



NESO SSEP approach actions from PwC review

FINAL REPORT

June 2026

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PricewaterhouseCoopers (referred to as “PwC” or “We” or “Our”) have been commissioned by National Energy System Operator Limited (referred to as the “Company” or “NESO”) to **review and comment on the SSEP programme’s proposed approach** for five key outputs and NESO’s documents produced in support of this. **The scope of work to develop this deliverable involved:**

- Reviewing materials shared for the five stages of the SSEP programme (Spatial Evaluation Framework, Pillars Spatial Assessment, Down-selection, Appraise Framework, and Sensitivity Testing).
- Reviewing the approach documents to assess the suitability and clarity of their approach, and alignment with HMT guidance where relevant.
- Conducting interviews with key stakeholders to validate our observations related to the approach documents.

The following are **out of scope services** and are not the intended purpose of this review of the SSEP programme’s approach documents:

- Detailed review or validation of all documentation and processes relating to the SSEP Programme.
- Review of processes related to external parties or programmes external to NESO.
- Formal assessment of current compliance with good or regulatory practices.
- Subsequent follow-up to review completion of actions in line with agreed due dates and owners. PwC has not validated or approved the owners or due dates of actions. Where any action has a due date recorded as “Complete”, this reflects NESO’s own internal assessment and does not represent a conclusion, confirmation or verification by PwC.

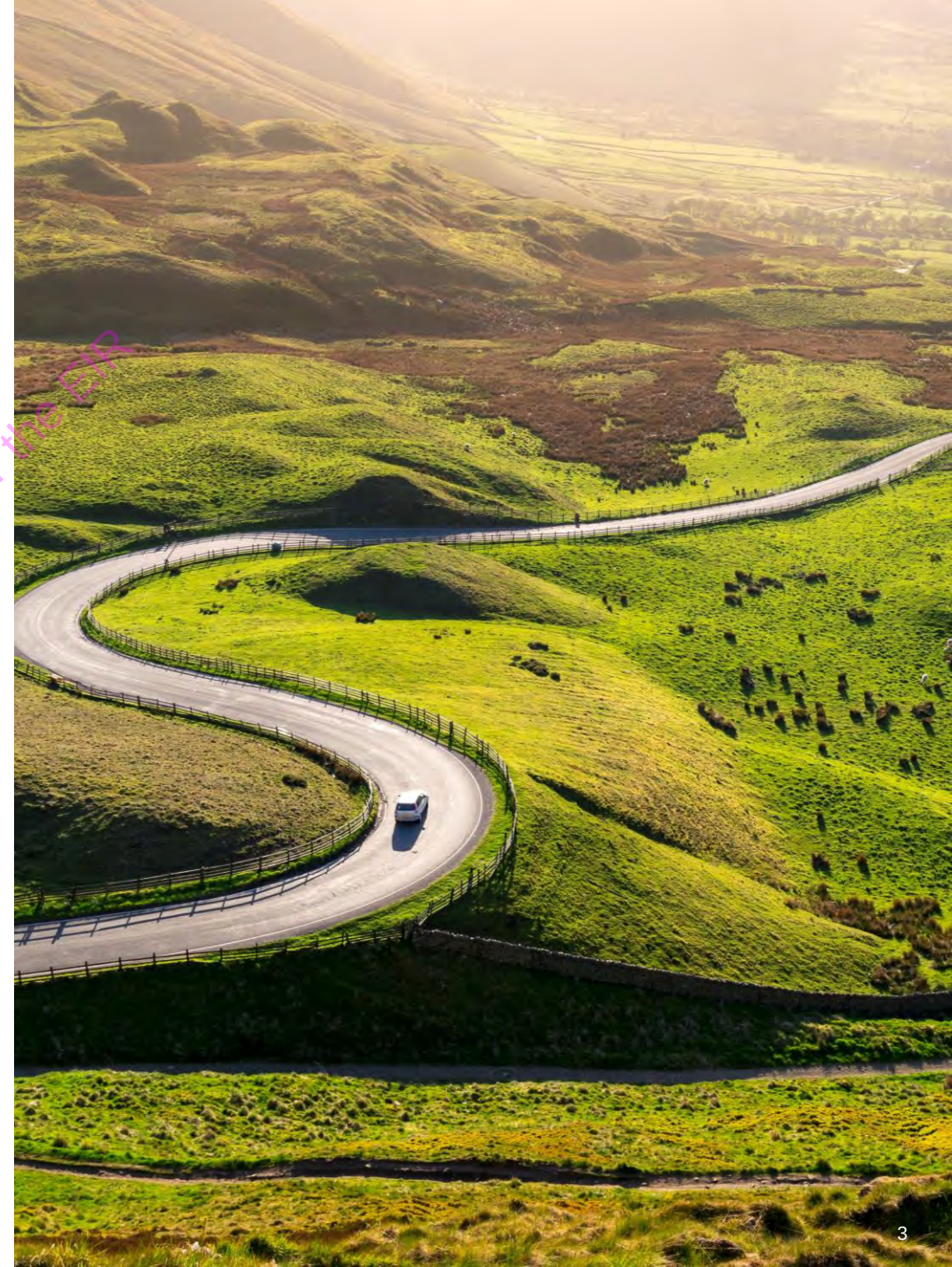
This report deliverable has been prepared only for National Energy System Operator Limited and solely for the purpose and on the terms agreed with National Energy System Operator Limited in our engagement letter dated April 2026 and the agreed scope. The report deliverable has been developed using a variety of sources from NESO. We have not sought to establish the reliability of those sources or verified the information so provided.

