

Data centres – what is the environmental impact, and is Hertfordshire the right place?

This report considers the environmental impact of data centres and whether Hertfordshire is the right place for them, with particular reference to the planned new data centre sites at South Mimms and Abbots Langley. The report considers whether the reasons put forward for these data centres are compelling and whether there are better locations elsewhere. This report does not discuss the need for data centres in the UK but looks at the criteria for optimal locations and considers whether Hertfordshire meets these criteria.

What are data centres?

Data centres are secure, large-scale buildings that from the outside look a lot like traditional warehouses. Inside, they house thousands of computer servers and their associated infrastructure. These servers store, process and distribute data and applications that support everything from websites and cloud services to artificial intelligence. Data centres are essential for modern living, although quite how many data centres are needed is not clear.

Current data centre context

The government has recently changed national planning policy to make it easier for data centres to be approved, seeing them as a source of economic growth. However, these projects are divisive and there is growing concern in many local communities about their impact.

In their favour, data centres could support jobs, redevelop industrial areas, and boost economic growth. Their business rates could make useful contributions to local public budgets. Some data centres could provide local community benefits such as public access and local heat distribution networks.

However, data centres also have many drawbacks, particularly around their impact on the environment. Data centres require huge quantities of electric power to run their servers and to keep the machines cool, they generate a considerable amount of carbon emissions, and they can use vast amounts of water.¹ Data centres also cause noise pollution.²

Data centres are large-scale industrial buildings and thus, when built in the countryside, have a damaging impact on the landscape. The data centre sites at South Mimms and Abbots Langley in Hertfordshire are situated on productive agricultural land within the London Metropolitan Green

¹<https://www.lse.ac.uk/granthaminstitute/explainers/what-direct-risks-does-ai-pose-to-the-climate-and-environment/>

²<https://www.eesi.org/articles/view/communities-are-raising-noise-pollution-concernsabout-data-centers>

Belt, so these data centres also have the effect of taking the land out of food production, as well as destroying the designated protected Green Belt.

There is concern that planning applications for data centres may understate their environmental impact, and that their classification since 2024 as Critical National Infrastructure means that planning permission may be too readily granted. For example, The Guardian has reported concerns that the operator of the recently-consented 720MW data centre in Cambois, Northumberland has understated its planned water use.³ In another example, the Secretary of State has revoked the permission granted for a data centre in nearby Iver, Buckinghamshire on the grounds that the environmental impact assessments were inadequate.⁴ The not-for-profit organisation Foxglove (which brought the legal challenge at Iver) has produced data showing that the carbon emissions from only ten of the large-scale data centres currently in planning or construction in the UK would all but wipe out the projected 2025 carbon savings from the switch to electric cars.⁵ Detail from this Foxglove report also shows significant variations in developers' estimates of carbon emissions.

Data centres in Hertfordshire

Hertfordshire currently hosts several large data centres in urban settings, including a large Colt facility in Welwyn Garden City and several NTT facilities in Hemel Hempstead. However, public awareness and concern regarding the environmental impact of data centres have grown significantly with the recent consents for two new hyper-scale data centres on greenfield agricultural land within the London Metropolitan Green Belt at South Mimms in Hertsmeire Borough and at Abbots Langley in Three Rivers District.

South Mimms data centre

- Hertsmeire Borough planning application 24/1152/OUTEI
- Land east of South Mimms Services, St Albans Road, South Mimms
- Site size 34.4 hectares (85 acres)
- Agricultural land
- 6 Public Rights of Way running across and adjacent to the site
- Applicant argued that the site is 'grey belt', Council granted permission in February 2025
- A 250MW data centre. Until relatively recently, a 20MW or 30MW data centre was considered large. This is not the total power drawn from the grid, only the power required to run the servers. Additional power will be required for cooling⁶ and other usage.
- Data centre size 187,000 square metres
- Air cooled; diesel generator backup
- Estimate of 200 ongoing post-construction jobs
- Estimate of £21m per annum in local authority business rates
- Proposals for upgraded cycleways, public footpaths and bus routes.

