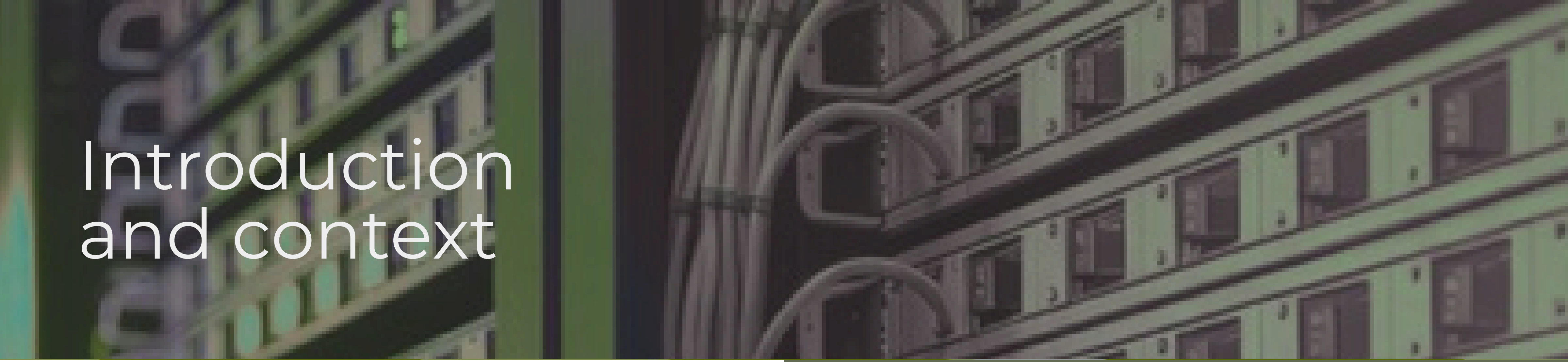
Industry charter

Delivering green data centres in Scotland

Principles for the development of sustainably designed digital infrastructure

June 2026

Table of contents



Introduction and context

In today's world, almost everything we do relies on data centres, from the way we shop, communicate, and learn to lifesaving medical research, climate modelling, and the systems that support banking, transport, and telecommunications.

Our lives are increasingly connected through digital services - all of which depend on data and data centres.

This green data centre charter sets out, in no particular order, the core principles we believe should underpin the development of sustainable data centres in Scotland.

"Critical National Infrastructure"

In 2024, the UK Government officially designated data centres as "Critical National Infrastructure", on a par with energy, water, and emergency services.

The sector currently contributes an estimated £4.7 billion in annual gross value added (GVA) to the UK economy and is expected to contribute an additional £44 billion by 2035.

Now, with the rapid advancement of large-scale computing, there is a global demand to build hyperscale data centres which can process vast amounts of data at incredible speed. These data centres can be built anywhere - Norway, the United States, England, or Dubai - and, at present, the majority of the data centres we rely on are not located in Scotland.

Place-based advantage

With an abundance of renewable energy, a skilled workforce and supply chain, academic excellence in computing, a cool climate, and some of the most demanding planning, environmental and building controls in the world, data centres play to Scotland's strengths.

And, in an increasingly uncertain world, it makes economic, environmental and strategic sense to host them on UK soil.

The Scottish Government has recognised data centres as "essential infrastructure" and, if designed sustainably, as a force for good – delivering secure, low-carbon operations, supporting local communities, boosting employment, and driving economic growth.

Five core principles

In this charter, we set out five core principles which underpin the sustainable development of data centres in Scotland.

These are:

Renewable energy

Data centres should maximise the use of low-carbon electricity, including connection to nearby onsite renewable generation, where feasible.

Energy efficiency

All data centres should be built to high energy-efficiency standards and comply fully with the Building (Scotland) Regulations, including Energy Performance Certificates (EPCs) on completion, with a commitment to continuous lifecycle monitoring, evidenced improvements, and accountability.

Water consumption

Data centres will not be located in water- stressed areas and, where possible, will utilise closed-loop cooling systems that minimise water use and reduce demand impacts..