We accept no liability (including for negligence) to anyone other than our client. We note that this document has been prepared only for the Company and solely for the purpose and on the terms agreed with the Company. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this document, and, to the extent permitted by law, PricewaterhouseCoopers LLP, its members, employees and agents do not accept or assume any liability, responsibility or duty of care for any consequences of anyone acting, or refraining to act, in reliance on the information contained in this report or for any decision based on it.



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Executive Summary

Summary of actions for NESO SSEP approach grouped by theme

Theme	Actions for NESO	Slide ref.
1. Framework Construction	- Provide clearer definition of the Spatial Evaluation Framework (SEF) structure and interactions between the components. - Clarify the process taken to identify the criteria used to filter datasets, and how datasets that partially aligned with the criteria were treated for the SEF. Establish a process to track and review excluded datasets for future inclusion in the SEF.	Slide 10
2. Modelling approach and process controls	Review the SEF assurance process against Aqua Book guidance and identify any learnings for future stages of the SSEP, including the Pillars Spatial Assessment, Down-Selection, Appraise Framework, and Sensitivity Testing.	Slide 11
	Define a consistent and evidence-led approach for setting Pathway Run Thresholds and applying the zonal distribution review, including defined criteria for how objective evidence and subjective judgement are combined and applied.	Slide 14
	Plan and embed proportionate quality assurance (QA) activities across the down-selection process in advance of the down-selection workshops, in addition to the day specifically allocated to QA.	Slide 17
	Define controls for how pathways are iterated during the Appraise stage, including a consistent approach for deciding when re-modelling is necessary and checks required to ensure pathways remain aligned with those assessed at down-selection.	Slide 20
	Introduce a consistent approach for assessing the criticality and uncertainty of pathway components used in the Sensitivity Testing, using quantitative evidence where possible and logging decisions in line with Aqua Book guidance.	Slide 24
3. Appraisal Methodology	Define a consistent approach to assessing and quantifying CSFs at Down-Selection, including the use of minimum thresholds backed by quantitative evidence to filter out pathways from the longlist quickly. - Implement a structured process to identify, challenge and test underlying assumptions during the down-selection workshops, with individuals nominated to provide challenge.	Slide 17
	Develop the proposed approach for shortlist appraisal to be better aligned with Green Book guidance, with more comprehensive monetisation of costs and benefits to allow for more effective and transparent decision-making when comparing pathways.	Slide 21
4. Monitoring and evaluation	Identify any learnings from the process taken to develop the SEF to inform future stages within and future iterations of the SSEP. This will form part of the process for monitoring and evaluating the SSEP to review how it performs against its objectives and identifying any learnings to benefit future iterations.	Slide 12
5. Stakeholder engagement	Establish structured tracking and use of stakeholder input in the Pillars Spatial Assessment with a defined process to capture, track and link stakeholder feedback to decisions taken in line with Aqua Book guidance.	Slide 15

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Scope and approach

Our scope of work to review the SSEP approach documents



In January 2026, following our review of the modelling approach and processes within NESO's Strategic Spatial Energy Plan (SSEP) Programme (completed in December 2025), PwC was commissioned by NESO to undertake an **independent review of approach documentation for the programme**. We reviewed five stages within the SSEP Programme, specifically the Spatial Evaluation Framework, Pillars Spatial Assessment, Down-selection, Appraise Framework, and Sensitivity Testing.

Our work focused on reviewing the suitability and clarity of the proposed approach for each document against their stated purpose and alignment with HM Treasury guidance where relevant (approach covered on slide 7). This did not constitute a formal audit nor compliance review of the programme against relevant standards (i.e. HM Treasury Green Book).



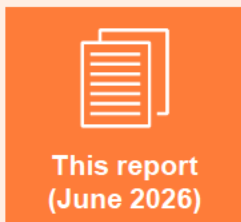
What was in scope of our January 2026 review

- **Review of documentation related to five stages of the SSEP Programme**, limited to a targeted selection of key materials that define and evidence the SSEP approach (see Annex A for full list).
- **Interviews with members of the SSEP team** to discuss the approach and processes (see Annex B for full list of interviews).
- Identification of **findings and potential considerations** for each of the five stages of the SSEP Programme.



What was not in scope of our January 2026 review¹

- Detailed review or validation of all documentation and processes relating to the five stages of the SSEP Programme.
- Formal assessment of SSEP Programme's compliance against relevant standards (e.g. HM Treasury Green Book).
- Follow-up validation with the SSEP Programme to review development of the approach against any findings uncovered through our review.



The findings and potential considerations identified through our review were communicated with NESO in March 2026. These have been reviewed by the SSEP teams relevant to each in-scope stage of the Programme and accepted by NESO in full to take forward as actions in March 2026. This report presents these findings, with a **formalised set of actions for NESO to address them**. As part of this report, we have reviewed additional documentation to further inform and strengthen the proposed actions.

