Public

Ref: FOI/26/072

National Energy System Operator
Faraday House
Gallows Hill
Warwick
CV34 6DA
InformationRights@neso.energy
www.neso.energy

22 July 2026

Dear requester

Request for Information

Thank you for your request for information which we received on 9 June 2026. Your request has been considered under the Environmental Information Regulations 2004 (EIR) as the requested information meets the definition of environmental information at Regulation 2(1)(c) of the EIR.

We wrote to you on 8 July 2026 to advise that we were not in a position to respond due to ongoing consultation with the Department of Energy, Security and Net Zero ("DESNZ") and that you could expect to receive a response no later than 22 July 2026. For full transparency purposes, we also consulted with Great British Energy-Nuclear ("GBE-N") about your request, as the site owner of Wylfa. We apologise again for the delay in providing you a response. It is important that NESO consults with affected parties to understand any impact from disclosure of information they may face and this process took longer to complete on this occasion.

Request

You asked us:

Please could I see any reports produced in the past five years relating to the siting of SMRs at Wylfa, Anglesey, describing how the decision was arrived at

My particular interest is the consideration of available grid capacity in north Wales. I have no interest in any commercial details

This was replied to as EIR2026/02096 which mentions grid reinforcement needed for either Wylfa or Oldbury, and references advice from NESO

Please can I see a copy of the advice provided, by NESO, to DESNZ and/or GBE-N

Our response

We can confirm that we hold information in scope of your request. NESO, known as the Electricity System Operator ("ESO") at the time, produced an Initial Assessment report on 26th May 2023 ("the report") for placing new nuclear power generation sites in England and Wales, which included Wylfa as one of the sites considered. We have extracted the relevant information from the report and replaced withheld information with "xxxx" in the enclosed disclosure of information. Information has been withheld in line with the relevant exceptions from disclosure in the EIR, specifically under regulations 12(5)(d) and 12(5)(e) of the EIR. The use of these exceptions is explained below.

Use of the exception at Regulation 12(5)(d) – Confidentiality of Proceedings
Regulation 12(5)(d) of the EIR states that a public authority may refuse to disclose information to the extent that its disclosure would adversely affect the confidentiality of the proceedings of that or any other public authority where such confidentiality is provided by law.

The Information Commissioner accepts that 'proceedings' can cover a range of activities and will include situations where a public authority is exercising its statutory decision-making powers. For the purposes of our use of this exception the proceedings relate to the following area of government decision-making. The government's National Policy Statement for Energy (EN-1), published here, has effect for the decisions by the Secretary of State for Energy Security and Net Zero ("Secretary of State") on applications for energy developments that are nationally significant under the Planning Act 2008. In conjunction with this overarching policy statement, there is also a specific National Policy Statement for nuclear energy generation (EN-7), which taken with EN-1, provides the primary policy for decisions by the Secretary of State on applications for Development Consent they receive relating to infrastructure using nuclear fission to generate energy.

It is this process for Development Consent Orders (DCOs) which constitutes 'proceedings' for the purposes of Regulation 12(5)(d), as it involves a means to formally consider an issue and reach a decision, namely providing development consent for nuclear power generation.

National Energy System Operator Limited
Company Number 11014226
Registered office address St Catherine's Lodge, Bearwood Road,
Sindlesham, Nr Wokingham, Berkshire, RG41 5BN

The exception requires that there is a basis in law for the confidentiality of the proceedings. NESO (ESO at the time) was also subject to restrictions on the use of system operator functions information through its electricity system operator licence ("licence") at the time. Part C of this licence was concerned with System Operator Functions Information ("SOFI"), which prohibited the disclosure of SOFI beyond specified purposes. NESO has similar conditions under its current licence. Whilst Regulation 5(6) of EIR disapplies any statutory bars on disclosure for environmental information, the information ringfencing and confidentiality obligation in our licence does mean that confidentiality is provided by law for the purposes of this exception and is an important factor in the public interest test. The common law duty of confidence also applies. NESO report was provided and marked up as confidential, which confirms the advice was provided on an understanding of confidence and on the expectation, it would not be disclosed.

