



Francis Taylor Building

PLANNING FOR DATA AND STORAGE

What are data centres and why are they important?

1. Data centres are essentially warehouses that provide the physical space and supporting environment required to house large quantities of computing equipment (primarily servers) along with associated components such as telecommunications, network and storage systems. They constitute an important part of the essential data infrastructure underpinning the modern economy, by transmitting, receiving, processing, storing and managing digital data, as was recognised by the Government by the inclusion of those employed in “*data infrastructure*” among the list of key workers at the start of the first national lockdown.¹
2. There are between 400-450 data centre facilities in the UK, which operate on three principal models:²
 - a. Enterprise data centres are essentially large, off-site IT rooms for individual organisations;
 - b. Co-location data centres provide secure, service data centre space to a number of different organisations, who rent the space to locate their own servers; and

¹ See ‘The UK Data Centre Sector’, TechUK, May 2020, p.4; ‘Tech UK COVID-19 Position Statement’ May 2020

² Ibid. pp.4, 8-11

- c. Cloud service providers will often run their own data centres to provide an entire package of IT services (infrastructure, platform, and application) for a customer organisation on the operator’s own infrastructure.
3. COVID-19 has resulted in a sharp increase in demand for digital communications to enable business continuity through the pandemic. Even before this, however, demand for data centre services was booming: between 2010 and 2018 it increased by more than 500%.³
4. UK-wide, data centres are key to a number of strands of Government policy, although they are rarely dealt with expressly. The Government’s Industrial Strategy identifies four “*Grand Challenges*”.⁴ One of these is to “*put the UK at the forefront of the artificial intelligence and data revolution*”. Where there is the need to store and process data, then data centres are required, and the whole of the Industrial Strategy envisages a data-heavy economy: artificial intelligence and the future of mobility (another of the Great Challenges) obviously involving the intensive creation and processing of data.
5. The strategic importance of data centre provision is partly recognised in the Government’s draft National Data Strategy (“NDS”). “Mission 4” of the NDS is “ensuring the security and resilience of the infrastructure on which data relies”. The Government comments that:

“With data now a critical part of modern life, we need to ensure the infrastructure underpinning it is safe, secure and resilient. The infrastructure on which data relies is a vital national asset – one that supports our economy, delivers public services and drives growth – and we need to protect it

³ Consultation draft ‘National Data Strategy’, DHCLG, 9 December 2020 para.7.2.2
<https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy>

⁴ ‘Industrial Strategy: Building a Britain Fit for the Future’, BEIS, 2017
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

appropriately from security risks and other potential service disruption.”

6. In the context of this infrastructure being a “vital national asset”, the NDS goes on to state:⁵

“The need to store and process data externally – for example, in data centres – will also become even more of a critical operating function. OECD figures show that the number of businesses in the UK purchasing cloud computing systems nearly doubled from 2014 to 2018. As data centres underpin an increasing amount of business and societal activity, having confidence in the security and resilience of the UK’s infrastructure on which data relies is a key aspect of protecting individuals’ rights, service delivery across private and public sector organisations and national interests.”

Essential features in planning terms

7. Some key features of data centres drive their spatial distribution, their land needs, and their principal impacts in planning terms.
8. In terms of the location and distribution of data centres, there are three principal considerations:
 - a. Perhaps most importantly, data centres need access to appropriate energy infrastructure. The 24-hour operations consume a large amount of energy which needs to be delivered in as reliable a manner as possible. Whilst a standard warehouse might have a supply of 2MVA, data centres require many times that. For example, a data centre development in Broxbourne permitted in 2019 required a total of 120 MVA. Proximity to National Grid infrastructure allowing connection straight into the Grid and bypassing local electrical power networks

⁵ NDS, para.7.2.1

is therefore important, to avoid overburdening local networks and the consequent potential for fluctuations in supply. Moreover, multiple grid connection points, in order to increase resilience, are often preferred.⁶ An onsite substation adds to the built form on a data centre site.