While the findings and actions are independent to PwC and our review, the assignment of owners and due dates for each action has been provided by NESO.

Our approach to review the SSEP approach documents

Our review of the SSEP's approach in January-March 2026 looked at the suitability and clarity of approach, and alignment to relevant HMT guidance, for five stages of the SSEP Programme (Spatial Evaluation Framework, Pillars Spatial Assessment, Down-selection, Appraise Framework, and Sensitivity Testing).

Structure of our review



Suitability of approach

Our review assessed how suitable the outlined approach is for its purpose, including the following points:

- Alignment of approach with the document's intended purpose as defined by NESO,
- Completeness of approach based on the document's intended purpose,
- Alignment of approach with the SSEP Methodology (published in May 2025),
- Alignment of approach across GB nations.



Clarity of approach

Our review assessed how clear the outlined approach is based on the evidence available, including the following points:

- Clarity of the principles underlying the proposed approach,
- Clarity of how the defined approach will be implemented,
- Consistency of approach across SSEP processes.



Alignment with HMT guidance

Where relevant, and based on the evidence available to us, our review considered the extent to which the proposed approach aligns with HMT guidance, including:

- The Green Book (e.g. documentation for Down-Selection reviewed for alignment with Chapter 5 on longlist appraisal),
- The Aqua Book (e.g. documentation for Pillars Spatial Assessment reviewed for alignment with Chapter 8 on analysis),
- The Magenta Book (e.g. documentation for SEF reviewed for alignment with Chapter 3 on process evaluation).

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Findings and actions

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Spatial Evaluation Framework

Actions – Spatial Evaluation Framework (1/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
1	1. Framework Construction	The process behind the identification and construction of indicators under each SEF pillar is unclear.	Provide clearer definition of the SEF framework structure and interactions – For future iterations of the SSEP, or if it is requested by external stakeholders for this iteration, provide clearer definition of the SEF components, including datasets, indicators, subcategories, categories and pillars, and how these link together in the overall framework. A diagram setting out the hierarchy of components and defined inputs and outputs for each component would provide clarity to stakeholders of how the overall framework is constructed.		21/03/2026
2		The scope of the SEF, including the datasets it covers, as well as the outcomes of the initial longlisting and filtering process, are not clearly articulated.	Provide greater clarity on the datasets and indicators included within the SEF – For future iterations of the SSEP, or if it is requested by external stakeholders for this iteration, provide clearer clarity of the SEF and the datasets and indicators included within the overall framework. This could be done by providing the full list of datasets under each indicator in the SEF for complete transparency for stakeholders. Alternatively, NESO could provide a sample to give stakeholders an example of a particular pillar, or share the headline numbers for each component within the SEF so stakeholders understand the size of the framework.		06/04/2026
3		There could be greater clarity on the construction of the criteria for filtering datasets, for inclusion in the SSEP.	Clarify process for identifying the criteria used to filter datasets – For future iterations of the SSEP, or if it is requested by external stakeholders for this iteration, clarify how the criteria used to filter datasets were identified. While the criteria appear broadly proportionate to the intended approach, additional explanation on how they were developed would help to better understand the process used to create the SEF. Additionally, review whether any additional criteria are necessary for the next iteration of the SSEP when the SEF will be updated. This will ensure that the criteria to identify datasets for the SEF remain relevant and support the selection of the most appropriate datasets to construct the highest quality SEF.		10/07/2026
4		There could be greater clarity on the consequences if a dataset received an 'amber' ranking against at least one criteria.	Define treatment of datasets with partial criteria alignment – Define how datasets that received an 'amber' ranking against the shortlist criteria were treated during the development of the SEF. In the E0099 SSEP Finalised Spatial Exclusions & Suitability Scores document, it was proposed that they would be reviewed for inclusion in the SEF later during the SSEP appraisal process, however it is unclear whether NESO did this. This documentation of the SEF should include how trade-offs between spatial datasets were considered and documented as part of this process to ensure consistent and transparent decision-making.		29/05/2026