District heat networks

All new data centres should be 'district heat ready', built with the necessary offtake technology to enable local businesses, communities and nearby land users to connect efficiently to heat network infrastructure.

Community benefits

Data centre deployment should aim to maximise net social and economic benefit, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities.

The Scottish planning system

Decisions on data centre development in Scotland sit with the relevant local authority, as the statutory decision-maker for planning applications.

Data centres have been identified in the Scottish Government's Green Industrial Strategy (2024) as a target industry for investment.

This is also highlighted in Scotland's Fourth National Planning Framework (NPF4), which identifies data centres as a National Development that is a "fundamentally important utility" supporting Scotland's economic and social needs.

Planning and policy

However, this does not remove the requirement for planning authorities to assess proposals against relevant policies, including those on climate change, energy, and environmental impact.

It remains for decision-makers to interpret and apply NPF4 and the relevant local development plan in the context of individual cases, taking into account all material considerations. [1.]

This may include criteria such as the extent to which the data centre is powered by renewable energy sources, uses energy-efficient technologies, minimises water consumption, and supports the re-use of excess heat.

In determining the acceptability of a proposed development, local authorities seek expert input from a range of statutory consultees, who advise on water supply, drainage, flood risk, pollution and environmental impacts, for example, as well as considering representations from local communities and stakeholders.

1 https://aprs.scot/resources/response-from-minister-on-data-centres/

Environmental Impact Assessment

Many major developments also require a full Environmental Impact Assessment (EIA). This process examines the likely environmental effects of a proposal and the associated mitigation measures to reduce or offset them.

Even when an EIA is not formally required, the applicant still has to undertake a rigorous and robust assessment of the environmental effects associated with any development, which will be considered and weighed up as part of the planning application process.

If planning permission is granted, construction must comply fully with the Building (Scotland) Regulations. These include stringent requirements for energy efficiency, fire safety, building services commissioning, and environmental performance.

Developers must apply for a building warrant, undergo inspections and secure a completion certificate before the site can operate.

Principle 1: Renewable energy

Data centres should maximise the use of low-carbon electricity, for example, through networks connections, energy storage, and green power purchase agreements, to ensure their development has the lowest possible environmental impact.

Principle 1. Renewable energy

Operational energy accounts for the majority of a data centre's whole-life-cycle carbon emissions, but locating facilities in Scotland offers significant advantages that help mitigate this impact.

They include:

- A **cooler climate**, which helps to reduce cooling demand and achieve higher efficiencies for cooling systems.

- Use of **abundant renewable energy** closer to its source helps minimise transmission losses and network and system costs, while benefiting from part of the GB electricity grid, which has a higher contribution from renewables across the country.

In 2024, 91.5 per cent of Scotland's electricity was generated by low-carbon technologies (including renewable generation and nuclear power), compared with 62.6 per cent in England and 33.5 per cent in Wales.[2]

This increase in renewable generation has had a significant impact on the carbon emissions factor (CEF) associated with the electricity grid in Scotland. When considered over a 60-year lifecycle, this results in a potentially significant 63 per cent reduction in operational carbon emissions compared with the **UK-wide value**. And far from being a drain on our natural resources, well-sited data centres have the potential to ease grid constraints and costs that hit consumer bills each year.

Grid constraints

The largest current grid bottleneck in Great Britain prevents the export of green electricity from Scotland to England, where demand is higher. **This curtailment of power costs British consumers more than £1.5 billion last year and could reach up to £8 billion annually by 2030**.

These costs are due to the 'constraint payments' paid to renewable generators to switch off when generation is high, e.g. on windy days, while gas generators in England are also paid to switch on to replace the energy which can't reach the southern centres of demand.

The electricity grid is undergoing a transformational upgrade, but, when combined with battery energy storage, advanced data centres in central Scotland could support better integration of renewable energy that would **otherwise be wasted**, reducing constraint costs for consumers and kick-starting regeneration of areas blighted by historical industrial decline.