With regard to EIR, the exception only applies where the disclosure of information would adversely affect the confidentiality of proceedings. Disclosure of the information relating to sites considered other than Wylfa would have a negative impact on the confidentiality of the proceedings to consider development consent on suitable sites for nuclear power generation, as disclosure would interfere with potential discussions between developers and site owners and would influence the planning balance. In the case of Wylfa, where contracts have been signed, we are able to share the assessment information without adverse effects. Our use of the exception at Regulation 12(5)(d) relates to the information about the other sites that were named and assessed. The report also only covers one factor of many considered for the suitability of some sites and is highly indicative and therefore is more suitable for preliminary consideration only and would give an incomplete view of the nuclear sites considered. Release of this information may stall proceedings or make developers reconsider applying for development consent, where they might otherwise have done. The Government's policy, through EN-7, also involves a new more flexible and developer-led approach in response to the changing nuclear landscape and to support a longer-term pipeline of projects beyond 2025. Disclosure would impact the flexibility aim of this policy and affect the number of projects in the pipeline.

Details of the public interest test carried out by NESO in concluding the public interest in withholding information outweighs the public interest in its disclosure are provided in Annex A to this letter.

Use of the exception at Regulation 12(5)(e) – Confidentiality of Commercial or Industrial Information

Regulation 12(5)(e) of the EIR states that a public authority may refuse to disclose information to the extent that its disclosure would adversely affect the confidentiality of commercial or industrial

information where such confidentiality is provided by law to protect a legitimate economic interest.

Information is covered by Regulation 12(5)(e) if:

1. The information is commercial or industrial in nature;
2. Confidentiality is provided by law;
3. The confidentiality is protecting a legitimate economic interest; and
4. The confidentiality would be adversely affected by disclosure.

Information about, assessment and comparison of land areas owned by third parties is commercial in nature and could influence market behaviour or the commercial positions of third parties if released.

In our opinion, the requested information is confidential in law for the same reasons as those set out above in relation to Regulation 12(5)(d). To add to the applicability of the common law duty of confidence, Information also relates to third-party ownership of sites, and these third parties would have an expectation that any information relating to the favourability of their sites would not be disclosed.

There are legitimate economic interests which need to be protected by confidentiality. Nuclear projects require considerable expenditure. Revealing site specific suitability would give site owners or developers undue advantage, affecting financial negotiations and future project bids. Sites not considered or sites considered less favourable, in particular, would be impacted and this would likely affect their land value and their ability to compete in the market.

Details of the public interest test carried out by NESO in concluding the public interest in withholding information outweighs the public interest in its disclosure are provided in Annex A to this letter.

Advice and Assistance

We would emphasise that the report is now 3 years old and there have been some significant changes to government policies and actions since this information was provided to DESNZ/GBE-N. Consequently, some of the early assumptions underpinning the analysis may no longer reflect current positions or the approach that would be taken in an actual project. This report also did not include any outputs from formal assessment processes such as electrical studies by the transmission owner or economic constraint analysis, therefore the results should be taken as highly indicative.

Next steps

If you are dissatisfied with our handling of your request, you can ask us to review our response. If you want us to carry out a review, please let us know within 40 working days and quote the reference number at the top of this letter. You can find our procedure here: Freedom of Information and Environmental Information Regulations | National Energy System Operator. The ICO's website also provides guidance on the internal review process: What to do if you are dissatisfied with the response | ICO.

If you are still dissatisfied after our internal review, you can complain to the Information Commissioner's Office (ICO). You should make complaints to the ICO within six weeks of receiving the outcome of an internal review. The easiest way to lodge a complaint is through their website: www.ico.org.uk/foicomplaints. Alternatively, they can be contacted at: Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

Thank you for your interest in the work of the National Energy System Operator (NESO).

Regards,

The Information Rights Team, National Energy System Operator (NESO)

National Energy System Operator Limited
Company Number 11014226
Registered office address St Catherine's Lodge, Bearwood Road,
Sindlesham, Nr Wokingham, Berkshire, RG41 5BN

Annex A – Public Interest Test

All exceptions in the EIR are subject to a public interest test. Public authorities may aggregate the public interest arguments when applying more than one exception.

Public interest arguments in favour of disclosing the requested information:

- There is a public interest in nuclear energy development, particularly as the construction or development of such sites may have an impact on local areas.
- Releasing information on the assessment of nuclear sites would be transparent and encourage public participation in the decisions made around these sites and challenging the robustness of decisions made.
- NESO is also mindful of the presumption in favour of disclosure that underpins the EIR.