- b. Data centres need to be located so as to have easy connectivity with clients and exchanges by fibre-optic cable. Physical proximity to key clients or location within areas with high levels of fibre infrastructure is therefore important and may limit the range of sites which are practicable for data centre developments.
 - c. Flood risk is of high concern to data centres, where water damage can have devastating consequences. Location away from areas of flood risk is therefore highly desirable.
9. An aspect that the NDS picks up on is the need for good security at data centre sites, given their economic importance, the value of the machinery and plant situated on them, and the value of the data and its uninterrupted flow. All sites will require security apparatus such as boundary treatments (e.g. multiple lines of high fencing), 24-hour lighting, cameras, and entry/exit controls. These necessarily have knock-on effects in terms of built form and impact.
10. Data centres function 24-hours a day, with staff generally present at all hours. This means that there will be a steady stream of traffic generation and activity on the site, though potentially more limited than other forms of B Class development, as in the case of a recently approved data centre at the former Didcot B site⁷. It is necessary to keep the internal environment cool, which means that air handling equipment is required, with the potential for noise impacts.

⁶ Officer's Report, Broxbourne ref: 07/18/1181/0, paragraphs 6.8-610; 8.30ff

⁷ Officer's Report, Vale of White Horse District Council, ref P18/V2277/FUL ("Didcot B") at paragraphs 5.4 - 5.6

11. Finally, the identified need for a secure power supply means that provision has to be made at data centres for back-up power generation in the event of electricity failure. Given the electricity consumption of these sites, this energy generation is often very sizeable. At the Didcot B site, provision is made for 38 x 2.64MW generators for each of the two building, giving a total export capacity of some 200.64MW.⁸

How does this form of development fit into the planning system?

Use classes

12. Data centre use does not fit comfortably into any particular use class. The Inspector in the Magna Park appeal decision in 2009 understood a data centre to be principally concerned with “*the storage of electronic data*”.⁹ It followed from the fact that, although “*data storage may be a relatively novel form of storage, [...] it is nevertheless storage*”, so he held that data centre use falls into class B8. This reasoning has been directly relied upon by many local planning authorities in reaching the view that data centres fall within class B8.¹⁰ Many subsequent planning decisions take this position for granted.¹¹

13. In a recent planning decision, however, Wychavon District Council took a more nuanced and interesting approach. The officer’s report rejected a simplistic inclusion of data centre use within class B8 in favour of a more detailed assessment of the different ways in which a data centre might operate (as outlined above), as well as the physical conditions of the site.¹² The officer’s assessment was as follows:

⁸ Officer’s Report, Vale of White Horse District Council, ref P18/V2277/FUL (“Didcot B”) at paragraph 1.6.

⁹ APP/Y0435/X/09/2103771 at paragraph 4

¹⁰ E.g. Officer’s Report, Coventry, ref FUL/2018/1485, approved 10 August 2018

¹¹ Officer’s Report, Didcot B at paragraph 5.1; Officer’s Report, Sheffield City Council, ref 20/03308/FUL; Broxbourne (2019) at paragraph 8.9, by reference to the “need for B8 warehouse development (the use class category within which data centres sit)”.

¹² Officer’s Report, Wychavon District Council, ref 20/01685/RM, 12 November 2020 (“Wychavon”)– section 7.1

“A data centre could arguably fall within B1, B8 or sui generis use and depends upon the specific nature of the use proposed. Cases where the data centre relates to storage for cloud users could arguably be distinguished from offsite data centre storage for a single firm, which would traditionally be a B8 use. In the former the operator of the data centre performs a number of additional services for members of the public that go beyond the simple storage of their data: they are keeping and allowing access to the data in such a way that it facilitates a number of activities for the client such as remote multiple-user access, they also perform maintenance and upgrading services.

In the case of this building and use, the entrances to the building and the internal floor area will be elevated a metre above ground level which is a significant determining factor. Given that no subsequent conventional storage/distribution use (B8 use) could operate from the proposed building with the entrances and floor not being level with the ground, the data centre building would be constructed in a way that would be unlikely to work for any conventional storage and distribution operator. It is therefore considered that, despite being for the “storage” of data, in reality the use would not constitute B8 and would constitute sui generis use (a use that stands on its own and doesn't fit into general use classes).”

