section would require intervention due to asset health.

(ii) Load related driver

5.11. SHET has set out that the load related driver is anticipatory investment to allow the connection of future renewable generation onto the Skye network, and to avoid the need for future upgrades or reinforcements requiring major construction works in the Skye area given its natural beauty and challenging terrain.

5.12. SHET identified 1,071MW of potential new generation in the Skye area via stakeholder engagement involving an online questionnaire and webinar event for developers plus an online presentation and discussion with the Highland Council to seek their views. This led to the identification of twenty-five potential generation projects (i.e. developer proposals to bring renewable generation onto the Skye network) that are at varying stages of development. Seven of these projects (c.418MW) have agreements in place with the ESO for connection to the network by c.2025 (Appendix 5).

5.13. SHET contracted Gutteridge Haskins & Davey Limited (GHD) to develop a Probability of Generation Assessment Tool (PGAT) to evaluate these twenty-five projects in order to determine how much generation would be likely to ultimately come forward (i.e. be built). The PGAT "scored" these potential generation projects using six criteria (Appendix 6) that were weighted differently to determine a project's development potential. In addition, the PGAT provided each project with a 'probabilistic' capacity based on how it scored across the criteria.

5.14. A project's PGAT score was then used to identify which of four renewable generation scenarios (S4 to S1) the project's generation value (MW) would fall within, as per table 1. Note that a project could fall within more than one scenario depending on its score, i.e. the more certainty of a project's generation being realised, the higher the project scored, and the more scenarios that project's generation would fall into. An example is if a project had 40MW of generation and scored highly enough, its 40MW would be added to each of the

four scenarios from S4 through to S1; however, if the project did not score well, 40MW of generation may only be added to scenarios S4 and S3.

5.15. GHD aimed to broadly align its four scenarios with the ESO's FES[32], namely Leading the Way (LW) aligned to S4, Consumer Transformation (CT) to S3, System Transformation (ST) to S2, and Steady Progression (SP) to S1.

Table 1: New renewable generation to 2050 across four scenarios

New renewable generation to 2050	S4	S3	S2	S1
GHD analysis of 25 projects	724MW	539MW	388MW	273MW

5.16. The OHL is currently oversubscribed with a total of 137MW of generation connected on the Isle of Skye and the Western Isles against a peak demand of 53MW. To enable the connection of more generation to the Skye network as identified in any of the four scenarios in table 1, reinforcement of the line is required.

(iii) Security of Supply

5.17. The security of supply on Skye and the Western Isles is dependent on the Skye circuit as it is the only connection to the main GB electricity grid. To enhance supply security on the Western Isles, there are Scottish Hydro Electric Power Distribution plc (SHEPD – the local Distribution Network Owner) owned backup diesel generators at Battery Point power station and Arnish (both connected at Stornoway) to support the Isle of Lewis and Harris, and diesel generators at Loch Carnan and Barra to support the Isle of Uist. The diesel generation located on the Western Isles is used as standby generation in the event of a single circuit fault on the transmission system. additionally, SHEPD use mobile backup diesel generation to secure supply on Skye. Therefore, in the event of a fault on the main OHL, customer supplies are solely reliant on ageing backup generators which impact the environment due to the production of greenhouse gas emissions.

[32] ESO's FES scenario framework showing how the four scenarios move towards decarbonation given differing levels of societal change

