To whom it may concern,

OpenUK has considered questions 7 and 8 of the consultation in particular, and would like to make the following contribution regarding sustainability in the development of Compute in the UK.

The [Shift Project](#) estimates that on its current path, the global ICT industry could be on track to grow from circa 4% of global greenhouse gases (GHG) today to nearly 8% by 2025. The gradual shift to renewable energy, while important, is a small part of the solution. There are greater than 50m tonnes of e-waste produced annually–this number is growing and we are running out of the Earth's minerals required for electronic components.

OpenUK has been grappling with this problem, and has looked in particular at data centres. They are the backbone of the ICT industry, and their scale is both [important and immense](#). Bold and responsible action is urgently needed and the opportunity to do so clearly emerges: Operational phase energy (Scope 1 and 2) efficiency is essential, but only a small piece of the equation. Scope 3 emissions in the supply chain require intense focus and mitigation in this era of sustainable development via circular data centres infrastructure and corresponding solutions.

At COP26, OpenUK and its international partners published "Patchwork Kilt", a blueprint for the carbon negative data centre of the future. Adopting the blueprint can help achieve up to 80% decarbonisation and 90% dematerialisation of data centres.

Patchwork Kilt brings together best practices and approaches usually found in closed silos, across 6 areas: Buildings, Energy, HW/SW, Network, Operations and Regulatory Environment. They are connected with a circular model that can only be enabled by Open Principles and Open Technology.

For example, the blueprint calls for using refurbished, centrally located buildings. It's the right time for it, as 5G/Edge based networks are being deployed closer to end users, and at the same time, retail and office buildings are abandoned or underutilised as a result of the pandemic. This would not only result in eliminating the need for carbon-costly materials to build new data centres, but given their central location, excess heat and hot water produced by the facilities cooling system can be redirected back into the grid to serve underprivileged communities in an affordable way. In addition, given the central location, employment becomes more accessible, fleet operations are significantly reduced, and an eventual electrification strategy wouldn't need to rely on a 1 for 1 replacement approach.

At the same time, in the HW/SW category, the blueprint calls for the refurbishing of high-end equipment underutilised by the hyperscalers (Facebook, Amazon, Google, etc.), and recertifying it so it is open, repairable on site, and life extended. This delays the need to draw new materials for as long as possible. Then through software virtualisation, drastically reducing the amount of hardware needed in the first place. The supply chain represents more than 90 percent of a data centre's emissions.

The blueprint also outlines the journey organisations need to take to reach 24/7, 100% renewable energy, recognising that it doesn't happen overnight, and that the journey will need to include offsetting, local storage and power purchase agreements backed by transparency.

Transparency is paramount, and that can only be achieved through a combination of open software, open data, and regulatory intervention. The role of government, both as a regulator

and as a user of data centres, will be fundamental in ensuring the dematerialisation and decarbonisation of data centres operating in the UK by requiring supply chain transparency, circularity across buildings, operations, energy and equipment, and through the adoption of open technology across the stack.

We believe that approaches similar to those set out in our Patchwork Kilt blueprint could be adopted in the development of Compute in the UK, and we would be happy to work with the UK Government to promote sustainability as the UK's strategy is developed

We trust this response is helpful.

Kind regards

Chris Eastham

Chief Legal Officer, OpenUK