Public interest arguments in favour of withholding the requested information:

- There is public interest in ensuring no third party land owner is materially disadvantaged in ongoing or potential discussions through disclosing confidential and highly indicative information about individual sites.
- NESO has a public duty under our licence to facilitate competition within the energy market and there is a recognised public interest in allowing competition in the energy industry. Such projects are crucial to the Government achieving its net zero and clean energy targets and anything that unjustifiably inhibits the competitive development of related projects runs counter to these goals.
- NESO is the designated independent system operator and planner under the Energy Act 2023 and must remain independent, fair, and consumer focused. Disclosure could erode trust within the sector, hampering NESO's role and our ability to drive forward reforms and initiatives that would bring benefits to consumers and to the environment.
- There is a public interest in protecting the ability of landowners, developers and other parties to undertake commercial activities associated with project development on a fair and informed basis. Disclosure of information that could influence perceptions of the relative attractiveness or development potential of particular land areas may affect commercial behaviour and commercial negotiations. This could, in turn, risk undermining value for money in future commercial arrangements, with potential consequences for both taxpayers and energy consumers.

Having weighed up these public interest arguments, our opinion is that the balance of the public interest lies in maintaining the exceptions and withholding the requested information.

Legal Disclaimer and Copyright

Document purpose

This document was created following engagement from the Department for Energy Security and Net Zero (DESNZ) with information collated from teams across NGESO to form part of an initial high-level impact assessment for placing new nuclear power generation sites in England and Wales.

The information contained in this document is based on engineering knowledge and judgement. We have included metrics on the local network, operability, and constraints (wider network). However, as this report does not include any outputs from formal assessment processes such as electrical studies by the transmission owner or economic constraint analysis, the results should be taken as highly indicative.

Constraint costs are the costs incurred by the ESO (and therefore ultimately borne by the end consumer) because of actions taken to balance generation and demand when there are restrictions to the flow on the wider network. The economic study on the projected frequency of future constraint costs helps determine when wider network capital expenditures (also borne by the end consumer through the regulatory framework) are required.

Insights provided were based on an adapted Leading the Way scenario from our Future Energy Scenarios (FES). The adaption was for removing existing Small Modular Reactors (SMR) from the scenario and considering the potential sites provided for operating from 2034.

The sites and capacities considered are:

XXX
Wylfa (up to 2350 MW)
XXX

All information provided is intended to be used as initial guidance in supporting the early

steps of a site selection process. A more coordinated approach that includes electrical studies from the transmission owner, NGET, is also recommended.

Sites summary

As a reference point, this section summarises each site's key points and factors.
Note: The Constraints (Wider Network) information within this table is supplied without the addition of any electrical studies from the transmission owner, NGET. The costs provided are an annual average reduction to constraint costs over 40 years (anticipated lifespan of a new SMR), based on the highest anticipated capacity (as provided by DESNZ). The costs shown are discounted

Site	Existing Nuclear Capacity	Estimated New Nuclear Capacity	Other Generation* (expected to connect nearby – TEC based)
Wylfa	None currently (Former ~1000MW)	2350MW (XXX)	Offshore Wind (8160MW) – Onshore Wind (265MW) – Solar (880MW – Tidal (210MW)

XXX

Considering the factors in Table 1 above, there are various benefits to the NETS for building a case for connecting a nuclear plant at some of the potential locations, however, there is nothing which points to a "winning" combination of two plants which should be favoured. There is a concern that operating two new nuclear plants near each other, or an existing nuclear site could result in concentrating inertia in one area, thus increasing the risk of losing large amounts of inertia during system outages and faults. Therefore, a 'geographically diverse' deployment combination could be beneficial from an operability point of view. Moreover, a north and south deployment could support system security when renewable generation is low, and interconnectors are exporting.
The economic study which looks at the impact of each nuclear location on the wider network and constraint management costs has identified a rough geographical arrangement of 'red', 'amber', and 'green' results. XXX

Connecting to the national grid

The National Electricity Transmission System (NETS) broadly comprises 400, 275, and 132kV circuits.

