



Data demands

Data centres Anthony Judge and Sarah Quy look at some of the legal and practical issues faced by operators setting up a new data centre

A data centre is a space where companies locate and operate the ICT infrastructure that supports their businesses, including the servers and storage equipment that run software, and process and store data and content. This infrastructure can be a simple cage or rack of equipment, or a whole room housing several such racks. The facility will typically have a raised floor with cabling ducts underneath to power the cabinets and to carry the cables that connect the cabinets together.

Some businesses run their own data centres but others outsource some or all of this function. There are several outsourcing models, ranging from paying a licence fee to locate equipment in someone else's premises (a "co-location contract"), through to paying for a third party provider to provide data centre services, sometimes on flexible "pay as you go" terms

reflecting the recent surge in popularity of cloud computing over traditional IT infrastructure.

Power requirements

Data centres use an enormous volume of power. According to the Global Agenda Council on Governance for Sustainability, a body set up by the World Economic Forum, the ICT industry as a whole creates 2% of the world's carbon emissions, largely due to the resources needed to power and cool data centres, and this figure is estimated to double in the next 10 years (*Green Light: Creating ICT Efficiency for a Cleaner Future*, September 2013). Besides their power costs, this energy consumption has a range of consequences for operators, including:

- the need for a power source – a data centre needs to be located near to a good power source. They usually have on-site generators that start automatically when

utility power fails, running on diesel fuel, and often have battery backup systems in case the generator fails. They are sometimes connected to multiple sections of the utility power grid for additional reliability;

- carbon costs – data centres have been affected by the implementation of the Carbon Reduction Commitment ("CRC"). According to a survey by the organisers of the Data Centre World Conference 2012, the number of operators adopting energy management policies has increased by 300% since the CRC came into force in 2010. However, many advocates of the data centre industry propose that it should be excluded from the CRC and regulated instead by its own climate change agreement, on the grounds that the sector is such a major contributor to economic growth; and
- the use of alternative energy – some heat pumps can be designed to utilise local

resources such as geothermal energy, wind or solar power instead of mains electricity.

Environmental considerations

The electrical power used by the electronic equipment is converted to heat. Unless the heat is removed, the temperature in the building will rise, and condensation will form, both of which can result in equipment malfunction. Data centres are usually cooled by powerful air conditioning systems that keep the humidity within acceptable parameters. However, these chillers lead to further problems, such as:

- noise – the cooling system will usually be located on the roof of the building, and this means that the noise and vibrations generated by the equipment may cause problems between the centre operators and neighbouring occupiers;
- the safety of the roof area – the occupier of a data centre will need to be sure that the roof area is suitable for housing the centre's cooling system; and
- the carbon footprint – the power needed to run the chillers adds to the centre's enormous power consumption.

There are moves afoot to make more creative use of the heat generated by data centres, for instance by extracting it and transferring it to nearby buildings that are large users of heat, such as schools, universities or hospitals.

Similarly, the most modern data centres boast a variety of cooling methods that are less damaging to the environment, such as sucking in external air to cool the inside temperature or dispensing with a roof altogether. Some make use of water from nearby rivers or lakes for cooling purposes, and some are located in colder climates where the chilling requirement will be less. For instance, Facebook established a new centre in Sweden last year, where it can use locally generated hydroelectric power and benefit from the arctic outside temperature.

Communications

Data centres often have multiple fibre optic cables entering the building at different entry points so that communications are not interrupted if one bundle of cables is damaged. Some also have wireless backup connections, for example via satellite. If the cables need to cross land owned by a third party, or if the property is leasehold and the terms of the lease require the landlord's consent for structural alterations, then the operator will need the third party and/or landlord's permission for these cables to be laid.

Planning concerns

Each local authority will treat an application for consent for use as a data

centre differently. Some consider that data centres fall into use class B1 (office or light industry) whereas others consider that the use is *sui generis*, which requires specific consent for such use and for any subsequent change of use. Others consider the use to be class B8 (warehouse and storage) on the basis that the main operations involve storage of data.

Use as a data centre within class B1 is valuable as it enables changes to other B1 uses without subsequent consent, assuming that there is no condition restricting use to data centre only. A *sui generis* consent will remove any doubt as to the permitted use of a property as a data centre, but operators would require consent for any subsequent change of use.

The future for data centres

The increased use of information technology has resulted in a greater need for data centres. They are unique and complex buildings which we are reliant on for access to the data we need, for both social and professional purposes. Property professionals need to grasp the nettle of understanding how data centres work in order better to advise their clients.

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TERMS TO CONSIDER IN DATA CENTRE AGREEMENTS

In an outsourcing agreement:

- Consider whether the data centre services agreement is actually a lease/licence? Often such agreements are drafted as commercial agreements but contain provisions for the supply of an interest in land and therefore need to be reviewed by a property law professional to consider elements such as security of tenure, adequacy of easements for cables and termination provisions.
- Typically, the outsourcer will provide:
 - the agreed number of lockable rack cabinets or cages;
 - power in a variety of formats;
 - network connectivity – either in a “house blend”, where the provider is a customer of carriers, and connects their clients to their own router for access to multiple carriers, or as direct “cross-connect” access to the routers of the carriers themselves, or both;
 - cooling;
 - physical security (including video surveillance, biometric and badge access, and logging); and
 - real-time live monitoring of its functions for failures.
- The pricing of services should mirror the energy supply contract between the

data company and its energy provider.

- In light of the insolvency of 10 UK subsidiaries of 2e2 Ltd in January 2013, check the arrangements in place to protect the customer if the provider becomes insolvent. For example, can the customer enter the centre to retrieve its property, or supply a network-attached storage device to back up its data on a regular basis so that if the provider ceases to run the centre the customer can remove the device with all the data on it?
- Assignability: what happens if the provider is acquired by another business?

In a lease of premises to be used as a data centre:

- Both improvements to the premises and the conduits leading to them should be disregarded at rent review: see *Cordoba Holdings Ltd v Ballymore Properties Ltd* [2011] EWHC 1636 (Ch); [2011] PLSCS 177 in which the landlord and tenant disagreed about the amount of rent payable at rent review in relation to a data centre. The lease provided that improvements carried out by the tenant were to be disregarded. The tenant argued that it was therefore unreasonable to value the property as a

data centre since it could only be used in this way as a result of the tenant having significantly improved the power supply. The court decided that the tenant had not established that the power upgrade works were to be disregarded.

- Nuisance – the data centre user will be acutely aware of the risk of neighbours complaining about the noise caused by the cooler units on the roof of the data centre. They will sometimes try to ensure that the freeholder helps them minimise these risks by, for instance, agreeing not to allow residential use nearby, or by imposing covenants on other occupiers of adjacent or nearby properties in common ownership that they will not complain about the noise.
- Roof space – the occupier needs to ensure that the roof area and the airspace above it is part of the demise, that it is sturdy enough to withstand the weight of the chiller units, that there are no contradictory rights over the roof area such as crane oversailing rights, and that there are sufficient rights of way to allow for frequent access for maintenance, etc.
- Wayleaves and easements – have these been obtained in respect of all the necessary cables?