Actions – Spatial Evaluation Framework (2/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
5	1. Framework Construction	There is a potential risk that datasets which did not meet the filtering criteria but may be considered for inclusion in future iterations of the SSEP, are not consistently recorded.	Establish a tracking and review of excluded datasets process – Maintain a log of datasets that were considered for inclusion in the SEF, in line with Aqua Book guidance on documentation (Aqua Book, Chapter 8.3). Include all datasets that did not meet the filtering criteria for inclusion in the first iteration of the SEF but may be relevant for future iterations, as is proposed in the E0099 SSEP Finalised Spatial Exclusions & Suitability Scores document. Also, include indicative review points to reassess these datasets against the dataset criteria in the event that data quality or availability improves. This should also include datapoints for which no dataset was found for the first iteration of the SSEP and should be reviewed for inclusion in the next iteration. Based on the evidence available for our review, the Spatial Evaluation Framework_v7.1_CLEAN appears to track datasets for future iterations of the SSEP. However, including indicative review dates within this log would minimise the risk of datasets being missed for the next iteration of the SSEP.		30/10/2026
6		The end-to-end process for creating indicators, scoring the spatial constraints and opportunities, and aggregating these is difficult to follow. Different weighting approaches at the category and pillar level are discussed but it is unclear which was taken forward for the SEF.	Define and document the scoring and weighting methodology used in the SEF – For future iterations of the SSEP, or if it is requested by external stakeholders for this iteration, produce a more detailed methodology setting out how spatial constraints and opportunities are scored and weighted in the SEF using an MCA approach. This will help to improve transparency of the assessment process and could be illustrated with the inclusion of a worked example. Note that if the approach for the SEF develops to be closer aligned with an MCDA approach in the next iteration of the SSEP, as recommended by the Green Book (Chapter 5.13), it would be appropriate to reflect this in the worked example of scoring and weighting for the SEF.		Complete
7	2. Modelling approach and process controls	Based on the documents available for our review, it appears that some of the assurance controls were established 'mid-flight' in the modelling process, which could have resulted in delays to the assurance process.	Review the SEF assurance process and identify any learnings for future stages – Review the effectiveness of the assurance activities undertaken during the development of the SEF and identify any learnings for future stages of the SSEP. An example of this could be setting out a clear and proportionate framework for assurance at the outset of each stage, based on Chapter 3 of the Aqua Book on proportionality. Effective assurance includes establishing stage-gates at key milestones where quality assurance must take place and assigning named individuals as responsible for providing sign-off for activities in-line with Chapter 5 of the Aqua Book on roles and the analytical lifecycle. Establishing these QA activities and responsibilities up-front would minimise the risk of assurance needing to be established 'mid-flight' in the future.		28/08/2028

Actions – Spatial Evaluation Framework (3/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
8	3. Appraisal Methodology	Multi-criteria analysis (MCA), used in the SEF, is not recommended by the Green Book, with multi-criteria decision analysis (MCDA) recommended instead due to MCA's lack of objectivity in its weighting and scoring approach.	Review effectiveness of MCA approach and identify learnings for future iterations of SSEP and wider SEP portfolio – As part of the evaluation process for the first iteration of SSEP, evaluate the effectiveness of the MCA approach for the SEF through the Magenta Book lens of process evaluation (refer to the ROAMEF cycle, Chapter 1.4). This will allow NESO to understand what worked well and what could be improved in the future. Additionally, review the decision-making process that led to MCA being chosen instead of MCDA, which is not typically recommended by the Green Book, and consider whether a more closely Green Book-aligned approach should be taken in the future (Green Book, Chapter 5.13). Opting for an MCDA approach for the next iteration of the SEF will support a more objective approach through its use of swing weighting, instead of a simple weighting and scoring approach which is typically taken with MCA (see Green Book supplementary guidance: multi-criteria decision analysis for more detail).		18/09/2026
9	4. Monitoring and evaluation	There may be learnings to take forward to future iterations to improve the transparency of the SSEP programme. NESO engaged extensively with stakeholders in the development of the SEF. This experience could serve as a valuable foundation and learning opportunity for shaping future rounds of stakeholder engagement.	Capture and apply lessons learnt from SEF delivery – In line with the SSEP Commission to NESO from DESNZ (Monitoring and Evaluation, page 16), identify any learnings from the process taken to develop the SEF to inform future stages within and future iterations of the SSEP. This will form part of the process for monitoring and evaluating the SSEP to review how it performs against its objectives and identifying any learnings to benefit future iterations. An example of lessons learnt from the SEF could be around transparency for stakeholders. We understand from our review that NESO released the SEF in response to a transparency request which should encourage NESO to be more proactive with knowledge sharing in the future to help build stakeholder confidence in the SSEP.		30/09/2026

Pillars Spatial Assessment

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Actions – Pillars Spatial Assessment (1/2)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
10	2. Modelling approach and process controls	The concept of setting PRTs to limit the impact of pathways on indicators is clearly outlined with respect to the purpose of the Pillars Spatial Assessment to generate deliverable pathways. However, the methodology for how the PRTs' are calculated is unclear and could result in pathways being assessed inconsistently.	Define a consistent and evidence-led approach for setting PRTs – Establish a clear methodology for setting PRTs, including defined criteria for how objective evidence and subjective judgement are combined and applied. This methodology should be aligned with Aqua Book guidance on documentation (Chapter 8.3), including a decision hierarchy and documentation of assumptions and trade-offs which are consistently applied across all pathways. This will enhance the robustness of the process and ensure that pathways are assessed on a consistent basis. Additionally, the layer of governance provided by the SSEP Design Authority should be used to add rigour to the process by providing constructive challenge to the methodology and underlying assumptions used to construct the PRTs.		31/03/2026
11		The optional step to further assess pathway deliverability by zonal distribution could lead to pathways being assessed on an inconsistent basis.	Apply a consistent and threshold-based zonal distribution review – Apply the Zonal Distribution Review and Cap consistently across all pathways, including setting a clear threshold (for example, the proposed 10% zonal distribution cap set out in the methodology document) for all pathways. Document the process taken in the methodology document and any decisions taken in a decisions log in line with Aqua Book guidance (Chapter 8.3). This will improve consistency and provide a clearer basis for comparison when preparing the longlist of pathways.		26/02/2026
12		The final stage of the assessment to compare the cost of the 'Pillars Optimised Pathway' and the original 'Geospatially Optimised Pathway' could potentially lead to pathways that may be considered 'undeliverable' proceeding into the down-selection stage.	Review inclusion of the final proposed step of the Pillars Spatial Assessment – Review whether the final step in the methodology, where the cost of the re-modelled pathway is compared to the original pathway, is necessary and aligned with the purpose of the assessment. Based on the evidence available for our review, it may be appropriate to remove this step to avoid pathways that are deemed 'undeliverable' based on previous steps of the assessment progressing to the pathway longlist, which would undermine the purpose of the Pillars Spatial Assessment.		05/06/2026

