APPENDIX B

OFFICIAL: SENSITIVE

Directorate for Digital: Digital Connectivity Division 12 June 2024

Deputy First Minister and Cabinet Secretary for Economy and Gaelic

GREEN DATACENTRES PROGRAMME UPDATE

Priority and Purpose

To provide you with an overview of the Green Datacentres and Digital Connectivity programme of activity across Scottish Government, the wider public sector and with industry.

Timing – routine

Recommendation

It is recommended that you note the contents of this submission and the continued partnership working to promote Scotland as an attractive location for inward investment in green datacentres and the opportunity of free/affordable clean heat.

Context and Issues

1. Datacentres, and the associated digital infrastructure required to service them, are the backbone of a vibrant digital economy – providing the ability to service cloud computing, the Internet of Things (IoT), Big Data and other data-driven technologies such as Artificial Intelligence (AI). Furthermore, increased datacentre presence in the Scotland will help the country to fully embrace other new and emerging opportunities in the future and support the policy ambitions outlined in the National Strategy for Economic Transformation (NSET), Scotland's National Innovation Strategy, Scotland's Technology Ecosystem Review and Scotland's AI Strategy. With the appropriate support, interventions and investment, Scotland can generate significant new economic growth from data storage, management and innovation.

2. In 2021, the Scottish Government launched the Green Datacentres and Digital Connectivity Vision and Action Plan. The document sets out the co-ordinated action required to position Scotland as a leading zero-carbon, cost competitive green data hosting location, which can contribute towards our ambition of achieving net zero emissions by 2045. It envisages a portfolio of different sized datacentres across the country – including edge, co-location and hyperscale facilities – delivering enhanced capacity and supported by a highly skilled workforce.

3. Since the Vision and Action Plan was launched, significant progress has been made on delivery. This includes the publication of Datacentre Site Selection shortlist and longlist reports, which assessed over 100 potential sites and short-listed those that fulfil a number of key criteria. This has generated significant industry interest from around the world and helped to raise the profile of Scottish as a location for datacentre investment.

4. In 2023 we commenced a three year programme with Scottish Enterprise (SE) to grow the Scottish datacentre industry. As part of this, SE is keen to work with the

Scottish datacentre industry to explore opportunities to green operations and facilities by working with the green tech ecosystem as well as Scottish Renewables to scope opportunities and work on financing options including The Bank, and the UK Infrastructure Bank.

5. SE has commissioned a research study of the economic opportunity and impacts of datacentres on a range of countries globally to understand best practice and where competitors exist. Informed by this, we will develop an appraisal of the economic potential of datacentres on Scotland. We are also promoting the opportunity presented by datacentres with officials developing the Green Industrial Strategy.

6. Currently, Scotland's datacentre market is small, with 11 existing co-location facilities provided by 6 different operators (Asanti, Brightsolid, Datavita, IFB, Pulsant and iomart). 8 of these are in the Central Belt whilst 2 are in Aberdeen and 1 in Dundee. The total market size is estimated at approximately 10MW[1]. The power is required to support thousands of servers and related IT infrastructure and most importantly the cooling of those servers.

7. AI, including Generative AI, has driven an exponential increase in the levels of data being processed globally. Goldman Sachs Research estimates that power demand from the industry will increase by 160% by 2030 to represent 4% of global energy consumption with associated carbon generation[2].

8. This growth of AI is already impacting Scotland's indigenous industry. We have been advised, confidentially, that one Scottish datacentre operator will be [Redacted 29(1)(a) applies]. This expansion is [Redacted 29(1)(a) applies], and we are advised that there is existing [Redacted 29(1)(a) applies] if the necessary energy transmission infrastructure can be put in place.

9. Scotland does not presently have any hyperscale datacentre facilities (typically 100MW + in scale). We are working with Scottish Development International (SDI), SE and UK Government (UKG) Department of Business and Trade (DBT) and Office for Investment (OfI), on three significant Foreign Direct Investment (FDI) opportunities from hyperscale datacentre operators.

10. Each of these FDI opportunities represents a substantial investment in Scotland:

Datacentre operator	Power	Estimated Capex
[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]
[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]
[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]	[Redacted 29(1)(a) applies]

11. The total power requirements across the three hyperscale datacentres is currently estimated at [Redacted 29(1)(a) applies]. For context, [Redacted 29(1)(a) applies] confirms an ambition for an additional 20GW of renewable electricity capacity by 2030 and states that if realised, this increase in capacity of renewable generation

[1] Datacentres are highly energy intensive and measured in megawatts (MW) instead of footprint size on the basis they will always run out of power before space. A MegaWatt is the standard unit used to measure electrical power in the International System of Units (SI) and is equivalent to 1,000 kilowatts and is abbreviated as MW.
[2] AI is poised to drive 160% increase in data center power demand (goldmansachs.com)

over the coming decade could mean Scotland's annual electricity generation is more than double Scotland's electricity demand by 2030, and more than treble by 2045.

12. The development of substantial new demand centres such as hyperscale datacentres could contribute to more electricity being used in Scotland (especially in areas where existing constraints may be evident) and could potentially reduce constraint payments (payments made by GB billpayers via the National Grid to electricity generators when more power is generated than can be transmitted).

13. Other factors, such as planning, skills and supply chains, can be as important as electricity availability in influencing where industry invests. Furthermore, electricity prices in the current GB market are amongst the highest in Europe. Further advice on electricity uses will be provided to Cabinet as part of the final Energy Strategy and Just Transition Plan. The UK Government's Review of Electricity Markets Arrangements (REMA) is looking at electricity pricing and any changes could impact Scotland's attractiveness as an inward investment location. The Scottish Government is working with the UK Government on this issue and has commissioned independent research to understand the potential opportunities and costs of electricity market reform, including locational pricing. Officials can provide further briefing on this specific topic if required.