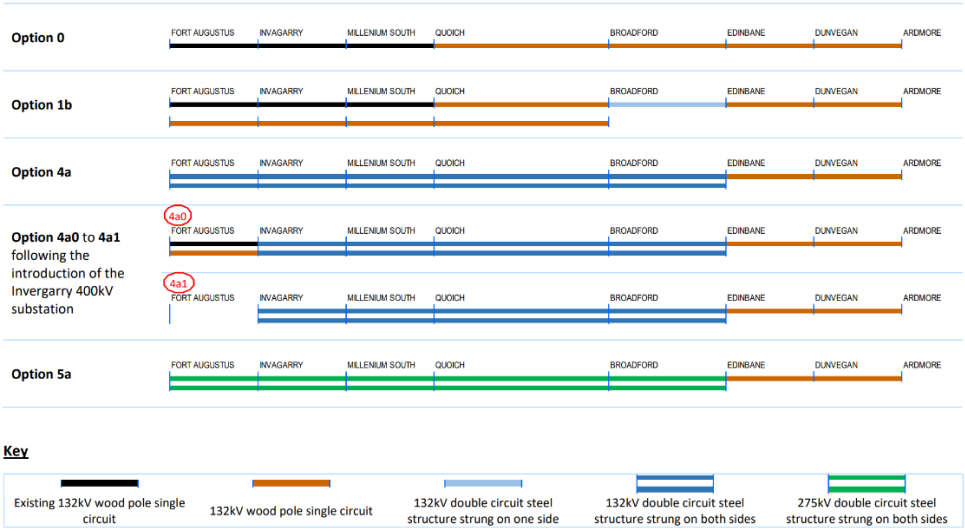
5.18. From a non-load perspective, the existing OHL is reaching the end of its operational life and requires replacement in order to help maintain security of supply for over 32,000 homes and businesses on the Isle of Skye and the Western Isles.

5.19. From a load perspective, there is a need to increase the capacity of the circuit in order to accommodate additional renewable generation. Any reinforcement works must deliver improved security of transmission access from a generator's perspective by increasing the reliability of the circuit and introducing a level of redundancy to meet the System Security and Quality of Supply Standards (SQSS)[33].

Options considered

5.20. SHET initially considered nineteen reinforcement options for the Skye project to address some, or all, of the key drivers referred to above. These consisted of a range of standalone and phased[34] solutions. Filtering these options based on strategic, technical, and stakeholder input resulted in SHET shortlisting five options as per figure 3, with further detail in table 2.

Figure 3: Five shortlisted options



[33] The National Electricity Transmission SQSS sets out the criteria and methodology for planning and operating the GB transmission system

[34] Phased solution (e.g. option 4a01) is when a solution has another better solution attached but this better solution is dependent on the outcome of another investment decision. The initial solution would be built as it is beneficial but if the better solution proved viable once more information became available, it would be developed by adapting the initial solution. Most of these phased solutions are completed in different years

Table 2: Five shortlisted options

Option	Description	Estimated Cost (£m)	EISD[35]
0	Base Case – 132kV wood pole single circuit from Fort Augustus to Ardmore.	195	2025
1b	Two 132kV wood pole single circuits from Fort Augustus to Broadford, a 132kV single circuit on steel structure from Broadford to Edinbane and a 132kV wood pole single circuit from Edinbane to Ardmore. The single circuit between Broadford and Edinbane will be supported by double circuit steel structures.	300	2025
4a	132kV steel tower double circuit from Fort Augustus to Edinbane and a 132kV wood pole single circuit from Edinbane to Ardmore.	400	2025
4a01	Option combines 4a0 and 4a1 into 4a01.	420 (*385+35*)	2025 & 2030
(4a0)	Two 132kV wood pole single circuits from Fort Augustus to Invergarry[36], 132kV steel tower double circuit from Invergarry to Edinbane and a 132kV wood pole single circuit from Edinbane to Ardmore.	*385*	*2025*
(4a1)	As above: if the Invergarry 400kV substation progresses, the OHL will connect to the new 400/132kV Invergarry substation and the Fort Augustus to Invergarry 132kV OHL will be dismantled.	*35*	*2030*
5a	275kV steel tower double circuit from Fort Augustus to Edinbane and a 132kV wood pole single circuit from Edinbane to Ardmore.	520	2027

5.21. Option 0 replaces the existing single circuit with a new modernised single circuit on a like for like basis, and due to advances in transmission technologies the modern design

[35] Earliest In Service Date
[36] Invergarry is between Fort Augustus and Quoich

provides additional capacity when compared to the existing circuit rating. This option only addresses the non-load related driver. All five options would add transfer capability to the OHL and differ by the level of additional capacity offered (option 0 offers the least additional capacity and option 5a offers the most), and therefore the amount of generation that can connect to the Skye network. Barring option 0, all the other options improve security of transmission access from a generator's perspective due to their double circuit construction. By improving transmission access, the consumer will benefit as risk of system constraints will be reduced enabling increased usage of clean renewable energy.