14. This is a novel approach and one which is, arguably, open to the logical objection that one should not be deciding about land use on the basis of the design and, specifically, the potential for re-use of the building. The attraction of falling back on class B8 is that it fits comfortably into existing development plan policies that relate to the use of industrial estates and urban fringe employment areas. It may also enable data centre developers to slot their projects into existing outline permissions for business parks or

industrial estates at the reserved matters stage using already consented B8 floorspace, rather than seeking full permissions.

15. The disadvantages of the B8 approach are that bespoke buildings may not, in practice, be reusable for any different kind of B Class use, as explained by the officer. More fundamentally, given the particular practical requirements in terms of power requirements in all cases and proximity to clients in some cases, it may be that conventional employment locations cannot offer the requisite features for at least some kinds of data centre. In such circumstances, developers may need to look outside conventional employment allocations in areas not normally regarded as compatible with employment uses. In the Broxbourne decision referred to above, permission was granted for a data centre up to 62,000 sq.m and a mixed B Class business area on land designated as Green Belt, although it had been identified in the emerging development plan for release for general employment purposes. Substantial weight was given to the emerging policy, albeit that, in order for officers to reach that conclusion, the Council managed to negotiate multi million pound financial contributions to other business initiatives because of the perception of relatively low job generation from the data centre use. Overall, it was found that Very Special Circumstances existed, but this is a notoriously difficult argument on which to succeed and certainly does not provide the kind of clarity for business planning to which the DNS and the Secretary of State for DCMS aspire.

16. The location of data centre use in B8 is clearly not entirely comfortable, and only necessitated by (i) the fundamental inability of the Use Classes Order to cater for every form of development; and (ii) the failure to incorporate more novel forms of essential business and data infrastructure within the Order, notwithstanding last year's modernisations in other areas. Until the Government provides guidance or amends the

Order to make provision for data centres, the Wychavon approach to assessing the applicable use class where that is a relevant issue is pragmatically preferable to a blanket B8 approach, even if not entirely logical. The uncertainty is unfortunate and could helpfully be addressed by the Government in further amendment to the Use Classes Order.

Generators, NSIPs and Welsh Developments of National Significance (“DNS”)

17. In the context of significant generating capacity being provided on-site, a question which has arisen is the proper consenting mechanism for the development. In the case of the Didcot B data centre, generating capacity of 200.64MW was provided in the form of diesel-fuelled generators. Section 31 (read together with section 14 and 15) of the Planning Act 2008 requires the construction of a “generating station” with a capacity of more than 50MW to obtain consent under the provisions of the Planning Act 2008, and not under the Town and Country Planning Act 1990.
18. In the Didcot B report, the officer dealt with the Planning Act point in the following way (at paragraph 1.6):

“A development comprising of a generating station with a capacity of more than 50MW would be a nationally significant infrastructure project and should be determined by the Planning Inspectorate. In this case the generators are ancillary plant associated with the main data centre use to provide emergency electricity back up e.g. in the event of a power failure, rather than as an electricity generating station for general consumption. As ancillary plant to the main development proposal, I consider this authority is the appropriate determining body.” [Emphasis added]

19. This is a common sense approach. Although the officer did not mention it, his conclusion also accords with caselaw. In Gate v. Secretary of State for Transport [2013]

EWHC 2937 (Admin), Turner J held that, to fall within an NSIP, a project must fall entirely within the relevant description within the 2008 Act. He noted that the statutory phrase is “consists of”, not “includes”; he also pointed out that a mixed jurisdiction approach would be very difficult to apply in practice, because it would not be clear where the demarcation between regimes would occur.

20. The same issue arose recently in an application made to Newport City Council,¹³ although the relevant alternative statutory scheme was not the 2008 Act, but the provisions in the Planning (Wales) Act 2015 and Regulations¹⁴ made under it for Developments of National Significance (“DNS”). The applicants having discussed the point with Welsh Government and having taken their own (confidential) legal advice, the officer came up with the following ingenious approach to finding that his Authority had jurisdiction:

“[T]he proposals do not amount to a development of national significance because it is not a single generating station. They provide power to different floors of the building. It would not connect to the national grid and separately would not produce the energy that would exceed the regulations. In addition, the purpose of the electricity to be generated is not to add to the national grid but to back up the servers if mains power was ever lost, which is unlikely and only on an emergency basis.”