³ <https://www.theguardian.com/environment/2025/dec/19/uk-largest-proposed-data-centre-planned-water-use-northumberland>

⁴ <https://www.theguardian.com/politics/2026/jan/22/government-ai-datacentre-approval-quashed>

⁵ <https://www.foxglove.org.uk/2025/10/05/new-data-centres-wipe-out-carbon-savings-electric-cars/>

⁶ <https://blog.policy.manchester.ac.uk/sci-tech/2025/08/too-hot-to-ignore-fixing-the-infrastructure-gap-in-data-centre-cooling/>

Abbots Langley data centre

- Three Rivers District planning application 23/1068/OUT
- Land north of Mansion House Farm, Bedmond Road, Abbots Langley
- Site size 30.85 hectares (76 acres)
- Agricultural land
- 2 Public Rights of Way running across the site
- Planning appeal reference APP/P1940/W/24/3346061, appeal recovered by Secretary of State and determined in May 2025 granting permission and citing 'grey belt' as part of the rationale
- A 96MW data centre
- Data centre size 84,000 square metres
- Water cooled
- Estimate of 260 ongoing post-construction jobs
- Proposal to develop country park adjacent to the site

Location of data centres - arguments in favour of Hertfordshire and the Home Counties

Proximity to data users

This seems to be the main justification used for data centres in Hertfordshire, with the assertion that *"This type of data centre needs to be as close as possible to the office workers using its servers - miles equals milliseconds and this can mean millions of pounds in the fast-paced financial world."*⁷ This is however a very specialised use, and many data users do not require connections at this speed. For most uses, the additional 2 or 3 milliseconds of transmission time from the north of the UK is unlikely to be of any significance.

Grid connection

One of the key requirements for these hugely power-demanding sites is the necessary connection to the National Grid. Although the site at South Mimms already has some connections lined up it has not been fully quantified how much spare capacity on existing pylons currently exists. It has a power reservation of 400MVA from National Grid via the Elstree (Letchmore Heath) substation which translates into a peak power draw of 360MW. For comparison St Albans District, with a population of 150,000, draws only about one third of that – 135MW.⁸

Location of data centres: arguments against Hertfordshire and the Home Counties

Power requirements

Data centres are power hungry and consume vast quantities of electricity. Issues arising from this are:

1. sources of power, and
2. the capacity of the National Grid to transmit the power to where it is needed.

⁷ <https://news.sky.com/story/huge-vote-of-confidence-as-data-centre-giant-announces-4bn-british-investment-13459984>

⁸ <https://radlettwire.co.uk/2025/03/dc01uk-a-demanding-new-neighbour/>

1. Sources of power

It takes a great deal of power to run a data centre. For example, local media estimate that the electricity required to power the South Mimms data centre equals 1% of the entire country's demand for power.⁹

Given the impact of fossil fuels on climate change, generating the additional power needed to run data centres through anything other than renewable sources should be unacceptable. Britain has a significant offshore wind capacity which should mean that generating more renewable power is achievable. Wind farms are sometimes paid to turn off renewable energy generation because of grid bottlenecks, so there is clearly surplus capacity.^{10 11} It would make sense to power our data centres using this energy to avoid contributing to the climate crisis rather than using fossil fuels.

Using data centre roofs to generate some of the required power may help, but the power generated is unlikely to be anywhere near enough. Also, rooftop solar power generation may be problematic in air-cooled data centres where venting is from the roof.

Data centres use diesel generators for resilience. These are highly polluting, but they are standard as back up in the case of power outages, to ensure constant "uptime". This is less likely to be needed if data centres are sited near to sources of mains electricity. Diesel generators must be run at least once per year, and there is evidence that diesel generators are used at times of low power supply not merely power outages.¹²

2. National Grid capacity

The area with most wind is Scotland, particularly the north of Scotland, where transmission charges (imposed on power generators to pay for the National Grid) are significantly higher than in the south of England where generators are paid to connect.¹³ If data centres were situated near to wind farms then the transmission costs could be reduced. Additionally, the reason that wind farms are paid to stop generating energy is that the National Grid is sometimes full and cannot take the extra power. Upgrading the National Grid is under way but it is expensive, controversial and time-consuming.^{14 15} Siting data centres in Scotland nearer the source of power would reduce the amount of electricity the National Grid has to transmit the length of the country.

Cooling requirements

Data centres generate surplus heat and need to be cooled. The two main methods are air cooling and water cooling, which themselves use energy.