While concerns have been raised about the potential impact of data centre electricity use on other system users, this is being addressed through the GB-wide **Strategic Spatial Energy Plan (SSEP**) and demand connections reform programmes led by the National Energy System Operator (NESO).

Commissioned by the UK, Scottish and Welsh Governments, the SSEP assesses which energy technologies are needed and where - across a range of future scenarios - to deliver a clean, secure and affordable supply while supporting grid resilience and net zero. This includes optimising the location of 1–2 GW of data centres to identify where demand can deliver the greatest energy system benefits, thereby informing both industry and future government policy.[3]

Developers should maximise the use of renewable energy through Corporate Renewable Power Purchase Agreements (CRPPAs) to minimise carbon intensity.

Resilience and reliability

Data centres require backup generation to ensure 24/7 availability during outages, typically diesel, but used infrequently.

Reducing this reliance requires greater grid reliability and co-located battery storage, which can shorten backup generation runtime and enhance system resilience during periods of stress.

2 https://www.gov.scot/publications/energy-statistics-for-scotland-q3-2025/pages/electricity-generation-and-supply/

3 https://aprs.scot/resources/response-from-minister-on-data-centres/

Data centres should be built to high energy-efficiency standards and fully comply with the Building (Scotland) Regulations, including the requirement for an Energy Performance Certificate on completion.

Principle 2: Energy efficiency

Principle 2. Energy efficiency

All new non-domestic buildings in Scotland are regulated under the Building (Scotland) Regulations.

The legislation requires carbon-based energy modelling, high-performance building envelopes, mandatory commissioning of building services, submetering, and Energy Performance Certificates (EPCs) on completion.

These requirements are reinforced by Scotland's legally binding net-zero target by 2045, with further restrictions on direct emission heating systems already in force for new developments.

In practice, this means Scottish data centres must demonstrate significantly lower operational emissions per unit of IT load than facilities built in other jurisdictions, such as the USA, regardless of scale. [4] [5]

In Scotland, embodied carbon is increasingly a material consideration in planning policy, public sector procurement standards, and emerging whole-life carbon assessment practices for large infrastructure projects, to justify structural efficiency, material selection, and opportunities for reuse, modularisation, and circular construction.[6]

Internationally recognised standards

Responsible developers should measure their development against internationally recognised standards (such as BREEAM) to demonstrate their compliance with rigorous, science-based metrics.

In 2010, the BREEAM UK Data Centres scheme was launched to assess the design and construction of new-build data centre facilities in the UK. [7]

In practice, green data centres in Scotland should aim to comply with Building Regulations Section 6 (Energy) and align with operational energy targets appropriate for this building type, as defined by the emerging UK Net Zero Carbon Building Standard (UK NZCBS).

4 https://elmhurstairtightness-scheme.co.uk/wp-content/uploads/2022/03/00501015.pdf

5 https://ww3.rics.org/uk/en/journals/built-environment-journal/scotland-energy-efficiency-commercial-buildings.html

6 https://www.harpermacleod.co.uk/insights/data-centres-in-scotland-powering-a-sustainable-digital-future/

7 https://breeam.com/

This will include measures to reduce demand for energy, the adoption of energy-efficient systems and the use of low and zero-carbon generating technologies, with examples including:

Thermal efficiency

High thermal efficiency across the building envelope and solar gain control, using a 'fabric first' approach to ensure energy demand is minimised prior to the application of any heating and cooling systems.

Heating and cooling systems

High-efficiency heating and cooling systems, using air source heat pumps (ASHPs) for admin/office areas and free-cooling air-cooled chillers with variable speed compressors (using a closed loop) for the data hall areas.

Mechanical ventilation

Mechanical ventilation with heat recovery, including high-efficiency air handling units (AHUs) to provide fresh air in the admin/office areas.

High-efficiency lighting

High-efficiency lighting, including high-efficacy LED luminaires throughout.