Actions – Pillars Spatial Assessment (2/2)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
13	2. Modelling approach and process controls	Given that the Spatial Assessment is due to commence in February, assurance activities may not yet be underway. We have not yet seen details of any planned activities in the Pillars Spatial Assessment Methodology and would welcome clarification if these are captured elsewhere.	Embed proportionate assurance activities within the assessment process – Within the QA activities for the Pillars Spatial Assessment, establish assurance controls such as feedback and decision logs to track stakeholder input, assumptions, and decisions taken consistent with Aqua Book guidance (Chapter 8.2-8.3). Align these assurance activities with stage-gates within the assessment to help to achieve a proportionate level of assurance throughout the process rather than retrospectively. This will improve traceability and reduce the risk of identifying errors with the pathways later in the SSEP.		30/09/2026
14	5. Stakeholder engagement	NESO has set out a plan to engage with stakeholders in the initial stage of the Pillars Spatial Assessment, but it is unclear how the outputs of this phase will be used in the assessment process.	Establish structured tracking and use of stakeholder input – Implement a defined process to capture, track and link stakeholder feedback to decisions taken within the Pillars Spatial Assessment, including maintaining feedback and decision logs in line with Aqua Book guidance (Chapter 8.3). This will allow for effective tracking of stakeholder feedback and provide an evidence trail of how it informed decision-making.		30/03/2026

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Down-Selection

Actions – Down-Selection (1/2)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
15	2. Modelling approach and process controls	The approach set out in the Down-Selection Delivery Playbook document appears to be well-structured, however the quality assurance (QA) process may require development to be effective in the limited time available.	Plan and embed proportionate QA activities across the down-selection process – Define and schedule QA activities in advance of the down-selection workshops, in addition to the day specifically allocated to QA. Also, assign named individuals as assurers and approvers (Aqua Book, Chapter 5.1) who conduct iterative reviews of materials and maintain records of QA undertaken (Aqua Book, Chapter 8.3). This will ensure QA is applied throughout development rather than concentrated at a single point to identify issues earlier and reduce time pressures.		Complete
16	3. Appraisal Methodology	There could be greater clarity on how NESO will be quantifying its assessment of the pathways against the CSFs.	Define a consistent approach to assessing and quantifying CSFs – Establish a clear methodology for how CSFs are assessed, including a consistent scoring approach to allow for easier comparison between pathway options. This can be supplemented with qualitative narrative to provide rationale for the quantitative assessment. Green Book guidance notes that longlist appraisal should typically rely on indicative estimates and assessments against a set of CSFs to support informed judgement (Green Book, Chapter 5.10). Based on the evidence available for our review, we have seen that several CSFs (Deliverability Risk Assessment, Policy Assessment, Societal Insights Index, Spatial Assessment) will be assessed through a combination of quantitative and qualitative metrics (e.g. Pathway Deliverability will be assessed with a quintile score and supporting narrative points for each pathway) which appears to align with Green Book guidance. A similar and structured approach with a scoring framework should be introduced for each CSF to support consistent assessment of pathways.		Complete
17		There could be greater clarity on how NESO intends to use a minimum threshold for any CSFs as an initial step to filter pathway options.	Define clear and evidence-based minimum thresholds for CSFs – Establish minimum thresholds for CSFs which are supported by transparent and evidence-based criteria aligned to the objectives of the assessment, where relevant. An example of applying minimum thresholds could be filtering out any pathways that will not meet minimum required policy ambitions, in line with Green Book guidance (Green Book, Chapter 5.6). Document how these thresholds are set and applied across pathways to ensure consistent filtering, reduce subjectivity, and improve transparency of pathway selection.		Complete

