16 December 2019

Committee Secretary
Standing Committee on Industry, Innovation, Science and Resources
PO Box 6021
Parliament House
Canberra ACT 2600

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Dear Ms Bird, Mr Joyce, Mr Craig Kelly, Mr Perrett, Ms Swanson

**RE: Licella's response to the House of Representatives - Standing Committee on Industry, Innovation, Science and Resources Meeting on Wednesday, 4 December 2019**

We refer to the above mentioned meeting on 4 December 2019 and its subsequent minutes, which included discussion on our company Licella. Given the questions that have arisen regarding the challenges to commercialising innovative technologies such as ours in Australia, we wanted to take this opportunity to clearly articulate our current challenges and importantly, what we believe to be the opportunities to accelerate the commercialisation of chemical recycling technologies that would dramatically increase Australia's ability to recycle plastic locally, and even become plastic neutral.

Given the update to the National Waste Policy proposes ambitious new targets for our waste industry (including 80% average recovery rate from all resource-recovery streams, following the waste hierarchy, by 2030), the timing is ideal to discuss how we remove roadblocks to commercialisation of innovative Australian solutions to End-of-Life Plastic. Furthermore, on 8 November 2019, COAG Ministers determined that the export of mixed waste plastics should be banned by July 2021. *"This timetable is ambitious and will require the cooperation of industry and all levels of government to succeed."*

As an Australian company that has gratefully received support from the Federal Government, which has helped us to progress through our R&D phase, we are indeed at that "Valley of Death". By this we mean, having proved the technology at pilot scale, we now need to make the leap to commercial scale. To do this, we need to commission a so called "Pioneer Plant" (a first of its kind facility that typically cannot be financed using traditional capital markets) so that we can deliver this solution to the Australian market. To get a Pioneer Plant built in Australia will cost in the order of $40M-$50M. The support we are seeking from the Government is half of this.

To date, ARENA have supported Licella's pilot scale Cat-HTR development activities for biomass. The challenge Licella faces is that we cannot access ARENA funding for the commercial scale pioneer plant for plastic, as ARENA are governed by the ARENA act and plastics are not classified within "renewable energy".

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Licella have received support through DIIS's Accelerating Commercialisation Program to help prove the technology for non-recyclable plastics, but the maximum funding available is $1M.

Of particular importance, given it was discussed at your recent Committee Meeting, is the discussion on our access to the CEFC (Clean Energy Finance Corporation). CEFC are able to support low emission technologies but aren't able to assist Licella, as under the existing CEFC mandate they have a requirement that the technology must be commercial somewhere (i.e. a reference facility using the same technology at a similar scale and with a similar feedstock). As our Cat-HTR technology is a first-of-kind technology within a new category (hydrothermal liquefaction), we are unable to satisfy this application criteria.

These challenges demonstrate the roadblocks within Australia for an innovative technology looking to work alongside the Government to move from R&D into commercial use. Pyrolysis is an alternative plastic to oil technology that is well established, but the technical disadvantages have limited its successful use to date. Unlike pyrolysis, the Cat-HTR technology is able to process mixed plastic feedstock (without sorting it into a single stream of plastic), it can also process multilayer plastic (such as post-consumer packaging, which we know is extremely problematic to the environment) and does so more efficiently (Cat-HTR produces a high yield of high quality oil without creating a solid char).

Compared to waste to energy (incineration of plastic to create electricity or replace gas), our Cat-HTR process produces 80-100% more value with 45% less carbon emissions. Plus, chemical recycling supports the established waste hierarchy.

One commercial-scale Cat-HTR chemical recycling plant would process around 20,000 tonnes of End-of-Life Plastic a year, producing 17,000 tonnes or 119,000 barrels of recycled oil (based on an 85% oil yield from plastic). This "Plasti-crude" oil is a direct substitute for fossil oil in many applications, including the production of new plastics (making it a truly circular solution for currently non-recyclable plastic). That is 20,000 tonnes of plastic not going to landfill or our oceans by building just one Cat-HTR plant. We believe that to help Australia become "plastic neutral" will require 40 Cat-HTR facilities that would create at least 720 jobs, including within regional areas.

So, what are the potential solutions that can allow the Government to support Licella bringing the Cat-HTR solution for plastic to the Australian market? Firstly, by aligning the ARENA mandate to be the same as CEFC (i.e. to enable ARENA to support and assist companies with low emission technological innovation to move through R&D and pre-commercial demonstration activities and to market in Australia). This would provide a pipeline for other CEFC projects.

Secondly, by ensuring the Investment Mandate given to the CEFC for the Australian Recycling Investment Fund also includes support for innovative technologies. As stated above, the current CEFC investment mandate requires technologies to already be commercial / operational somewhere in the world, which is impossible for innovative technologies such as ours.

Licella would like to take this opportunity to again acknowledge the support of the Australian government to date. This support, particularly via ARENA and the DIISR's Accelerating Commercialisation scheme, has helped us move through our R&D phase and also help put an Australian innovation on the global stage.

We ask now that the Government consider the above mentioned challenges we have commercialising our Cat-HTR technology for plastic in Australia, and help us unlock the funding already available in ARENA and the CEFC Australian Recycling Investment Fund, so that we can be eligible to apply to accelerate the commercialisation of the Cat-HTR solution within Australia.

We welcome the opportunity to discuss the above with you and any questions you may have regarding our company or technology. We would also like to extend an invitation for you to visit our demonstration facility is Somersby on the NSW Central Coast.

Kind regards

Dr Len Humphreys

CEO, Licella Holdings Limited

Email [redacted]