Figure 2 (*below*) shows the National Grid Transmission System line diagram for England and Wales and the ten *potential* connection points that are being considered for new SMR capacity. National Grid Electricity Transmission (NGET) owns this part of the system
XXX

This document explores how the network could react to connecting a new SMR site at one of the ten locations by highlighting possible benefits and concerns associated with **Network Operability** and **System Capability**.

Each viewpoint combines complex sets of criteria which are described at a high-level below:

Network operability

Various factors are considered when determining how suitable a connection point could be from a **network operability** perspective. The insights outlined in this study are a combination of:

The ability to support the Scotland, England, and Wales networks with inertia and short-circuit level (SCL),

- **Inertia**: Many generators producing electricity for the grid have spinning parts – they rotate at the right frequency to help balance supply and demand and can spin faster or slower if needed. The kinetic energy 'stored' in these spinning parts is our 'system inertia'.
- **Short-circuit level (SCL)**: This is the current flow on the system during a fault. These faults can be caused by a lightning strike, weather conditions, or equipment failure. During the fault, the system can see a direct connection to the earth and current flows from all sources into it. SCL is vital during such a fault as it helps us to maintain system voltage. The bigger the current the stronger the system.

Network stability capability (acknowledging upcoming stability products and services being planned across the system via Stability Pathfinder projects),

Network Stability Capability: Stability has traditionally been supplied as an inherent by-product of synchronous generation. More asynchronous generation continues to drive a decline in the system's inherent stability, with a gradual reduction in system inertia, SCL, and reactive power support. Stability requirements are currently met (after-market dispatch) by synchronising generators.

- **Stability Pathfinder**: This is a set of projects which look for the most cost-effective way to address stability issues in the electricity system created by the decline in transmission-connected synchronous generation.

Network stability needs and system performance, by assessing what active (and planned) generators are connected to the area (associated with levels of non-synchronous generation in the area).

- **Existing/planned generator connections**: Generators (and interconnectors when importing) supply power in different ways. Inverter Based Resources (IBRs) are interconnectors (importing) and generators such as wind farms, batteries, and solar. IBRs don't support network stability in the way that synchronous plant does.

Nuclear (SMR) generation is a form of synchronous plant, which would support system stability requirements if placed into an area of predominant-or-total IBR supply.

System capability

Various aspects of the national grid are considered when assessing the connection of a new generation site from a **system capability** perspective. The following information was evaluated to present insights into each location:

Local grid infrastructure and its ability to cope with an SMR generator capacity,

- **Location**: If any new SMR generators are a long distance from the current or planned

transmission network, new transmission circuits and substations will be required to connect. Cost increases with distance from the current network.

- **Capacity**: Many transmission sites (substations) already have generation connected to them or have plans for new connections. Any new SMR connections will need to fit within the loading limits of the connections site, not just under intact conditions but under the *SQSS* requirement during fault and outage conditions.

SQSS (The Security and Quality of Supply Standard set out the criteria and methodology for planning and operating the National Electricity Transmission System (NETS)).

- **Infeed Loss**: The transmission network must be resilient to faults. The total amount of generation connected to any one point cannot exceed the amount of *response* available. This can limit the generation possible to connect to any point.

Response to unplanned circumstances (such as loss of generation in an area) is something National Grid ESO are obliged to plan for as part of the licencing rules. There are different types of responses available. (For more info, please visit Frequency response services | National Grid ESO)

- **Voltage Control**: Voltage management is something that cannot be done from long distances. Having the voltage control services of a generator local to where it is needed is beneficial.

Long-distance transmission capability and congestion,

- **Congestion**: If new generators are added to part of the network with high flows from other generators, they would be loading additional congestion to the 'route corridor'. This could increase overall network constraints depending on when (e.g., before reinforcement) and where these are placed (e.g., within, or adjacent to a highly congested part of the network).
- **Future Network Reinforcement Schemes:** Any planned reinforcement schemes planned may help alleviate network constraints introduced by additional generation

Wylfa XXX

Of the XXX options considered in Wales, Wylfa is the largest project considered as part of this study with an estimated new SMR capacity of 2.35GW (XXX).

XXX

The TEC register shows six separate projects connecting into the Wylfa 400kV substation between 2024 and 2033 – delivering a combined 5.52GW capacity, XXX. This activity and interest along the area have triggered reinforcement across Wales to accommodate the additional capacity, and any additional capacity is likely to trigger more.