Actions – Down-Selection (2/2)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
18	3. Appraisal Methodology	Evidencing the approach taken in the down-selection workshops, together with the results of the filtering process, will be important to support transparency of the process and defensibility against future external scrutiny.	Document and evidence decision-making in down-selection workshops – Document the approach, methods, and decisions taken during the down-selection workshops, including how filtering results and appraisal techniques (e.g. SWOT or RAG ratings) are applied. In line with Aqua Book guidance on key documentation (Aqua Book, Chapter 2), maintain decision logs and rationale for outcomes to provide a clear audit trail which will support defensibility under scrutiny.		Complete
19		There is a risk that the underlying assumptions informing the down-selection process may not be subject to sufficient scrutiny, which may reduce confidence in the robustness of the resulting decisions.	Embed external challenge and validation of pathway assumptions – Implement a structured process to identify, challenge and test underlying assumptions during the down-selection stage. Stakeholders who are external to the construction of the pathways could be nominated to provide independent challenge of pathways in the down-selection workshops, in line with Aqua Book guidance on roles and responsibilities of assurers and approvers (Aqua Book, Chapter 5.1). These individuals should provide challenge to the pathways and pose questions to ensure assumptions are explicitly evidenced and subject to sufficient scrutiny during longlist appraisal.		Complete
20		The proposed approach is to create a shortlist of 4-6 pathway options, including at least one 'low regrets' option.	Align shortlist construction with Green Book categories – Structure the pathway shortlist in line with Green Book guidance by defining options such as a 'do minimum' and a 'preferred way forward' (Green Book, Chapter 5.17). This will help to filter the longlist of pathways by formalising the grouping of pathways by their respective level of ambition and allow for comparison against a common counterfactual		Complete

Appraise Framework

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Actions – Appraise Framework (1/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
21	2. Modelling approach and process controls	NESO plans to iterate the shortlisted pathways and re-model aspects of them where appropriate. There is a risk that re-modelled pathways are materially different which could undermine the integrity of the original down-selection process and the basis on which options were previously assessed.	Ensure consistency between down-selection and appraisal pathways – Define controls for how pathways are iterated during the Appraise stage, including a consistent approach for deciding when re-modelling is necessary and checks required to ensure pathways remain aligned with those assessed at down-selection. These controls should include documenting changes made to pathways, reviewing any material deviations, and confirming that the rationale for pathway inclusion remains valid following re-modelling. Given this is a modelling exercise, Aqua Book guidance on analysis, roles and responsibilities, and assurance activities is relevant and re-modelling QA activities should align with this (Aqua Book, Chapter 8). The Appraise assessment outcome conflict decision tree included in the <i>SSEP Appraise Controls C01_Appraise Framework</i> document proposes a consistent approach to deciding which aspects of pathways to re-model. This will help add a layer of robustness to the decision-making process for re-modelling, and the process should be documented in a decision log in line with Aqua Book guidance (Aqua Book, Chapter 8.3).		06/04/2026
22		Based on the timelines in the SSEP Appraise Essential Information document, we understand that re-modelling has a relatively small window available which may result in time pressures if several pathways need to be re-modelled and quality assured.	Build in sufficient time for a proportionate level of QA during re-modelling – Review whether sufficient time is allocated for QA within the proposed timelines for re-modelling. Given the importance of the shortlisted pathways, embedding effective QA into the re-modelling exercise will be important to avoid any errors or delays ahead of producing the Pathway Options Report. Align these activities with previous QA activities and controls which were included in the generation of the initial pathway longlist and ensure there is a proportionate level of assurance to the size of the analysis (Aqua Book, Chapter 3).		06/04/2026
23		There is the risk that the appraisal of the shortlisted pathways may identify shortcomings against the Appraise criteria, resulting in pathways potentially needing to be removed from the shortlist.	Define mitigations in the event a shortlisted pathway is no longer viable – Define clear mitigation actions in case shortlisted pathways no longer meet the Appraise criteria, including revisiting the longlist appraisal to identify suitable replacement options in line with Green Book guidance (Green Book, Chapter 6.2). This should include setting a cut-off date for when shortlisted pathways can no longer be changed and documenting any decisions taken in a decision log.		17/04/2026

Actions – Appraise Framework (2/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
24	2. Modelling approach and process controls	NESO's approach for shortlist appraisal carries the structural risk of convergence around a favoured option. This can result in insufficient scrutiny being applied to underlying assumptions of the shortlisted options.	Appoint designated individuals to provide explicit challenge in appraisal – Assign specific individuals in defined 'challenge' roles within the Appraise process. These individuals are responsible for questioning any underlying assumptions and scrutinising the pathway options. This will reduce the risk of convergence and ensure decisions are subject to sufficient independent scrutiny. Given the need to provide independent challenge, Aqua Book guidance on roles and responsibilities is relevant for defining the roles of these individuals (Aqua Book, Chapter 5).		06/04/2026
25	3. Appraisal Methodology	NESO has outlined its approach to use an Appraise Framework to review and challenge the pathways. There could be greater clarity on how it plans to assess the pathways and support decision-makers to balance the trade-offs between options as part of the proposed framework.	Closer alignment to appraisal approach with Green Book principles – Develop the proposed approach for shortlist appraisal to be better aligned with Green Book guidance with monetisation of costs and benefits (Green Book, Chapter 6), a summary of which is provided in the Annex. Monetisation allows for a like-for-like comparison of cost and benefits across pathway options, with Green Book guidance recommending the monetisation of non-monetary factors (e.g. environmental impacts). Limited monetisation of shortlisted options can result in more subjectivity (or perceived subjectivity) in decision-making and lead to more challenge from stakeholders. Consider which factors included in the shortlist appraisal will be most material for decision-making and could be monetised most effectively in the time available. Given the complexities of cost benefit analysis, it may be appropriate to consult with sufficiently qualified appraisal experts. For each of the appraisal factors, review which approach given in the Green Book is most appropriate for monetisation (Green Book, Chapter 8.1). For example, market prices can be taken for technology costs, but methods such as stated preference will be needed to price environmental costs and benefits where there are not established market prices. If it is not feasible to monetise a greater proportion of the assessment criteria, document why this is not possible or feasible and adopt a consistent quantitative assessment approach across the remaining criteria, aligned with Green Book guidance (Green Book, Chapter 6.28) and relevant supplementary guidance. This will support a more structured and transparent comparison of pathway options while maintaining consistency with established appraisal principles.		31/01/2028

