Dear Edward,

**Closed Containment and the Implications for Waste**

During my evidence session before your Committee on 9 May 2018, I offered to write to the REC Committee and the ECCLR Committee to give information on closed containment and the implications for waste.

It was asserted in evidence at the ECCLR committee that if fish farming was moved onshore closed containment farms would require a sewage treatment plant, almost on a one-to-one basis. The issue I think, is not about the number of ‘sewage treatment plants’ required but the volume of material being treated and how it is disposed of, or in the case of open water cage culture, the volume and type of organic material emanating from the farm.

The basic principle of a recirculation system involves the recycling of water for re-use as the medium in which fish are farmed. In order to ensure that re-used water is suitable then processes including filtration and treatment are undertaken to remove organic waste from the system before returning the water to the farm.

Any farm which operates a recirculation system will have to ensure that reused water is sufficiently cleaned. At the very minimum collecting organic material from the water column is a requirement but whether any further treatment is undertaken on site may come down to several factors including – logistics, economics, the volume of material to handle and the ability of material to be moved off site bio-securely for treatment elsewhere.

Recirculation and closed containment is a fairly new concept to Scotland, at least in comparison to how the majority of the industry operates. New technologies and innovations may advance processes further and influence future development but their mainstream commercial application currently remains unviable.
In addition it is argued by some that fish which are produced in an on-shore container system may not offer the same level of consumer appeal and flavour taste of those farmed salmon that have spent time in the sea.

**Norwegian Website – Individual Fish Farm Lice and Disease Levels**

At the same evidence session I was also asked to provide more information on the Norwegian website which provides information about an individual fish farm’s lice and disease levels.

My officials have been in touch with colleagues in Norway, who explained that their website draws on seven already operational public data sources and is managed by a workforce of 1-2 people per year. They give the following indicative levels of cost behind the website:

- 2015 - 2,6 million NOK
- 2017 - 5,1 million NOK

**Total 7.7 Million NOK (in the region of £700K)**

Not included in the above figures are the costs of each of the seven already operational data sources or the workforce used to manage the website.

I hope this is helpful. I am copying this reply to Graeme Dey MSP, Convener of the ECCLR.