Haere mai, welcome, and thank you for joining the panel

Thanks very much for agreeing to join our expert panel on plastics. *We were overwhelmed with offers of support and have done our best to create a balanced panel to cover the breadth of expertise and interest in Aotearoa New Zealand in this important area. We want everyone to be able to contribute and are creating reference groups from the volunteer pool to feed in to the panel process. Membership is fluid and so it is not too late for people to join and contribute – we will work as transparently as possible to enable this. As the first major project from our Office, we are keen to ensure the process is optimised and that the final report is as comprehensive and useful to policy-makers as possible.*

Our task for the first meeting is to finalise the scope and agree on actions for the rest of the project. *So far, George has led the work from the Office - supported by intern Dr Akshita Wason - and put together some initial thoughts on framing and scope for the report. We think this is achievable in 6 months.*

Initial thoughts on framing and scope – to inform discussion at the first meeting

Context

'What to do about plastic' is an international problem. Our particular challenge is to frame our work in the context of Aotearoa New Zealand and prioritise actions to maximise benefit in our local context. Wisdom from Te Ao Māori places Aotearoa New Zealand in a strong position to lead on long-term approaches to environmental concerns - for example, the concept of kaitiakitanga will be useful to frame our work.

Starting considerations

Concern about the near-permanent plastic accumulation is increasing among scientists, policy-makers and the public.[1] As nations transition to a more sustainable circular economy model (a concept defined by the Ellen MacArthur Foundation as '*restorative and regenerative by design with an aim to keep the products, components, and materials at their highest utility and value at all*

[1] Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, *3*(7).

times,[2]), waste minimisation and recovery strategies are being designed globally to combat the problem of plastic overuse and mismanagement.

There is an international consensus that plastic pollution must be curtailed with effective material recovery incorporated on an industrial scale. Aotearoa New Zealand is part of *The New Plastics Economy Global Commitment,*[3] which aims to eradicate plastic waste and pollution by 2025. Innovative solutions are needed across several domains: immediate individual behaviour change; better disposal methods, e.g. modernising our landfill and recycling methods to recover the lost value from discarded plastic;[4] and invention of new technologies that can be scaled and widely adopted to remove our reliance on current materials. Action must be guided by scientific evidence and directed towards effective mitigating measures. We aim to compile a report that collates this evidence and provides an accessible guide for politicians, policy-makers and the public.

Complexity of plastics in Aotearoa New Zealand

Most plastics in Aotearoa New Zealand are imported. This makes it challenging to collect data on the type of plastic (based on recycle grade and material type) entering the country.[5] As a result, there is little empirical data on the tonnage and grade of plastic waste produced and recycled here.

A second issue is the lack of standardisation and labelling of plastics (and related products) resulting in co-mingled, low-efficiency recycling, with significant amounts of material being categorised as waste and diverted to landfills without any energy recovery.[6]In addition to the negative environmental implications, this linear approach loses out on material recovery with potential re-entry into the circular economy model.[7]

Aotearoa New Zealand also has issues of population size and distribution that may make solutions adopted by other countries not applicable here, or at least require alternative approaches to be effective.

Composting is considered a viable disposal method for biodegradable plastics. However, industrial composting practices are highly variable, lacking a standardised protocol. Contamination of the waste streams also hinders the process. Moreover, the bioplastics aimed at consumers do not

[2] *The New Plastics Economy: Rethinking the Future of Plastics*. https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics (Ellen MacArthur Foundation, 2016)
[3] *The New Plastics Economy Global Commitment*. https://newplasticseconomy.org (Ellen MacArthur Foundation, 2016)
[4] Sardon, H., & Dove, A. P. (2018). Plastics recycling with a difference. *Science*, *360*(6387), 380 LP-381.
[5] National Waste Disposal Survey, Prepared for Ministry for the Environment, New Zealand, 2017
[6] Rebooting recycling, A discussion paper, The Waste Management Institute of New Zealand (WasteMinz), 2018
[7] OECD, Global Material Resources Outlook to 2060 – Economic Drivers and Environmental Consequences.

conform to home-composting conditions and therefore persist in the environment.[8] As such, there is a need to clarify the material types (by structural classification i.e. petrochemical and bio-based) with effective end-of-life options. As single-use plastic bags are being phased out[9] (the regulation coming into force on 1 July 2019), it is crucial to critically assess alternative options as the decisions will have an impact on the environment, national economy and related industries.

A first pass at the scope of our report – to finalise at the meeting

Our initial research has highlighted the following topics as priorities in understanding 'what to do about plastic' in Aotearoa New Zealand.

1. **Categorisation of plastics entering Aotearoa New Zealand**: A review and a summary map of the types of plastics in circulation in Aotearoa New Zealand, with empirical data (where available) and quantitative assessment from industry partners. The goal will be to identify knowledge gaps and aid the standardisation and labelling of all plastic imported, manufactured and currently in circulation.
2. **Behavioural science**: An analysis of the social and behavioural science evidence related to plastics, covering issues such as perception by citizens, behaviour of stakeholders, political economy and psychology of the plastic debate. This includes social change in plastic usage, consumption and disposal at the community level, and impact on daily life across all communities. What is the evidence base for tools to change behaviour?
3. **Life cycle assessment of materials**: An analysis of the life cycle assessment (including end of life options) for various materials to aid effective waste management, with a robust understanding of the material flow and economies to regain the untapped value. This will involve an analysis of material recycling, dematerialisation, reuse and conversion technologies for appropriate management of plastic generated.
4. **Technological solutions**: An analysis of the developing evidence base for new recycling solutions and innovations in new materials that can replace plastics at scale.
5. **Regulatory framework**: An analysis of the international legislative/regulatory/policy frameworks of relevance, with a potential to provide a plastics tool-kit for policy-makers.

[8] Spierling, S., Röttger, C., Venkatachalam, V., Mudersbach, M., Herrmann, C., & Endres, H.-J. (2018). Bio-based Plastics - A Building Block for the Circular Economy? *Procedia CIRP*, *69*, 573–578. https://doi.org/https://doi.org/10.1016/j.procir.2017.11.017

[9] Ministry for the Environment. 2018. *Proposed mandatory phase out of single-use plastic shopping bags: Consultation document*. Wellington: Ministry for the Environment.

6. **A need for clear evidence-based policy options**. Keeping in contact with Ministry officials, we will weave the evidence base into a selection of useful policy options for Aotearoa New Zealand.

Reference material

An initial reference material list is provided here. We welcome suggestions for further reading – please send through to Chris in the first instance for collation and wider circulation.

1. Production, Use, and Fate of all Plastics ever made, *Science Advances*, 2017.
2. The New Plastics Economy, Catalysing Action, *Ellen MacArthur Foundation*, 2017.
3. Single-Use Plastics, A Roadmap for Sustainability, *United Nations Environment Programme*, 2018.
4. Global Material Resources Outlook to 2060, Economic Drivers and Environmental Consequences, *OECD*, 2018.
5. New Zealand's Plastic Packaging System, An Initial Circular Economy Diagnosis, *Circular Economy Accelerator, Sustainable Business Network*, 2018.