5.22. As described later in this chapter, CBA modelling carried out by SHET and the ESO resulted in the preferred option either being 4a or 4a01 (given the minimal difference in result), although option 4a is SHET's favoured option. Both options (4a and 4a01) address the need to replace the current assets due to their condition and the need to upgrade the assets to allow for additional generation.

CBA process and methodology

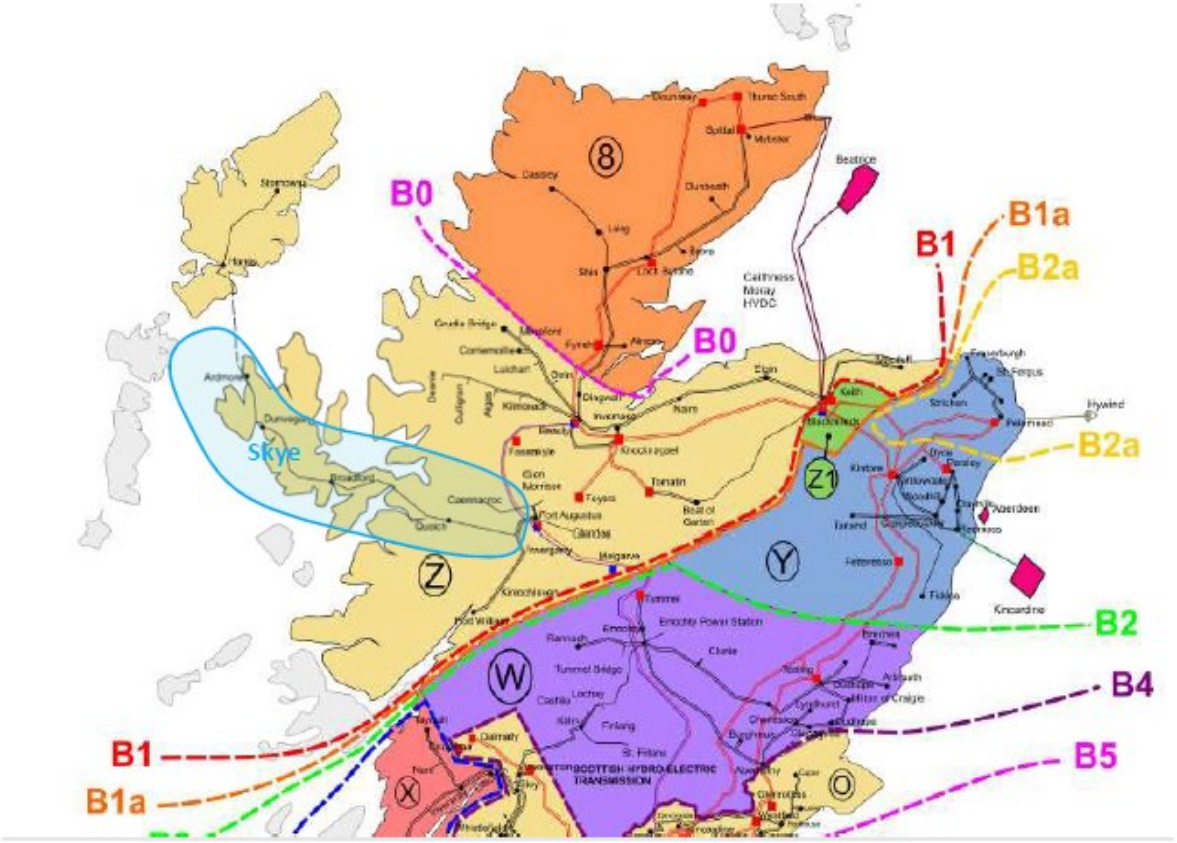
5.23. In general, the relevant TO (in this case SHET) works with the ESO to develop and run a CBA to assess the performance of each shortlisted network design option in order to inform the INC submission and satisfy the ESO's obligation to carry out a CBA as per the LOTI guidance. The ESO is involved in this process as it has visibility about the impact of local electricity transmission network designs on the rest of the GB electricity transmission network. As set out in chapter 1, the ESO also develops the FES that helps model potential future supply and demand across GB, including to meet Net Zero targets.