⁹ <https://radlettwire.co.uk/2025/03/dc01uk-a-demanding-new-neighbour/>

¹⁰ <https://www.telegraph.co.uk/business/2025/11/12/green-energy-giant-admits-quarter-of-its-wind-power-wasted/>

¹¹ <https://www.bbc.co.uk/news/articles/cdedjnw8e85o>

¹² <https://www.theguardian.com/environment/2025/dec/19/uk-largest-proposed-data-centre-planned-water-use-northumberland>

¹³ <https://www.bbc.co.uk/news/articles/c8x919v8g19o>

¹⁴ <https://www.bbc.co.uk/news/articles/c9vleryw41ro>

¹⁵ <https://www.bbc.co.uk/news/articles/cx28k4lwd41o>

To keep the servers running properly, the air temperature around them should be maintained between 18°C and 27°C with a preferred relative humidity of 40%-60%.¹⁶ It is estimated that the systems needed to maintain the required temperature and humidity, particularly cooling, can account for 30 – 50% of a data centre’s power requirements.¹⁷

If the outside air temperature is too high, it needs to be chilled first to be effective. A cooler climate would mean a smaller difference between ambient and operating temperatures. With increasing power per rack of servers, cooling is a key issue and lower ambient temperatures should be the aim. Building data centres in cooler climates can reduce energy consumption significantly and is the obvious solution.¹⁸ In the UK, a comparison between the average temperature range in the north of Scotland (up to 15 degrees) and the south of England (up to 24 degrees) makes a telling point that data centres located in Hertfordshire will always require more cooling, and thus require more electricity.^{19 20}

Water-cooled data centres not only have huge power requirements, but also require vast quantities of fresh water. This will be the case at the Abbots Langley data centre. Water availability in southern and eastern England is under serious stress already, and it makes little sense to site water-hungry data centres here.^{21 22}

Some studies have looked at using sea water for data centre cooling as a means of conserving fresh water supplies. There may be some possibilities for this but the technology is not fully developed.²³

Land use

Data centres are housed in very large buildings. The proposed data centre in the Green Belt at South Mimms will be 187,000 square metres, and the one in the Green Belt at Abbots Langley will be 84,000 square metres. Hertsmere Borough and Three Rivers District already have difficulty in meeting local need for social housing, schools and healthcare facilities, and this will only be made worse if valuable Green Belt land is used for developments like this. As one of the most densely populated counties in the UK it makes little sense for land in Hertfordshire to be used for something that could easily be built elsewhere.

Employment

Many areas of the UK have much higher unemployment than Hertfordshire. In terms of levelling up, bringing more people to a high employment area such as Hertfordshire continues the spiral of need for more houses and more infrastructure in the south of England to the detriment of other

¹⁶ <https://siteltd.co.uk/data-centre-air-conditioning-what-you-need-to-know/>

¹⁷ <https://blog.policy.manchester.ac.uk/sci-tech/2025/08/too-hot-to-ignore-fixing-the-infrastructure-gap-in-data-centre-cooling/>

¹⁸ <https://www.vaisala.com/en/expert-article/arctic-advantage-how-cold-climates-boost-data-center-efficiency-and-sustainability>

¹⁹ <https://www.timeanddate.com/weather/@2640938/climate>

²⁰ <https://www.timeanddate.com/weather/@2637375/climate>

²¹ <https://environmentjournal.online/headlines/most-data-centres-are-planned-for-water-stressed-uk-areas/>

²² <https://www.southeastriverstrust.org/water-water-everywhere-or-is-it/>

²³ <https://www.datacenterknowledge.com/cooling/turning-off-the-tap-the-case-for-seawater-cooling-in-data-centers>

areas of the country. Supporting and developing new commercial activity such as data centres in areas of high unemployment would be a significant rebalancing measure.

Conclusions

The rationale put forward to justify building new data centres in the countryside in Hertfordshire is not compelling when considered against the alternatives. There are strong arguments which demonstrate that the countryside in Hertfordshire is not the right place for these large-scale industrial buildings, including:

- Data centres require huge amounts of electricity and reliable grid connections, and there is a surplus of electricity generated from renewable sources in the north of Scotland;
- Data centres need to be kept cool, and northern locations are cooler than those in the south so less power is required to keep the centres cooled;
- Water-cooled data centres, such as that consented at Abbots Langley, require vast quantities of fresh water and it makes no sense to site them in seriously water-stressed areas like southern and eastern England;
- Land is finite and Hertfordshire is among the most densely populated countries in England, so it makes little sense to use land for something that is both land-hungry and could easily be built elsewhere;
- Data centres are very large physical structures resembling warehouses that are several storeys tall; when built in the Green Belt or other countryside locations they destroy the landscape, harming public rights of way and taking the land out of agricultural use and food production;
- Data centres create jobs but there is an argument that they would bring the most economic benefit to those areas with higher unemployment – Hertfordshire consistently has among the lowest unemployment rates in England, with employment above the national target of 80%.

For all of these reasons there is widespread and growing local community opposition to building new data centres in the Green Belt and the wider countryside in Hertfordshire.

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