Actions – Appraise Framework (3/3)

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
26	3. Appraisal Methodology	NESO approach for assessing sub-national factors in the Appraise Framework could be developed to better align with the Green Book guidance on place-based analysis.	Incorporate Green Book principles on place-based analysis into shortlist appraisal approach – Develop the proposed approach for shortlist appraisal to better align with Green Book principles of place-based assessment. The Green Book (Chapter 7.16) specifically references assessing the distribution of costs and benefits at a sub-national level and it is unclear whether NESO's proposed approach for shortlist appraisal sufficiently meets this guidance. Given that the SSEP assesses optimal spatial locations for energy infrastructure on a zonal basis with 17 economic zones in the modelling framework, it may be appropriate to specifically mention these zones, or the most impacted zones, when appraising the pathways. If NESO believes it is not appropriate to consider the zonal impacts when appraising the shortlisted pathways, it should document the rationale for this decision.		18/08/2026
27		NESO approach for assessing societal factors in the Appraise Framework could be developed to better align with the Green Book guidance on distributional analysis.	Incorporate Green Book principles on distributional analysis into shortlist appraisal approach – Develop the proposed approach for shortlist appraisal to better align with Green Book principles on distributional analysis. The Green Book (Chapter 7.1) specifically references assessing the distribution of costs and benefits between different groups in the population and this guidance is not at present reflected in NESO's approach. The Societal Insights Index appears to be the most relevant component in the Appraise Framework for addressing Green Book expectations on distributional analysis. Based on the <i>E0184 Methodology for use of Societal Insights Index</i> document available for our review, we understand that NESO is proposing to combine national and sub-national quantitative scoring with qualitative insights from focus groups and surveys for each pathway, providing a foundation for alignment with the Green Book. Build on this by further developing the approach to more explicitly capture how impacts may vary across different population groups in the Appraise Framework.		06/04/2026
28		We have not seen evidence of a proposed approach for presenting the pathway appraisal results in the Pathway Options Report.	Present appraisal results using a structured Appraisal Summary Table – Apply a consistent format for presenting appraisal results, including using an Appraisal Summary Table aligned to Green Book guidance (Green Book, Chapter 9). A template is provided in the Green Book (Table 12) which can be used. This will summarise monetised and non-monetised impacts, distributional effects, and key trade-offs effectively across the shortlisted pathways and provide a clear and balanced view for decision-makers.		23/04/2026

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Sensitivity Testing

Actions – Sensitivity Testing

Reference	Theme	Finding from review	Action	Input provided by NESO	
				NESO owner	Due date*
29	2. Modelling approach and process controls	NESO's proposed approach to prioritise sensitivities based on the relative criticality and uncertainty of each shortlisted pathway's components appears pragmatic and may help to avoid sensitivities being tested on an ad hoc basis. The approach to how the criticality of components would be assessed could benefit from greater clarity.	Define a scoring framework for assessing component criticality – Establish a structured approach to assess the criticality of pathway components by scoring components against the four principles outlined in the E0159 - Approach to robustness sensitivity testing document . The approach and process should be accurately documented in line with Aqua Book guidance on documentation (Aqua Book, Chapter 8.3). This will add a layer of robustness to the approach and provide a clear decision-making framework to ensure consistencies across the different pathways and components.		06/04/2026
30		The assessment of the uncertainty of input parameters for the shortlisted pathways is an important step for prioritising sensitivities and should as evidence-based as possible.	Strengthen objectivity and evidence used in uncertainty assessment – Define a consistent approach to assess uncertainty of components, using quantitative evidence where available and clearly documented assumptions where qualitative judgement is applied. Maintain a record of inputs, rationale, and supporting evidence to ensure decisions are transparent and robust under external scrutiny in line with Aqua Book guidance on documentation (Aqua Book, Chapter 8.3).		06/04/2026
31		As with previous stages of SSEP modelling, it is important there is a log of analysis, assumptions and decisions taken on sensitivity testing. NESO has acknowledged in E0159 - Approach to robustness sensitivity testing that external stakeholders may question the selection of sensitivities that have been tested.	Maintain comprehensive logs of sensitivity testing processes and decisions – Implement a structured approach to documenting sensitivity testing with logs of input data, assumptions, decisions, and the rationale for prioritising certain sensitivities. This will provide a transparent audit trail aligned to Aqua Book guidance (Aqua Book, Chapter 8.3) in the event that external stakeholders question why particular sensitivities were prioritised by NESO.		15/08/2026
32	3. Appraisal Methodology	The Green Book recommends that sensitivity analysis should include calculating 'switching values' which should be presented in the results output. We have not seen evidence of 'switching values' being considered in NESO's approach to sensitivity testing.	Review whether switching value analysis should be applied to sensitivity testing – Review whether switching value analysis, outlined in the Green Book (Chapter 6.105), is relevant for SSEP sensitivity testing. Switching value analysis could be used to identify the values that variables would need to take for pathways to be no longer considered deliverable or value for money. If NESO decides to integrate this analysis into the SSEP, these switching values will need to be included in the Pathway Options Report to support transparent assessment of uncertainty and non-monetised impacts. NESO will need to document its decision-making process for this in a decision log, with clear rationale given in line with Aqua Book guidance (Aqua Book, Chapter 8.3).		17/07/2027

