

AI data centres in the UK: Environmental permitting and consenting risks

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The environmental consenting landscape for artificial intelligence (AI) data centres in the UK is developing quickly. The UK government is actively encouraging the build-out of data centre capacity, including through critical national infrastructure designation, AI Growth Zones, grid connection reforms and changes to the planning regime. At the same time, large-scale AI data centres raise increasingly prominent environmental issues, particularly around power demand, standby generation, air quality, water use, cooling, local planning impacts and grid capacity.

The tension is between central government policy support for AI and digital infrastructure on the one hand, and site-specific environmental, planning, water and energy constraints on the other. This article summarises the relevant UK consenting framework, recent policy developments, substantive environmental pressure points and practical considerations for developers, operators and investors.

Environmental permitting and consenting overview

There is no single “data centre environmental permit”. The permitting and consenting position depends on what the project involves, where it is located and which supporting infrastructure is required.

A data centre development may require planning permission, environmental impact assessment, environmental permits for standby generating plant, water and wastewater arrangements, drainage approvals, grid connection approvals, biodiversity and flood risk assessment, construction-phase controls and, in some cases, greenhouse gas permitting under the UK emissions trading scheme (ETS).

The key point is that environmental risk is often infrastructure-led. The data centre itself may not be the regulated environmental activity. Instead, permitting and consenting issues are commonly triggered by the systems required to operate the facility: backup power, cooling, water supply, drainage, fuel storage, grid infrastructure and associated energy plant.

Government acceleration and strategic policy support

The UK government has increasingly treated data centres as strategically important infrastructure. In September 2024, data centres were designated as part of the UK’s critical national infrastructure, reflecting their importance to the digital economy.

The government has also placed data centres at the centre of its AI infrastructure policy. AI Growth Zones are intended to accelerate the deployment of AI data centres by addressing barriers such as slow planning processes and delays in access to electricity grid capacity. Government materials identify timely grid connections as one of the main blockers to AI data centre development.

The government is therefore strongly pro-development. However, policy support does not remove the need for project-specific environmental assessment, planning scrutiny or environmental permitting. In practice, the main question is likely to be whether consenting processes can accommodate rapid AI infrastructure growth while still addressing local environmental impacts.

Planning remains a central control point for data centre development. In England, local planning authorities are generally responsible for deciding planning applications, applying the National Planning Policy Framework, local planning policies and other material considerations. Planning controls may trigger a range of environmental obligations for data centre development, including contamination investigation and remediation conditions, as well as conditions around water conservation, energy provision, drainage and biodiversity net gain.

Backup generation and air quality

Backup power is likely to be one of the most important environmental permitting issues for large AI data centres. Data centres require a stable and resilient electricity supply. As a result, large facilities often include banks of diesel, hydrotreated vegetable oil, gas or other standby generators to maintain operations during grid outages or other interruptions.

Those generators may require environmental permits under the medium combustion plant and specified generator regimes. Larger or more complex installations may also interact with industrial emissions permitting, local authority permitting or ETS requirements, depending on the capacity and configuration of the combustion plant.

It is important to distinguish the generator permit from the data centre as a whole. A specified generator permit is not a general environmental permit for every aspect of the data centre. It is principally concerned with air emissions from the generating plant, including pollutants such as nitrogen oxides, sulphur dioxide and dust.

Issues such as aggregate thermal input, operating-hour assumptions, emergency use, testing and maintenance, emissions modelling and abatement may all be relevant. For developers, this means that generator strategy can affect the permitting route, programme, air quality assessment, operating constraints and design of the wider project.

Water use and cooling

Cooling is essential to data centre operation. The environmental significance of water use depends heavily on the cooling technology, the size and density of the facility, site location, local water stress and whether the facility uses potable water, non-potable water, closed-loop cooling, air cooling, evaporative cooling or any other systems.

The UK position, however, should not be overstated. UK data centres may not generally follow the most water-intensive models seen in some other jurisdictions, and industry sources suggest that many English data centres use relatively low volumes of water or waterless cooling systems. However, water remains a relevant policy and planning issue, particularly for future AI data centres with high cooling demand.

The National Framework for Water Resources recognises data centres as an emerging water demand issue, and recent analysis has called for AI and data centre water demand to be integrated into national and regional water planning.

In practical terms, water should be considered early in site selection and planning strategy. Even where no separate abstraction licence is required because the facility relies on mains supply, water availability and cooling design may still be scrutinised by local planning authorities, water companies, regulators and local communities.

Planning, Environmental Impact Assessment (EIA) and local environmental impacts

Even where national policy favours data centre development, site-specific environmental scrutiny and planning assessment remains important.

A recurring concern is whether data centres are treated too much like ordinary warehouses. Physically, data centres can resemble large industrial or logistics buildings. Environmentally, however, they may have a materially different profile because of their power demand, cooling requirements, resilience systems and supporting infrastructure.

Local planning authority and third-party concerns may be particularly acute where projects are proposed on sites subject to planning constraints, such as those located in the green belt or other planning designations, in water-stressed areas, in locations with constrained grid capacity or where the perceived local benefits are limited compared with the scale of land and infrastructure required.

Developers should therefore expect scrutiny not only from local planning authorities, but also from statutory consultees, water companies, network operators, environmental groups and third parties (such as local communities). A clear environmental assessment record will be important, particularly in relation to alternatives, mitigation and cumulative impacts.

Key considerations going forward

Developers, operators and investors in UK AI data centres should consider the following points early in the project lifecycle:

- Identify whether standby generators require medium combustion plant, specified generator or installation permitting
- Assess aggregate thermal input, emergency-use assumptions, testing and maintenance hours, as well as emissions limits and abatement requirements
- Consider whether UK ETS obligations may arise for large combustion capacity
- Engage early with the Environment Agency where bespoke permitting may be required
- Assess whether the planning strategy should proceed through the local planning route, or whether a request that a direction under Section 35 of the Planning Act 2008 would be more appropriate
- Build the planning and EIA strategy around the full infrastructure package, not just the data hall

- Assess grid connection timing and whether temporary, or onsite power solutions create additional consenting risk
- Evaluate water supply, cooling technology, local water stress, wastewater and trade effluent arrangements
- Engage early with local planning authorities, water companies, network operators, statutory consultees and local communities
- Consider construction-phase controls, fuel storage, spill prevention, waste and hazardous materials.

The UK policy environment is increasingly supportive of AI data centre development. However, that does not make these projects environmentally straightforward. The key point is that data centre permitting risk is design-led. Decisions about power, cooling, water, resilience and site selection made early in the project can determine the consenting route, permitting burden and litigation risk later on.

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