Network Operability: A nuclear connection in Wylfa XXX should add value in terms of network stability, and support inertia concerns when considering the upcoming renewable power generation projects (as shown in the TEC register), however of the XXX options, Wylfa could potentially provide greater benefits due to the proximity of incoming generation connections.

System Capability: There is a strong chance of conflicting with offshore wind generation projects, stemming from the Irish Sea and from being brought down from 'Scotwind' projects. Multiple network reinforcements are being developed to bolster North Wales's transmission capacity however XXX connections is likely to require more.

Constraint Costs: XXX due to the potential to install up to XXX SMRs at Wylfa, Wylfa has a greater impact on constraint costs XXX.

Wylfa could reduce constraint costs by an average of £27.8m per year based on its maximum 2350MW capacity. The optimum commissioning year for a nuclear facility at Wylfa is 2037. Commissioning this site in 2034 could see an average annual **increase** to constraint costs of £17.6m until then.

XXX

Overall: XXX connections looks highly likely to add to a range of reinforcement schemes in development for the area. If XXX these sites is considered a strong option it may need to be part of the wider reinforcement discussion as soon as possible to ensure a holistic strategy for the area, and impact on the network is considered. This would require early engagement with NGET and NGESO. From an economical perspective, Wylfa could reduce constraint costs by £1.1bn (1.9% saving) over a 40-year lifespan, XXX

Economical Assessment

An economic assessment was carried out to indicate the wider implication of new nuclear connections regarding constraint costs. The analysis carried out shows the level of change to constraint costs for each connection option in individual scenarios.

- **Constraint Costs:** These are the costs incurred by the ESO, in taking balancing actions needed to balance generation and demand when there are flow restrictions on the network. These costs are borne by consumers.

This analysis aims to complement the insights outlined throughout the document and provide an economic output towards the site selection process. It may also provide a basis for discussion for scoping out a site-combination assessment

XXX

Ideally, the economic analysis would be completed in parallel to electrical studies so that the data used in the economic analysis is as accurate as possible. However, electrical studies were out of scope for this assessment therefore the network was assumed unchanged from the Leading the Way scenario other than those noted in the assumptions above.

Two sets of analyses have been performed for each site:
Each new site is modelled with a maximum 940MW capacity, to identify locational advantages
Each new site is modelled at an estimated maximum capacity, as set out in this report, to further identify the wider impact of constraints.

All costs shown within this section have been discounted and provided based on a 40-year life span for the new nuclear SMR installations. Therefore, costs are shown in Present Value.

NB: Economic results within this report were a product based on the FES22 scenario 'Leading the Way' model (adapted as highlighted above) and GB energy market conditions at the time of writing. Under these conditions, there is a strong correlation between reduced constraint costs and the ability to export generated power in England and Wales through interconnectors.

If the GB energy market was to change its pricing conditions, for example, were a form of locational energy pricing introduced, evidence suggests interconnectors could behave differently. This could have an impact on the results shown in this report, therefore further detailed analysis which includes these sensitivities is advised before using data within this report to make any final decisions for site locations. Current and alternative market conditions are being reviewed, discussed, and investigated both by National Grid ESO and across the wider industry.
XXX

Constraint Costs

Option constraint costs are calculated by identifying the difference between the **base model** (in this case an adapted Leading the Way scenario) and the site options simulated as part of this study from the year 2034 (assumed first SMR commissioning date). Costs are discounted in line with the expected 40-year lifespan of a nuclear generator to provide a Present Value.

XXX

Costs across the two scenarios (940MW vs Estimated Maximum Capacity)

Table 2 (*below*) shows the rankings of the highest to least constraint cost savings for each site across both the '940MW Capacity' and the 'Estimated Maximum Capacity' scenario

XXX

Comparing the 940MW Capacity results (*on the left*), with the Estimated Maximum Capacity results (*on the right*) shows the benefit of having a higher capacity installed at any given location.

XXX

40MW Capacity Scenario | Locational Assessment

The analysis comparing a maximum of 940MW generation was designed to provide a fair look at how the geographical location of each site can impact the constraint costs.

Figure 5 (*below*) shows the average annual constraint cost savings for each site.

XXX