5.24. The reinforcement of the Skye network presents some challenges to the ESO's standard CBA modelling approach adopted to date. The Skye network is relatively small, whereas the ESO considers larger GB network zones within its CBA model. The ESO's model determines the balance of supply and demand within each zone on the GB network and evaluates the net power flows across the transmission boundaries[37]. The location of the Skye network is wholly contained within a single zone (Zone Z, between transmission

[37] Transmission boundaries split the electricity transmission system into two parts which represent pinch points on the network. This split crosses critical circuit paths that carry power between the areas where power flow limitations may be encountered. Zones are areas within boundaries and do not cross critical circuit paths. For more information on boundaries, see the ESO's Electricity Ten Year Statement 2020

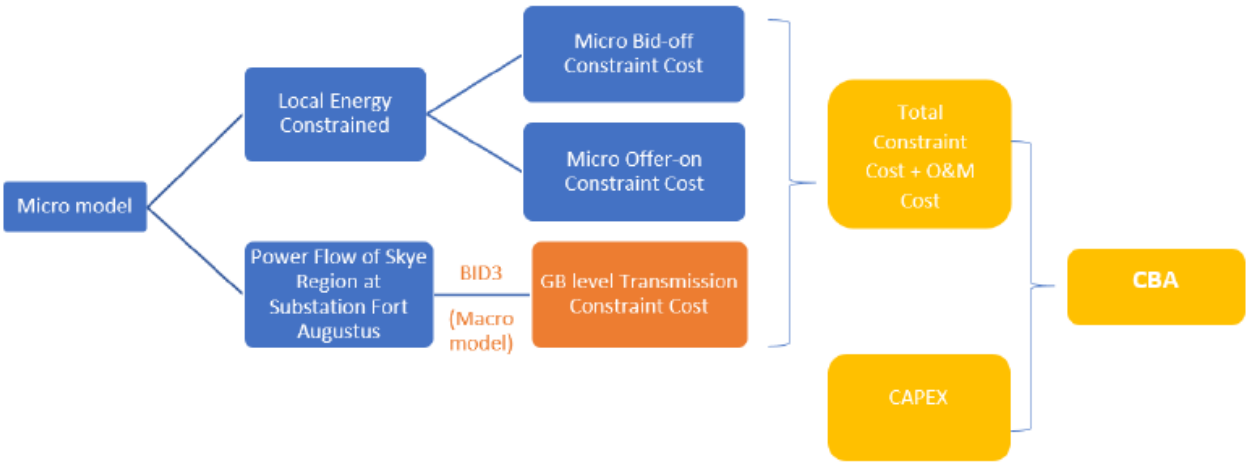
boundaries B0 and B1) as per figure 4. Thus, the existing boundaries cannot capture the transmission constraints in the Skye region nor the impact of different Skye reinforcement solutions. This inability to capture transmission constraints within boundaries is also why the Skye project is not included in the ESO's NOA.

Figure 4: Map showing transmission boundaries and zones within the ESO's model



5.25. To overcome the within boundary issue and show an overall view of the impact of the different options for the Skye reinforcement to the GB consumer, SHET produced a detailed model of the Skye transmission network in order to evaluate power flows and the alternative reinforcement options across the Skye network. This view was then aligned with the existing FES allowing the ESO to fully represent the needs of the Skye network when modelling the wider GB transmission system to produce a combined CBA. This two-step CBA approach adopted by SHET and the ESO – i.e. a combined localised (micro) model and a GB wide (macro) model – is shown in figure 5.

Figure 5: Combined CBA



5.26. The CBA for the Skye project compares the likely benefits (in terms of reductions in future constraint costs[38]) across four generation scenarios versus the costs (in terms of estimated capital costs) of the shortlisted investment options.

