

Water Consumption and the Unaccounted Cost of AI Cooling

The freshwater question that no planning authority is asking — and the disclosure framework that would answer it.

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Meta's data centre at Clonee, County Meath, withdrew 928 million litres of water in 2021 — the annual domestic water use of roughly 18,560 people.¹ A few kilometres away, Google's Dublin campus uses about 2.7 million litres a year after switching to air cooling.² Same country, same industry, a difference of more than two orders of magnitude — and in most jurisdictions, planning authorities are not required to know which kind of facility they are approving.

This paper finds that the planning systems processing data-centre applications across the UK, Ireland and the EU have **no common obligation to require site-level disclosure** of water withdrawal, peak-day demand, potable-water share, or cumulative catchment impact. The national-average figures that reassure regulators systematically hide local vulnerability. We set out why, and propose a six-point disclosure standard.

The measured case: one facility, a town's worth of water

The strongest evidence is not a model or a forecast; it is a disclosed, measured figure. Meta's Environmental Data Index reports that its Clonee facility withdrew 928 million litres in 2021.¹ Converted at standard UK/Ireland domestic consumption, that is the yearly use of a town of around 18,560 people. This is not a projection or a worst case. It is what one building, in one year, actually drew.

The instructive contrast sits nearby. Google's Dublin campus, after switching to air cooling, reports annual water use of about 2.7 million litres.² The lesson is not that data centres are uniformly thirsty, nor that they are not — it is that **the cooling architecture, not the label "data centre", determines the water cost**, and that cost varies by more than 300-fold between facilities that look identical on a planning form.

Why the national average misleads

Ireland's national water utility, Uisce Éireann, has stated that data centres account for less than 0.2% of national demand.³ The statement is true and misleading at once. The same utility manages large data-centre users by limiting peak flows and requiring private

storage — because the operative question is not the national share, but what happens to a city-region dependent on a single river when drought reduces its flow and every large user draws at once.

The greater Dublin area draws 85% of its supply from the River Liffey.³ A facility that is nationally trivial can be locally decisive. The national average is precisely the wrong denominator: it averages away the catchment where the harm occurs.

The discipline: measured, hidden, relocated, intensified

Public debate collapses several different water questions into one. Sound assessment must keep them separate:

Measured water use is what a facility actually withdraws and consumes, disclosed at site level. **Hidden** water use is real consumption obscured behind fleet-wide averages or national-share statistics. **Relocated** water use is on-site water saved at the cost of greater power-system water elsewhere — air cooling raises electricity demand, and thermoelectric generation itself consumes water. **Intensified** water use is the additional cooling load that denser AI workloads create. Google has stated directly that the expansion of its AI products increased its data-centre water footprint.²

AI can reduce, hide, relocate, or intensify water use depending entirely on the cooling architecture chosen and the metrics the operator elects to publish. The correct response to "is this a low-water facility?" is therefore never to accept the operator's assurance — it is to require disclosure.

The evidence across jurisdictions

JURISDICTION	MEASURED / DISCLOSED	WHAT THE AVERAGE HIDES	DISCLOSURE REGIME
IRELAND	Meta Clonee: 928M litres (2021), ≈18,560 people. Google Dublin: 2.7M litres after air cooling. ^{1,2}	Data centres <0.2% national demand — but Dublin draws 85% of supply from one river, the Liffey. ³	Peak-flow management + private storage on large users; no universal site disclosure.
ENGLAND	EA 2025: 57% of data centres in the south-east; 38 of the top 50 water users in that region; summer peaking tracks temperature. ⁴	Concentration in a region already classed seriously water-scarce. The EA states its own figures are an undercount. ⁴	Licence records only; no mandatory cumulative catchment assessment.
SPAIN	Amazon Data Services applied for 204,697 m ³ /yr from the Canal Imperial de Aragón. Microsoft says new	Growth followed 3+ years of severe drought; "zero water" cooling shifts load onto power and land.	Permit-by-permit abstraction; no standardised disclosure.

JURISDICTION	MEASURED / DISCLOSED	WHAT THE AVERAGE HIDES	DISCLOSURE REGIME
	Zaragoza sites use zero water for cooling. ⁵		
NETHERLANDS	North Holland: new data centres banned outside designated cluster zones; water-use assessment required as an establishment condition. ⁶	The most advanced policy found — but still evolving from conditions toward hard volumetric accountability.	Closest to best practice; conditions, not yet binding volumetric caps.

Caveat: these figures combine operator-disclosed data (Meta, Google, Microsoft), regulator assessment (Environment Agency), and permit applications (Amazon). Operator figures are self-reported and not independently audited; the Environment Agency states its own dataset is an undercount. Where a figure is self-reported, it is treated as a floor, not a settled value.

England: a structural collision

The Environment Agency's 2025 national water resources assessment found that 57% of England's data centres sit in the south-east, that 38 of the top 50 water-consuming facilities are concentrated there, and that consumption peaks in summer in line with temperature.⁴ These are not coincidental findings. They describe a structural collision: the densest concentration of a growing, summer-peaking water demand placed precisely in the region the Agency already classifies as seriously water-stressed — and the Agency notes its figures understate the true total.

What should be required

The remedy is not a ban; it is disclosure sufficient for honest assessment. Before consent, every data-centre application of material scale should be required to disclose, at site level:

(1) annual water withdrawal; (2) annual water consumption; (3) peak-day demand; (4) potable-water share; (5) cooling-system type; and (6) a catchment-level cumulative-impact assessment that counts this facility alongside every other large user on the same source. North Holland's regime is the nearest existing model.⁶ Without these, an authority approving a data centre cannot know whether it has permitted a 2.7-million-litre facility or a 928-million-litre one — a distinction of more than two orders of magnitude that current planning forms do not capture.

About this research. The Firewalkers is a global environmental movement using rigorous research to scrutinise the rush to build AI data-centre infrastructure. Our method separates what is *measured* from what is *hidden*, *relocated*, or *announced*, and seeks independent and dissenting voices rather than

relying on developer projections. This paper is offered freely for public use under attribution. For media enquiries: media@firewalkers.earth · firewalkers.earth

SOURCES

1. Meta, Environmental Data Index 2025 (Clonee, Co. Meath disclosed water withdrawal, 2021).
2. Google environmental reporting and statements on Dublin air-cooling and AI water footprint, 2024-2025.
3. Uisce Éireann / An Fóram Uisce 2024 (national demand share; greater Dublin Liffey dependence).
4. Environment Agency, National Water Resources assessment 2025 (south-east concentration; top-50 users; summer peaking; undercount statement).
5. Amazon Data Services Spain abstraction application, Canal Imperial de Aragón; Microsoft Zaragoza "zero water" cooling statements, 2025.
6. Province of North Holland data-centre establishment policy (cluster-zone restriction; water-use assessment condition).

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