Heat recovery

The potential for the proposed development to export recovered waste heat from the data halls (that would otherwise be rejected) to a future district heating network (once available) should be adopted. For more details, please see Principle 4: District heat re-use.

Air Source Heat Pumps

Air Source Heat Pumps (ASHPs) should be specified for meeting the space and cooling demand of the admin and office areas.

On-site generation

The potential for incorporating on-site renewable energy generation, notably rooftop solar photovoltaics (PVs) above all administrative areas, should be explored.

Principle 3: Water consumption

Data centres should be built with closed-loop cooling systems that minimise water use and offer opportunities for heat re-use.

Principle 3. Water consumption

Inside a modern data centre, powerful computers process and store vast amounts of information. And like any large machine, they generate heat.

To keep them running safely and efficiently, data centres use advanced closed-loop water-cooling systems to maintain a consistent temperature within the server racks.

These closed-loop systems are not major water users and operate similarly to the water-cooling system in a petrol or diesel car. At no point does water leave a data centre's system. Each system requires an initial 'first fill' to charge up, followed by occasional top-ups thereafter.

Public concern about data-centre water use is often shaped by historical US examples in hot or water-stressed regions that use evaporative cooling.

In Scotland, a cool climate, modern closed-loop cooling systems, and rigorous planning scrutiny typically result in much **lower water impacts**, comparable to common leisure or industrial buildings.

8 https://www.nrscotland.gov.uk/publications/households-and-dwellings-in-scotland-2024/
9 ttps://www.scottishwater.co.uk/-/media/ScottishWater/Document-Hub/Your-Home/Water-Efficiency/270718ScottishWaterWaterEfficiencyJun16.pdf

Worked example

The chart below illustrates the one-off first-fill water requirement for a circa 130 MW data centre of around 5,000m^3 (5 million litres) - roughly equivalent to two Olympic-sized swimming pools.

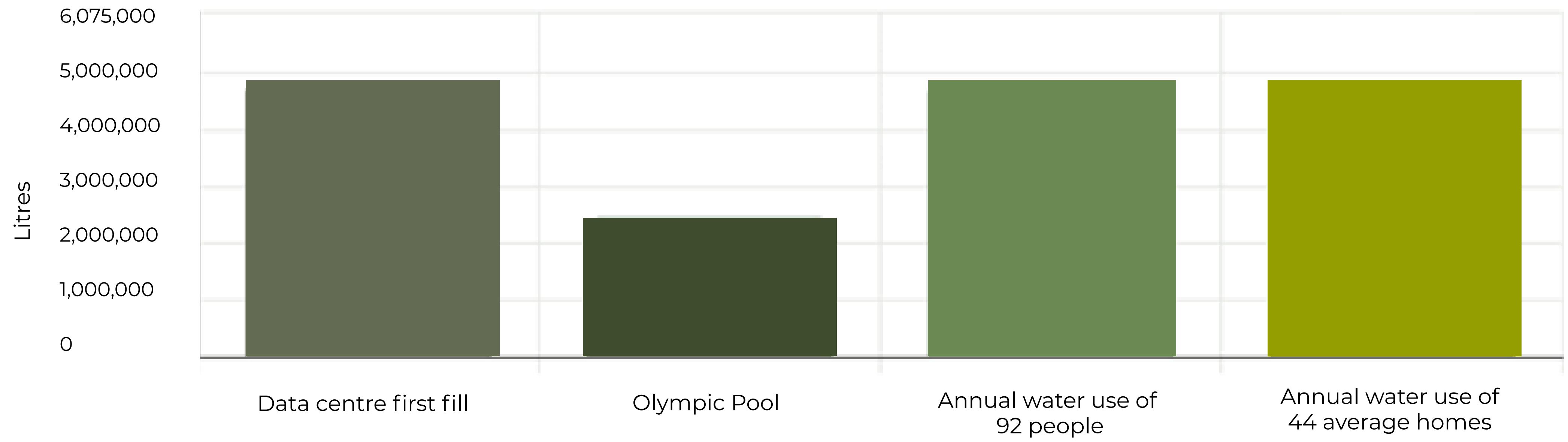
This equates to the annual water use of 92 people or 44 average homes (based on an average occupancy rate of 2.08 people per home[8] and an average water use per person of 150 litres per day.[9] Ongoing annual water use would be lower).

