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## Harnessing decades of knowledge to restore the forest floor



Honing our scientific knowledge of the Jarrah Forest floor in the south west corner of Western Australia for more than 50 years, Alcoa has completed another successful mine rehabilitation season - planting more than 550,000 native jarrah forest plants at our Huntly and Willowdale mines in 2021.

Our goal is to ensure every single type of plant species that existed before mining is returned to these rehabilitated sites within 15 months - something we first achieved in 2001 - and we look to improve our methods year on year.

For Alcoa Mine Environmental Manager Luke Gossage, the remarkable world-leading results being achieved today in restoring the forest floor can be traced back through the years to when Alcoa began its rehabilitation program in 1968.

“Our restoration work back then and in the 70s was leading practise at the time. Looking back at sites from that era and beyond - 45, 35, 25 or even 15 years on we can see what species are present and analyse what worked and what did not,” Mr Gossage said.

“A case in point was our shift in 1988 to planting solely local native jarrah and marri trees instead of dieback resistant eastern states eucalypts – a move informed by our research which showed local native jarrah will successfully establish and survive even if dieback disease is present.

“Because our bauxite mining process moves progressively, our rehabilitation process never stops – it is perpetually evolving and being nuanced.

“Through these learnings there has been a real evolution in thinking and our focus is now on the variety of plant and animal life or biodiversity rather than the quantity or biomass.

“Alcoa’s investment in research and development has led to enormous improvements in things like dieback management and preparing the contours of the restored soil to create a healthy bed for seeds to grow.”

Mr Gossage said Alcoa’s 2021 season included the planting of more than 490,000 hard to grow species and the spreading of more than 1.5 tonnes of seed.

“We have learned forest soil is the absolute key to success. It contains the seed of a diverse range of plants we could never collect any other way along with the nutrients and micro-organisms essential for plants to grow,” he said.

“We salvage topsoil to a depth of 15cm and return it to a rehabilitation area to maximise the soil’s restoration potential.

“In collecting seeds, we discovered that many need treatment with either heat or smoke as they would in the natural environment to trigger germination.

“Plants that are difficult to re-establish from seed or topsoil are raised in a nursery and hand planted and we pioneered the use of tissue culture to propagate these species that produce little or no seed at all.”

Home to more than 800 plant species, Mr Gossage said the surrounding jarrah forest is Alcoa’s reference against which rehabilitation efforts are compared.

“Our ongoing monitoring indicates the biodiversity of Alcoa’s rehabilitation is similar to that of the surrounding unmined forest,” he said.

“It is inspiring to see the return of animals and insects to a newly restored forest and we are very proud of the fact that self-sustaining jarrah forests now thrive in areas where Alcoa once mined.

“Our work here is the most recent in a long line of scientists and practitioners who have tirelessly strived for the best outcomes.

“These efforts have made WA the global focus for leading mining rehabilitation. Our understanding of the forest floor is considerable but our work is ongoing - the story has not finished and never will.”

Each year, approximately 600 hectares of forest are cleared, mined and progressively rehabilitated.

Alcoa does not mine in gazetted national parks, nature conservation reserves, old growth forest or other areas of high conservation value.