CBA results

5.27. The CBA was undertaken using the published FES 2020. GHD aligned their four generation scenarios to the FES 2020 (as described in paragraph 2.14, the ESO's LW, CT, ST, and SP scenarios align to GHD's S4, S3, S2, and S1 respectively) as this was the most up-to-date version at the time. The FES 2021 was not published until July 2021, which was too late for the Skye project INC.

5.28. Table 3 shows the CBA results for the five shortlisted options that were tested. The Least Worst Regret[39] (LWR) option is option 4a. It should be noted that option 4a01 is not

[38] Constraint costs are payments made to generators by the ESO to stop generators producing electricity. It will make these payments when the electricity transmission network in a particular area does not have the capacity to safely transport all of the electricity that is being produced in that area. Such action from the ESO ultimately feeds into consumer bills which is why it is beneficial to reduce constraints costs

[39] LWR is a decision-making tool that makes recommendations based on which options/strategy produce the least 'regret' across all analysed scenarios. We are aware of some limitations of the LWR analysis in practice. LWR results are determined by the balance between the least and most onerous case for development which could lead to spurious investment recommendations if scenarios are not 'credible'. To minimise this risk, the ESO's NOA results are reviewed by the NOA committee who use the latest market intelligence to test the plausibility of the results, and sensitivity analysis is undertaken to look at how robust recommendations are to scenario changes

significantly different to warrant discounting it. Given this, either option 4a or 4a01 are recommended as the preferred option by the ESO.

Table 3: Results for the CBA

Location	PV of Micro & Macro Constraint Cost+ / Constraint Saving- (£m)				CAPEX	NPV (£m)				Regret				Worst Regret
	LW	CT	ST	SP	TO	LW	CT	ST	SP	LW	CT	ST	SP	
Skye_0	0	0	0	0	153	153	153	153	153	573	216	161	0	573
Skye_1b	-434	-276	-242	-24	235	-200	-42	-8	211	220	20	0	57	220
Skye_4a	-737	-379	-264	-21	317	-420	-62	53	296	0	0	61	143	143
Skye_4a01	-736	-375	-265	-21	332	-404	-43	67	311	16	19	74	158	158
Skye_5a	-737	-384	-268	-23	405	-332	21	137	382	88	83	144	228	228

5.29. In addition to the CBA, various sensitivity analyses were carried out by the ESO. The summary of these results is highlighted below in table 4.

Table 4: CBA sensitivity analysis summary

Sensitivity	Result
Generation background sensitivity: stress test the impact of decreases to the lowest or increases to the highest generation scenarios[40].	Preferred (LWR) options remain 4a or 4a01.
Capex: variance of +/- 10% and 20% for all the shortlisted options.	Varying capex by +/- 10% or 20% for all options simultaneously does not alter the LWR rankings, with option 4a or 4a01 remaining the preferred (LWR) options.
Capex: possibility of underground cabling for a section of the line was tested. Capex increased between 10% and 17% across all shortlisted options.	Underground cabling for a section of the line for all the options does not alter the LWR rankings, with option 4a or 4a01 remaining the preferred (LWR) options.

5.30. We engaged with SHET on a sensitivity analysis using lower assumptions for MW for each of the four scenarios (S1 to S4). This was to test the impact of less generation coming

[40] Under the low sensitivity S1 was changed to 205MW whereas S2 to S4 stayed the same. Under the high sensitivity S4 was changed to 840MW (to reflect the potential to allow some generation from the Western Isles to connect and export via the Skye transmission link) whereas S1 to S3 stayed the same

forward than suggested by the initial PGAT model. In practice this was done by adjusting the weightings in the PGAT model to place a greater weighting on securing planning consent. The changes to the PGAT model resulted in the following generation capacities S1: 205MW, S2: 331MW, S3: 448MW, S4: 561MW. The result of this sensitivity analysis was that the preferred LWR option changed from 4a or 4a01 to 1b.

Appendix 3 –Competition models

Delivery model considerations

5.31. Since we consider that the that the current preferred option (4a or 4a01) for the Skye project meets the criteria for late model competition, we have considered whether it is in the interest of consumers for the Skye project to be delivered through a late model of competition rather than via the prevailing LOTI mechanism under the RIIO-2 arrangements.