In comparison, a 75-acre site in eastern Scotland (appropriate for a 130MW data centre) would accommodate around 900 homes at low to medium density.

In other words, **a 130 MW data centre built on a 75-hectare site in east-central Scotland would have around five per cent of the annual water impact of medium-density housing built on the same land**.

Data centre operators should include a **detailed analysis of the water use** in their proposal at the time of application, which will be assessed by the relevant statutory authorities as part of the local planning process.

Worked example: Water use in context



All new data centres should be ‘district heat ready’, built with the necessary offtake equipment to enable local authorities and nearby land users to develop district heat networks.

Principle 4: District heat networks

Principle 4. District heat networks

One of the most effective ways to reduce carbon in data centre development is to supply heat directly to surrounding users, thereby reducing the carbon associated with heating these buildings.

In Scotland, all new data centres will use closed-loop cooling, in which water pipes pass through the closely packed racks of servers to absorb heat, which then passes through cooling units on the roof and back into the data centre as cooled water.

This presents an opportunity to foster the development of district heat networks in the vicinity of the data centre, redirecting heat from the data centre to heat exchangers that deliver low-carbon heat to networks serving homes, hospitals, schools and businesses.

The idea is simple: It is more efficient to generate heat in a single place and distribute it as hot water via insulated pipes, rather than having every building have its own boiler. Nor is it new. The Romans were the first to pilot district heating, and around the world, many cities still heat their buildings this way today. In Scotland, Aberdeen and the Shawfair district in Edinburgh are early pioneers, with successful networks already in operation.

Heat networks in practice

Developers in Finland and Sweden are already making it work.

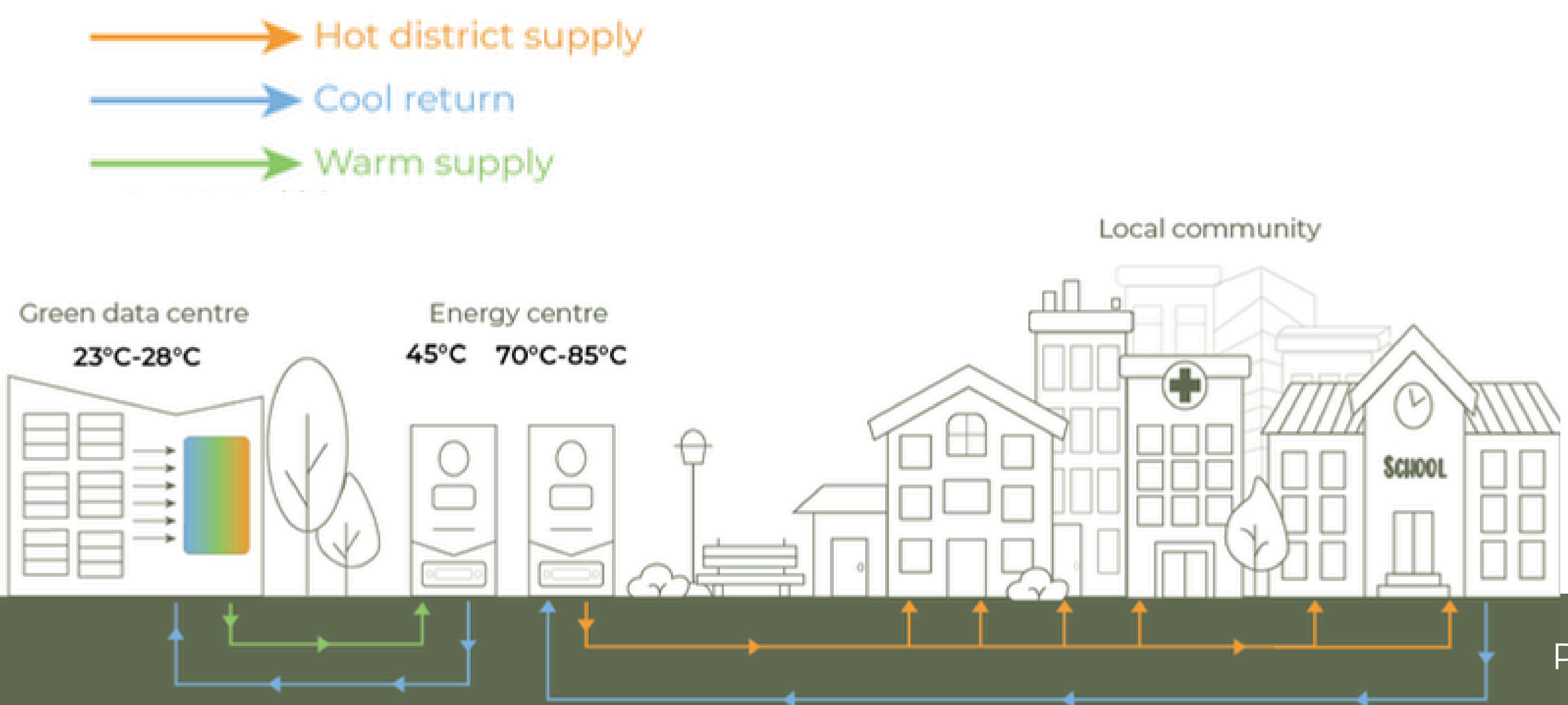
Just outside Helsinki, Microsoft is building a cluster of data centres that, when completed, should supply heating to 40 per cent of Espoo, Finland's second-largest city. That's about 100,000 homes.