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Annex

Annex A: Green Book guidance on social cost-benefit analysis

Cost Benefit Analysis (CBA) is a method used to compare the total expected social costs and benefits of a proposal to assess its overall value to society. It is used to identify the option that offers the highest net benefit to society (Net Present Social Value) among a shortlist of options and is recommended by the Green Book as a structured, evidence-based approach to assessing social value and supporting value-for-money decisions.

Key CBA principles



Compare total social costs and benefits to identify the option with the highest Net Present Social Value (NPSV).



Use real prices, appropriate time horizons, and a 3.5% standard time preference rate (unless otherwise justified).



Monetise where possible. If not feasible, then quantification is the next best alternative. If there is insufficient evidence for this, then use qualitative assessment.



Apply optimism bias adjustments to costs and benefits. Incorporate distributional analysis and take account of risk and uncertainty where applicable.

Output

- Summary measures of social value, including Net Present Social Value (NPSV) and Benefit-Cost Ratio (BCR) metrics.
- Sensitivity analysis to test robustness.
- Clear articulation of winners and losers.
- Use of distributional weights, where appropriate.
- Options linked to strategic case for intervention.



What to do about unmonetisable impacts?

Impacts should be monetised where possible based on available data. Market prices provide the most reliable evidence, but often this is not available for a particular type of cost or benefit. Other valuation techniques can be used instead, such as revealed or stated preferences.

However, uncertainty, lack of available data, or ethical reasons **may prevent monetisation.**

What to use instead:



Quantitative non-monetary evidence: Use structured techniques and proxy indicators to value hard-to-price impacts. The Green Book supplementary guidance provides more detail on this (e.g., Wellbeing guidance for appraisal, Valuation of energy use and greenhouse gas emissions, Health).



Qualitative evidence: Use case studies, stakeholder input, and expert judgement to capture system-wide or localised impacts, especially where data is lacking, or impacts are context-specific.

Annex B: Documents reviewed and stakeholder interviews

Documents reviewed

Ref	Document
Spatial Evaluation Framework	
01	E0099 - SSEP Finalised Spatial Exclusions & Suitability Scores
02	E0155 - Updates to Spatial Evaluation Framework for Modelling Input
03	Spatial Evaluation Framework Detailed Design Playbook
04	AECOM SEF Technical Notes (7 documents)
05	SEF Assurance artefacts (Scope of Review [Draft], Data SOP [Draft], Governance SOP [Draft], Assurance implementation and sign-off)
Pillars Spatial Assessment	
06	Pillars Spatial Assessment Methodology
Down-Selection	
07	Appraise: Down-Selection and Appraise Assessments
08	SSEP Stakeholder Engagement
09	Down-Selection Assessment Data Inputs
10	Down-Selection Delivery Playbook
11	E0131 – Appraise Pathway Down-Selection Methodology
12	Down-Selection Essential Information

Ref	Document
Appraise Framework	
13	Appraise: Down-Selection and Appraise Assessments
14	SSEP Appraise Essential Information
15	E0162: Incorporating Insights from Appraise Assessments into Pathway Re-Modelling
16	SSEP Stakeholder Engagement
Sensitivity Testing	
17	E0159 - Approach to robustness sensitivity testing
18	E0177- Robustness sensitivities list: Inclusions and exclusion

Stakeholders interviewed

Interviewee	Programme Role	Date
		13/02/2026
		05/03/2026
		06/03/2026

Annex C: Out of scope services

The following services were out of scope for this review:

- **External Dependencies:** Where applicable, the review assessed whether appropriate dependency links and governance processes are in place to support the SEP portfolio. However, it did not include a review of other external parties or programmes external to NESO.
- **Other NESO programmes:** The review did not consider the programme management of other programmes outside of the SEP portfolio.
- **Formal assessment of current compliance:** The support did not include a formal assessment of each Programme's current compliance with good or regulatory practices (e.g. HM Treasury's Green Book) within the SEP portfolio.
- **Addressing the actions from the review:** We provided NESO with insight into how to address the issues found through the review. However, NESO is responsible for addressing the actions from the review. Subsequent follow-up of these actions to review their completion in line with agreed due dates and owners is not in scope of the review. PwC has not validated or approved the owners or due dates of actions. Where any action has a due date recorded as "Complete", this reflects NESO's own internal assessment and does not represent a conclusion, confirmation or verification by PwC.

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Thank you

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