14. Despite being attracted to Scotland by our renewable energy generating capacity, the hyperscale interests have reported lack of power availability due to grid constraints as a significant blocker to development. At present, [Redacted 29(1)(a) applies]is being serviced through the Grid Triage Service set up by OfI and the Department of Energy Security and Net Zero (DESNZ) in the UKG. We have built effective and valued relations with UKG and are sufficiently supported in this aspect of our engagement with UKG. We are working closely with SG Energy and Climate Change colleagues, as well as OfI and SDI, to support the datacentre opportunities. We are responding to requests from [Redacted 29(1)(a) applies]and the National Grid ESO who have both, separately, expressed interest in exploring how demand, specifically coming from datacentres, could be supported.

15. [Redacted 29(1)(a) applies] visited Scotland recently in relation to the company's interests in establishing a presence here. During the meeting, [Redacted 29(1)(a) applies] emphasised the importance they place on the ability of a host nation to demonstrate itself to be a credible delivery partner, with clarity on the stages required to deliver an approval. Consenting is a core element of that, along with provision of power. [Redacted 29(1)(a) applies] was advised of the First Minister's stated priorities around achieving improvements to consenting and enabling power provision which aligned well with [Redacted 29(1)(a) applies] interests. Our view is that there is a strong likelihood of a major announcement relating to one of these opportunities in the coming months.

16. Some datacentre providers are attempting to service the unprecedented growth in AI whilst avoiding the grid constraints identified above by adopting a distributed computing approach. This essentially breaks up a hyperscale facility and distributes it across a large number of facilities spread across a wide geographic area. This has the benefit of making the facilities, in principle, quicker to deliver.

17. The datacentre industry is also developing a new approach to generating *'clean heat from distributed computing'.* This utilises clean heat from computing tasks such as AI, powered entirely by renewable energy, which would otherwise need significant cooling. The heat can be provided for free or at low cost to nearby facilities. This is a key strand of activity for the Scottish Green Datacentres programme and involves many sectors, regions and stakeholders. SG is already supporting opportunities to utilise heat from datacentres through other programmes. Most recently SG contributed £2.1M to University of Edinburgh through its Public Sector Heat Decarbonisation Fund to use waste heat from the University's main server to improve existing heat provision.

18. Early industry reports suggest potential commercial investment of [Redacted 29(1)(a) applies]. This will generate approximately [Redacted 29(1)(a) applies]. This represents a very compelling proposition where clean, free/affordable heat is used to service large parts of Scotland's heat requirements whilst improving the country's digital resilience and capability.

19. We are working closely with SG district heat network policy colleagues, public sector partners and industry to explore an initial deployment in Scotland, with a view to establishing Scotland as a key market for the heat from edge industry.

Contribution to the Government's Three Missions

Working together to improve the lives of the people of Scotland

20. In addition to the provision of high value jobs (albeit not in large numbers) generated by hyperscale datacentres, there is a far wider benefit to the development of datacentres of all scales across Scotland. The presence of major tech companies such as [Redacted 29(1)(a) applies] can attract further innovation and support advancements in robotics, machine learning and AI. The heat from edge solution could significantly reduce heat poverty nationwide and make facilities like swimming pools economically viable. Datacentres and their associated digital infrastructure would also improve Scotland's broader digital resilience.

Verity House Agreement Implications

21. There are no specific implications for the Verity House Agreement. We are actively engaged with local authorities through our Digital Connectivity Single Point of Contact network and have consulted directly with local authorities across Scotland where sites of interest have been identified.

22. We will continue to explore opportunities across all local authorities, working collaboratively with local authorities that have the capacity (power provision and availability of suitable land) to accommodate datacentre opportunities.

Financial Considerations

23. There are no specific financial considerations associated with the three FDI opportunities at this stage.

Legal Considerations

24. At this point there are no specific legal implications of the kind that would require consultation with Scottish Government Legal Directorate and/or Law Officers.

New Deal for Business Implications

25. We have considered the New Deal for Business Group (NDBG) Implementation Plan and there are no implications for Policy and decision making, at this stage.

Sensitivities

26. Ongoing discussions with the hyperscale datacentre operators are commercial in confidence. We are progressing site discussions concurrently with the operators, guided by SDI and DBT and OfI of UKG.

27. There is a risk of environmental and social lobbying against datacentre developments. The standards that datacentres need to achieve in the build and operation of their facilities and the additionality, including community and economic benefits, could go some way to mitigate these risks.

Quality Assurance

28. This submission has been approved by Geoff Huggins, Director Digital.

Conclusion and next Steps

29. The hyperscale datacentre inward investment opportunities that officials and the enterprise agencies are responding to represent an opportunity for Scotland to become a significant player in the international data processing and storage market. There is the potential for Ministerial engagement later in the year to support and amplify the interest from the Tier 1 technology companies.

30. The opportunity of free/affordable clean heat from edge datacentres is another major opportunity that officials are pursuing. We are seeking to support early demonstrator projects that we expect will yield comms opportunities in the months ahead.

31. You are asked to note the content of this paper.

38(1)(b)

Digital Connectivity Division

Cabinet Secretaries and Ministers Copy List	For Action	For Information Portfolio interest	For Information Constituency interest	For Information General awareness
Deputy First Minister and Cabinet Secretary for Economy and Gaelic	X			
Minister for Business,		X		
Minister for Employment and Investment				X
Minister for Agriculture and Connectivity				X

Officials Copy List
Permanent Secretary DG Corporate DG Economy 38(1)(b)

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