

# Microplastics in Aotearoa's Marine Environment

*Emerging risks, knowledge gaps, and strategic interventions*

*An invisible contaminant with visible consequences*

ANITA LEWIS

Scientist – Contaminated Land  
Waikato Regional Council

# What are Microplastics?



# Why this Matters



# Environmental Transport Pathways



# System Design Flaws

- Designed for discrete waste streams, not diffuse particles
- ➔ Assumes linear, single-pathway transport and interception
- Limited visibility once particles enter environmental systems



# Monitoring Gaps and Variability in Aotearoa NZ

- No nationally standardised monitoring methods or metrics
- High variability across sites, matrices, and analytical approaches
- Limited baseline data to assess trends or intervention effectiveness



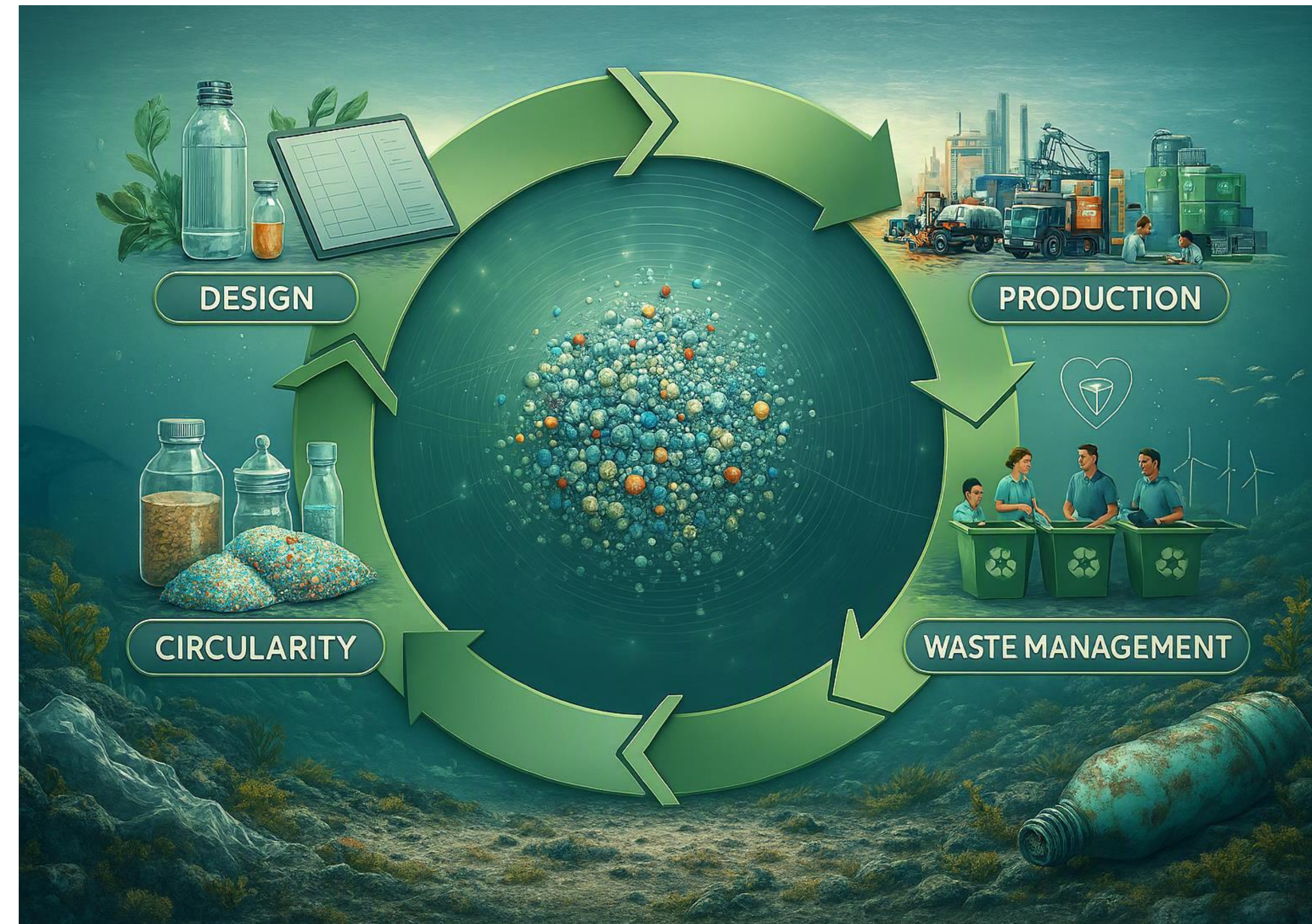
# What This Means for System Design and Management

- Limits of existing management frameworks
- Assumptions misaligned with microplastic behaviour
- Reduced confidence in evaluation and decision-making



# Strategic Interventions: Designing for the Invisible

- Shift **upstream** to prevent microplastics at their source
- Design **systems** for diffuse, multi-pathway contaminants
- Enable cross-sector **collaboration** across waste, water, industry, consumer and policy



# Key Messages

- **Ministry for the Environment** – turn microplastics into a routine contaminant by enabling nationally consistent monitoring methods, metrics, and baselines
- **Regulators** – assess whether existing regional data are sufficient to support inclusion of microplastics in State of the Environment reporting
- **Consultants** – start considering microplastics in design, investigations and advice
- **Industry** – reduce microplastics at source by addressing product, process, and system design that contributes to diffuse leakage
- **Consumers** – everyday choices contribute to microplastic pollution, and prevention at source is more effective than downstream clean-up



Microplastics may be invisible  
but the consequences of ignoring them are not