Relevant consideration of models

5.32. The late competition models that are available for consideration for the Skye project are:

i. Competitively Appointed Transmission Owner (CATO) Model
ii. Special Purpose Vehicle (SPV) Model
iii. Competition Proxy Model (CPM)

5.33. Below we set out details of each of these models and our initial views on how applicable each might be for the Skye project.

CATO model

5.34. Under the CATO model a competitive tender would be run for the financing, construction, and operation of the Skye project with a transmission licence provided to the winning bidder setting out the outputs, obligations and incentives associated with delivering the Skye project. The CATO model requires legislative changes to allow for new parties to be able to be awarded a transmission licence following a competitive tender

SPV model

5.35. Under the SPV model, the incumbent network licensee would run a tender to appoint an SPV to finance, deliver, and operate a new, separable, and high value project on the licensee's behalf through a contract for a specified revenue period. The allowed revenue for delivering the Skye project would be set over the period of its construction and a long-term operational period (currently expected to be 25 years). The SPV model was originally developed for consideration for projects where the CATO model had been discounted due to

a clear expectation that underpinning legislation would not be in place in time to allow the delivery of specific projects.

CPM

5.36. The CPM involves setting a largely project specific set of regulatory arrangements to cover the construction period and a 25-year operational period for an asset (in contrast with setting arrangements for a portfolio of assets under a price control settlement). It is intended to replicate the efficient project finance structure that tends to be used in competitive tender bids for the delivery and operation of infrastructure projects

Timing of the decision

5.37. The LOTI Guidance explains that, wherever possible, we intend to decide whether to apply a late competition model to a project at the INC stage of our assessment. It also explains that we may, at the INC stage, give an initial view before confirming our view at the FNC stage of our assessment.

5.38. The approach explained in the LOTI Guidance reflects our recognition that deciding to apply a competition model as early as possible is the best way to ensure that the consumer benefits associated with competition can be achieved without compromising on the timely delivery of key infrastructure that is expected to be critical in the meeting of Net Zero targets.

Appendix 4 – Asset health condition (non-load)

Steel tower

Middle phase shackle failure

Shackle showing extreme wear

Wood pole

Wood pole failure

Wood pole decay

Appendix 5 – Contracted generation

c.418MW contracted generation, of which c.108MW currently has planning consent

Project*	Capacity	Connection date	Distribution / Transmission connected	Consent status
A	40.8	2026	D	Consented
B	2.0	2025	D	Consented
C	25.0	2027	D	Scoping
D	6.1	2026	D	Consented
E	9.2	2025	D	Consented
F	49.5	2025	T	Consented
G	45.0	2026	D	Scoping
H	240.0	2026	T	Scoping
Total	**417.6**			

* Projects have been anonymised due to confidentiality

Appendix 6 – PGAT criteria

Each project was scored on the following criteria

Criterion	Meaning	Weighting (%)
Network Contractual Status	Each project will need to go through a formal connection application process in order to connect to either the distribution or transmission networks.	**12.5**
Project Planning Status	Each project will need to go through the formal planning process. As a minimum, smaller projects can take months to prepare and submit a planning application followed by months for the Council to make a decision. Larger projects typically take years.	**32.5**
Ownership / Financial Considerations	The speed at which a project can be brought forward. Its ultimate viability can be dictated partly by the nature of the owner.	**10**
Distribution or Transmission	Currently, Use of System charges favour development of Distributed Generation over transmission-connected projects, although Ofgem has advised that it intends to harmonise charging before 2030.	**10**
Economies of scale	Economies of scale can have an important bearing on project viability. Benefits can be gained by spreading fixed CAPEX costs over a larger MW total installed capacity. Also, larger turbines may have lower costs per MW and/or have higher capacity factors than smaller turbines.	**10**
Distance to Connection	Connection costs are an important factor in project attractiveness. Costs will include fixed and variable costs of connecting to the network depending on distance between the development site and the nearest part of the network with sufficient capacity to accept the generation.	**25**
TOTAL		**100**