21. In fact, there was no need to resort to such development-specific salami slicing because the wording of the Regulations mirrors that of the 2008 Act and is therefore identical to that ruled upon in Gate.

22. Incidentally, Planning Policy Wales, like the NPPF, does not include express

¹³ 20/0039 Land East Of Celtic Technology Centres Celtic Way Celtic Lakes Newport

¹⁴ The Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016

consideration of data centres, whilst being generally welcoming to technological innovation and increased connectivity within the Future Generations framework.

Environmental issues

Carbon emissions

23. Data centres are intensive consumers of electricity: energy consumption of UK data centres approaches 6TWh per year. In 2011, it was estimated that data centres accounted for 3.9% of the UK's total carbon emissions, coming close behind the aviation industry's 4.2%.¹⁵ However, as a large consumer with stable, predictable demand, data centres are well placed to act as anchor customers of renewable energy and some operators are trialling alternative technologies such as fuel cells and batteries.
24. Local planning authorities vary in their stance in respect of the carbon footprint of datacentres. In the Broxbourne decision, the officer considered that there was "*a clear requirement in both local and national policy for development to contribute towards reducing carbon emissions*" and as such recommended the imposition of a condition "*that a scheme of carbon offsetting to achieve carbon neutrality should be in place prior to first occupation of the data centre*". This was a big ask, not least because the officer recognised that "*application of the London model to the data centre indicates that this would require contributions in excess of £25 million*".¹⁶ By contrast, in respect of a Sheffield application, the officer exhibited no such concern. As we suggest below, when considered in a rounded way against sustainability objectives, it is likely to be possible to articulate a positive case for the environmental contributions which data centres can make through facilitating remote working and cutting the need for travel, though we have not seen any models attempting to do this in a scientific fashion.

¹⁵ "External Hard Drives" Estates Gazette, February 26, 2011

¹⁶ Broxbourne at paragraph 8.37.

EIA development

25. However described in terms of use class, a data centre may require screening as industrial estate development under 10(a) of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 if it occupies a site of 5ha or more. The same applies in Wales, where the Environmental Impact Assessment (Wales) Regulations 2017 apply. This may be the case especially where the data centre forms part of a wider development, or where the site is sufficiently large to accommodate further data hall buildings in the future to meet demand.

Fuel storage, contamination and regulation

26. With stand-by generators comes the need for significant fuel storage on site. By way of example, the proposed data centre on the Didcot B site makes provision for the storage of 1.72 million litres of diesel on the site at any one time. This clearly poses potential risk in terms of leaks and consequent ground water and aquifer pollution. There may also be a requirement for consent under the Planning (Hazardous Substances) Act 1990, which will engage questions of relationship to neighbouring land uses and the development plan.¹⁷

Policy gap

27. Central UK Government policy (set out above) although predicated upon adequate data centre capacity, and alluding to the importance of providing that capacity, does not translate into specific planning policy or guidance.

28. Planning policy in some areas, in particular London, has been trying to get to grips with data centres. The published London Plan 2016 (soon to be replaced) “Policy 4.11 Encouraging a connected economy” requires the Mayor to:

¹⁷ See s.9 Planning (Hazardous Substances) Act 1990

“facilitate the provision and delivery of the information and communications technology (ICT) infrastructure a modern and developing economy needs, particularly to ensure: adequate and suitable network connectivity across London (including well designed and located street-based apparatus); data centre capability; suitable electrical power supplies and security and resilience; and affordable, competitive connectivity meeting the needs of small and larger enterprises and individuals.”

29. The supporting text at 4.57 states:

“In ensuring robust e-infrastructure capacity, additional data centres (facilities housing computer and associated systems) may be required, together with reliable, sustainable and resilient electricity supplies. Data centres handling critical security and financial traffic benefit from proximity to the offices they serve, while other centres can be located close to local and sustainable sources of energy. These will be appropriate uses in preferred industrial locations and industrial business parks.”