In Dublin, Amazon Web Services is working with the county council and the city's energy agency to deliver the Tallaght District Heating Scheme, the first of its kind in Ireland.

Installed at the planning stage

District heat networks work best when installed at the planning stage, when they can become an integral part of new developments. This often requires a coordinated, cross-sectoral approach, with the local planning authority and nearby landowners collaborating with the data centre developer from the outset.

Responsible developers should design data centres to be "district heat ready," enabling future integration with local developments, and collaborate with landowners and local authorities to unlock opportunities for district heat networks.



Principle 5: Community benefits

Data centre developers should engage closely with local communities and businesses to ensure the wider benefits of data centre development are maximised locally.

Principle 5. Community benefits

Close engagement with local communities is vital, not only to ensure a common understanding of any proposed development, but also to explore ways to maximise the local benefits of data centre development.

In Scotland, community engagement is embedded in the local planning process. Well-advertised local events are an important way to share development proposals with nearby residents, and when community consultation has already taken place, the results can be positive.

Positive sentiment

This support is echoed more widely in Europe.

A 2024 survey of over 13,000 people across the UK, Ireland, the Netherlands, Spain, Italy, France and Germany. found that, "...public attitudes towards data centres are more favourable than expected, with a total of 93 per cent of people saying that they either feel positively (51 per cent), or neutral (42 per cent) about them". [11]

The survey also found that positivity increases among those who know that a data centre is located near them, with economic benefits cited as the most important factor:

- Two-thirds of respondents agree that investment in local communities is a key benefit
- 31 per cent say broader economic growth in their area would make them more willing to accept a data centre nearby.

Recent research indicates that data centre development in Scotland can deliver significant local and national economic benefits.

For example, the proposed 550 MW Ravenscraig data centre campus, paired with 650 MW of battery energy storage, is expected to attract £4.2 billion in capital investment, support more than 4,000 construction jobs annually, and create around 2,400 long-term skilled operational roles in North Lanarkshire. [12]

11 https://www.cyrusone.com/resources/press-releases/new-research-from-cyrusone-explores-public-perception-towards-data-centers-in-europe

12 https://www.bbc.co.uk/news/articles/c70xwgl181yo

The Europe-wide survey also highlights that community-level amenities deeply influence acceptance: around half of respondents view investment in parks, playgrounds, sports facilities and community gardens as a clear benefit, with those living near data centres even more likely to value this kind of contribution.

