



## Tellus Solutions within the Circular Economy

### The Problem with Waste and the Linear Economy

In a world of dwindling resources and a rising population, Australians are one of the highest producers per capita of hazardous (“Haz.”) waste and have relatively low recycling and recovery rates.

Haz. waste in Australia has historically followed the Linear Economy of **"Take, Make, Dispose"**. Disposal is mostly to landfill that does not permanently isolate the waste from the biosphere and is generally considered the least favourable option in the established waste hierarchy. This is not sustainable and should change.

Fig 1: Linear economy



The relatively high standard of Australian lifestyles contributes to depleting finite reserves and creates many products that end up in landfill or in incinerators. Australia currently recycles approximately 25% of its high economic value hazardous waste. But what happens to the remaining 75% of haz. waste that is difficult to recover?

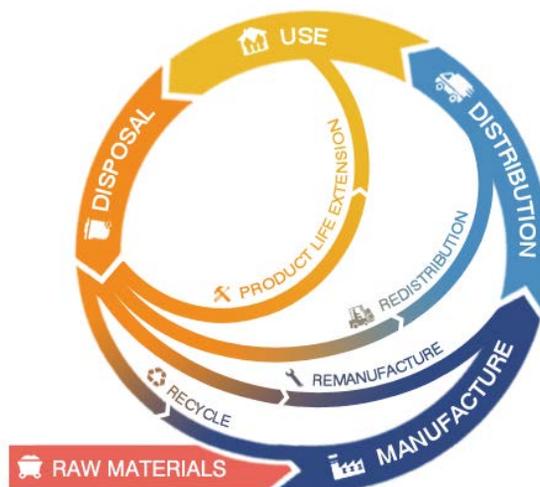
Tellus is an innovative company in the business of finding economic, environmental and social value in some difficult to manages wastes and supports pushing valuable materials back into the circular economy.

### Tellus’ Solutions within the Circular Economy

Tellus does not support the linear economy of "Take, Make and Dispose Materials"

Tellus supports the circular economy = "Take, Make, Recover for this Generation or Store Safely for the next Generation or Dispose Safely"

Fig 2: Circular economy



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## Tellus Solutions within the Circular Economy

### Waste is a valuable resource

Tellus' is developing the Sandy Ridge and Chandler Licenced Facilities that are geological repositories that can safely store or permanently isolate haz. waste (resource)".

Tellus' purpose is to protect our environment by putting difficult to manage wastes (resource) to good use and finding innovative ways for the waste to re-enter the circular economy.

We believe that waste is a valuable resource, and if we in this generation cannot find a good use for it with the technology we have, then we should store it safely until a future generation can find a good use for it with new technologies they have.

Tellus stores "like with like" as a storage cell today could become a secondary recovery mine of tomorrow.

This creates the ability to reduce the amount of primary resources mined and its associated reduction in energy and greenhouse gases required to convert the primary resource into a useful product.

### Journey of moving from OLD to NEW again

When it comes to haz waste, Tellus supports the circular economy where not only the relatively easy to manage "high economic value wastes (resource) – can follow the journey of moving from OLD to NEW again", but we also create more opportunities for the much harder to manage "lower economic value wastes (resource) that can also follow the journey of moving from OLD to NEW again".

Tellus is focused on seeing what portion of the remaining 75% of haz waste that is not currently recycled in Australia can be temporarily stored and re-enter the circular economy or be permanently isolated in Australia's safest geological repositories.

The opportunities presented due to economies of scale, storing "like with like" and looking at the materials on a molecular level is what Tellus believes is the key to converting the waste into a valuable resource and positioning Australia as a leader in high-value niche products.

This approach enables Tellus to play a key role in the debate about the challenges ahead for the waste management industry, anticipate future developments and influence policy as we strive to create a circular economy.



## Tellus Solutions within the Circular Economy

### Creating new business opportunities, jobs and environmental benefits

- Domestic solution supporting new value-added green materials and resources, instead of shipping our waste offshore
- Reducing environmental pressures in Australia and beyond
- Minimising Australia's high and increasing dependence on imports
- Increasing the competitiveness and social license to operate of Australia's industry
- Tellus will deliver opportunities to revolutionise the domestic recycling industry through the creation of new enterprise, associated technology and jobs
- A strong domestic recycling sector can deliver significant cost reductions to Australian industries
- Improve corporate and government environmental performance

### The innovation economy is already here

According to the article *"In steel, the innovation economy is already here"*, by Veena Sahajwalla<sup>1</sup>, The Australian, April 29, 2016, Globally, waste management is a vast and rapidly growing industry, rich with untapped opportunities. The UN Environment Program estimates global emissions could be reduced by 10 per cent to 15 per cent by reimagining waste as a resource and responding accordingly. Total savings to businesses could exceed \$US1 trillion (\$1.31 trillion) globally.

For Australia, there's much to be gained. Modelling by the NSW Environment Protection Agency estimates 0.46 jobs are created for every 1000 tonnes of domestic waste diverted from landfill and 0.33 jobs per 1000 tonnes of commercial and industrial waste.

Then there's the considerable value of repositioning Australia as an innovator globally. If we can grab the new opportunities emerging from our R&D sector to deliver new green materials, new intellectual property and associated science and technology-based services, in collaboration with Australian industries, we can grow future jobs.

<sup>1</sup>Veena Sahajwalla, is ARC laureate professor Veena Sahajwalla, director of the Centre for Sustainable Materials Research and Technology and the ARC Industrial Transformation Hub for Green Manufacturing at the University of NSW. She is a previous winner of The Australian Innovation Challenge.