30. This strategic policy wording has not made it into the Intend to Publish New London Plan 2021; there is no strategic commitment to ensure data centre capacity as such in the new plan. However, the relevance of various of its policies to the provision of this resource is reflected at para.9.6.7:

“Warehouse-based data centres have emerged as a driver of industrial demand in London over recent years and this will need to be taken into account when assessing demand for industrial land (see Policy E4 Land for industry, logistics and services to support London’s economic function, Policy E5 Strategic Industrial Locations (SIL), Policy E6 Locally Significant Industrial Sites and Policy E7 Industrial intensification, co-location and substitution.”

[Emphasis added].

31. Some London boroughs have attempted to do this. For example, Tower Hamlets Local Plan 2031, in policy S.EMP1, identifies Blackwall as a ‘local employment location’ which is suitable for “*small-to-medium enterprises and data centres which support the needs of Canary Wharf and the City of London*”, but this is the only provision of the Plan that refers to data centres.
32. Currently, therefore, data centres sites come forward through planning applications by operators or speculative developers. This runs counter to the principles underpinning the plan-led system and the importance, alluded to in the Publication New London Plan 2021, of assessing and making adequate provision for need through plan-making.
33. There is a strong argument in favour of local development plans making explicit provision for data centre developments, by criteria based locational policies and/or by means of allocations. We have been unable to find any such policies in emerging development plans, however. This is, perhaps, unsurprising, given the omission of national planning policy and guidance to address the issue specifically.
34. More generally, NPPF Paragraph 8(a) emphasises the “*economic objective*” as part of the sustainable development principle at the heart of the planning system:

[T]o help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

35. Datacentres are also increasingly instrumental in relation to the NPPF’s “*social objective*”, given their role in supporting essential services such as the NHS, central and local government and the police. During the pandemic, the dramatic increase in the use of internet technology to keep the economy functioning, as well as its role in

maintaining morale, has been a very striking feature and, in the wake of Covid, society's need for data storage has grown commensurately. As noted above, the impact of data centres on policy objectives for moving to a low carbon economy is, potentially, more complex and is therefore something with which national planning policy should actively engage, on a fully informed footing.

36. When the NPPF deals with strategic policy-making, paragraph 20(b) requires the strategic policies of a local plan to make “*sufficient provision*” for:

“[I]nfrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat).”

37. Although to an extent one could construe “*telecommunications*” to include data centres, not least because broadband providers and internet service providers require data centre capacity, the absence of express reference to data storage and handling here is both surprising and behind the times. The provisions of paragraphs 112-116 in respect of communications are fairly out-of-date anyway. Although paragraph 112 refers to 5G and full fibre broadband, this section focusses on consumers and particularly on negative perceptions of “*radio and electronic communication masts*” and does not require assessment or demonstration of need because of the particular statutory context in relation to these matters, which do not apply to data centres.¹⁸

38. Paragraph 82 of the NPPF gets closer, requiring that:

“Planning policies and decisions should recognise and address the specific locational requirements of different sectors. This includes making provision for clusters or networks of knowledge and data-driven, creative or high technology

¹⁸ The Inspector in the Sheffield Road, Tinley appeal (APP/J4423/W/20/3246490) read paragraph 112 as supportive of data centre development in that case, related as it was to support for high speed fibre optic broadband provision.

industries; and for storage and distribution operations at a variety of scales and in suitably accessible locations.”

39. Location, as we have seen above, is a crucial factor for data centres. Taking location and need together therefore, there is a strong argument that policies specifically recognising and dealing with the data economy need to be introduced to plan-making. Just as residential or commercial development often follows the contours of highway infrastructure, both facilitating that development and reciprocally requiring upgrade to accommodate increased pressures from development, so too the digital economy is going to follow the data highways and data infrastructure that it needs to function. In line with the Industrial Strategy, that digital, data-driven economy will be ever more important, and thus in planning for industrial and business uses in local plans, the requisite digital infrastructure in the form of data centres will be crucial. Because of its particular locational requirements, specific characteristics and environmental effects and their importance to most aspects of 21st century life and wellbeing, national planning policy and guidance should address this form of development as a priority.

Conclusion

40. Like many relatively novel forms of development in rapidly developing markets, data centres fit awkwardly into planning law and policy. Their habitual classification as B8 use is strained, and local and national policy is required to secure their provision in suitable locations, where they can act as centres for economic growth in the emerging digital economy.

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