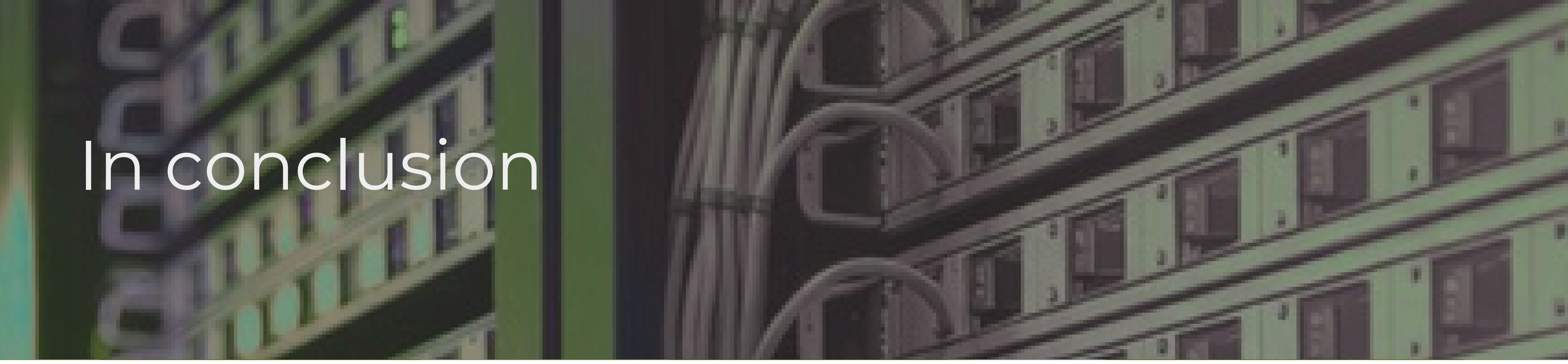
Data centre developers in Scotland can demonstrate their commitment to local communities and sustainable development through Section 75 (s75) agreements. These legal agreements, established as part of the planning process, ensure that developers contribute directly to local infrastructure, amenities, and social projects.

Lasting legacy

Close coordination between local communities and developers is essential to ensure that community benefits reflect local needs.

There are strong examples of best practice in Scotland, where renewable energy developers have delivered meaningful local programmes, and in Nordic countries, where collaboration has enabled outcomes such as district heating schemes and significant biodiversity investment.

Community benefit schemes should be integral to data centre development in Scotland. Embedded from the outset, they can deliver tangible outcomes including improved transport links, district heating, enhanced public spaces and biodiversity, alongside investment in education and recreation.



In conclusion

Green - or sustainably designed - data centre development should be grounded in a clear set of core principles:

- Renewable energy
- Energy efficiency
- Responsible water use
- Integration with district heat networks
- Meaningful community benefits

These principles form the critical considerations for defining and delivering genuinely sustainable data centre development and should inform decision-making throughout the full project lifecycle.

A holistic approach

However, they are not exhaustive. Delivering sustainable outcomes requires a holistic approach to development; one that considers how a facility interacts with its surrounding environment, infrastructure networks, and local communities. Thoughtful design and long-term stewardship are therefore essential.

This includes minimising visual and amenity impacts, integrating landscape and biodiversity enhancements, supporting local employment and skills opportunities, and ensuring developments remain resilient and adaptable as technologies, operational requirements, and energy systems evolve.

Developers should also consider how data centres can contribute to broader decarbonisation objectives, including grid flexibility, heat recovery opportunities, and the efficient use of finite resources.

In combination, these factors help ensure that data centres are not only low-carbon and resource-efficient but also resilient, future-focused developments that deliver meaningful local and strategic benefits well into the future.

This charter has been endorsed by:

REA

APATURA

prosper

Ravenscraig

Heat Network Scotland