Dear Jessie,
Reports attached and links below. All reports can also be downloaded from Hunter Renewal's website.

There is only one text correction for my section.

CORRECTIONS
P. 23. In Kimberley Crofts' response at bottom of the page, it should read 'Once those ideas had been **ranked** over by the academics'. Ranked not raked.

DOCUMENTS/LINKS
1. Restoration Blueprint. Report I created in 2023 alongside Hunter Renewal on post-mining land use in the Hunter.
2. *Conversation* article from Dr Simon Wright that mentions the Denmark Renewable Energy Act which makes it compulsory for all renewable projects to be 20% or more community owned. This came originally from an Australia Institute report.
3. **Future-proofing the Hunter** report created alongsider Hunter Jobs Alliance in 2021. This report was created to advocate for the Hunter community during debate in the NSW Parliament on the changes to the Mining Act which contained the Royalties for Rejuvenation Fund and Expert Panels.
4. Article on Germany's 45 billion euro spend on phasing out coal
5. **EY Report** on the economic benefits of post-mining land use through industrial diversification. Includes three scenarios for different levels of investment in renewables and other industries such as agriculture.

All the best with the remainder of the Inquiry. Please let me know if there is anything else I can help you with.

Best
Kimberley

After the coal rush, the clean up.

A community blueprint to restore the Hunter

A REPORT FROM HUNTER RENEWAL

HUNTER Renewal

Acknowledgement of Country

Hunter Renewal acknowledges Australia's First Nations Peoples as the Traditional Owners and custodians of this land and gives respect to their Elders — past and present — and through them to all Aboriginal and Torres Strait Islander people.

This report was conceived and written on Wanaruah/Wonnorua, Worimi, and Awabakal Country.

The Hunter Renewal Project

Hunter Renewal is a project to bring people, businesses, and organisations of the Hunter Valley together to envision a diverse, resilient, and thriving future for our region. The Hunter Renewal project was created by the Hunter Central Rivers Alliance and Lock the Gate Alliance in 2017. Both groups are focused on supporting regional communities to make decisions for themselves about their future.

Initial door-knocking in 2016-17 of over 4,000 homes in Singleton and Muswellbrook found that 90 per cent of people surveyed wanted a plan for the future of the region after coal mining. It was evident that no one in politics or business was supporting the development of a community-driven plan, so Hunter Renewal stepped in to address the gap. In 2017-18 Hunter Renewal hosted several community dinners and workshops to start discussing what a plan for the future might look like.

Following a large summit held in February 2019, the *Hunter Renewal Roadmap* was created, setting out community priorities for transition. One of our key priorities is a locally-based independent statutory authority to oversee and coordinate an orderly region-wide transition. This is supported by thousands of local people, many businesses and several other organisations. The recommendations in this report to address post-mining land issues are a crucial adjunct to the ongoing campaign for a Hunter Valley Transition Authority.

In 2021 Hunter Renewal hosted a series of workshops in partnership with the Hunter Jobs Alliance. These were aimed at gathering community priorities and perspectives to inform decisions about the Royalties for Rejuvenation Fund and the Hunter Expert Panel, and to ensure the community were given access to information and opportunities to be involved in diversification planning and initiatives. This was published in the report *Future-proofing the Hunter: Voices from our Community.*

Our 2022 report *Diversification and Growth: Transforming Mining Land in the Hunter* highlights the economic opportunities from the progressive closure of mines in the region. It examined scenarios for 130,000 hectares of mined and mine-owned buffer lands. Expanding biodiversity and agricultural investment onto these mining buffer lands could more than double economic outputs and jobs compared to the current trajectory of basic mine rehabilitation. The maximum conservation scenario model, combined with using just 1,630 hectares of heavily-impacted lands for clean industrial development could enable the creation of 13,600 jobs across 10 different industries. Manufacturing which supports the renewable energy industry could grow to an aggregate economic output of $3 billion over the next 25 years. We believe that this vision of environmental restoration, agricultural production, and job creation in clean industries can be made a reality with careful planning and public input. We need a policy framework that puts people, nature, and future generations at the heart of decision-making.

We are grateful to all of the Hunter Valley community and our volunteers who contributed to this report. Thanks also to Kimberley Crofts for the design.

Published by Hunter Renewal (2023).
www.hunterrenewal.org.au

Cover image is an aerial view of Wambo open cut coal mine from Lock the Gate Alliance. The mine is cut into the landscape in the foreground, with the valley and mountains stretching into the background.

Contents

Foreword

John Drinan has lived most of his life in the Hunter Valley and continues to advocate for it. He is an agriculturalist and environmentalist, and is now retired from working as a farmer, researcher, educator, and administrator. His book, *The Sacrificial Valley*, records the environmental, human, and social damage caused to the region by coal and calls for an urgent start to its reconstruction.

The era of coal mining and burning is coming to an end faster than predicted even a few years ago, and the coal-dominated Hunter Valley economy is facing the prospect of severe pain. Closure of the mines and power stations will progressively leave coal miners, power station workers and employees of coal service businesses unemployed. The consequences will be felt throughout the regional economy but most severely in the major towns.

Sadly, this realisation has been slow in developing urgency in the minds of local councils and governments, but they are now starting to think about the post-coal future. The NSW Government's *Upper Hunter Economic Diversification Action Plan* and various council-led activities are in evidence but are inadequate for the task ahead. That is because there is far more to it than rebuilding the economy.

Once-grand landscapes are gone, replaced by vast areas of featureless ridges and mountainous piles of spoil, interrupted by man-made drainage lines and huge holes in the ground. Streams above and below ground are broken and contaminated. Threatened and endangered species of plants and animals are steadily, sometimes catastrophically, reduced. Unique, ecologically endangered communities are being destroyed or reduced to unsustainable sizes. These, too, must be fixed as must the effects on human and community health and well-being. The effects of poor air quality cannot be denied, but less recognised are the consequences of, for example, excessive noise and night-lighting, the loss of home and sense of place, and the disturbance of families and communities by long shifts. And it must not be forgotten that the Wanaruah/Wonnorua people have long been alienated from their traditional lands.

Reconstruction of the Hunter cannot be successful unless councils and governments realise that a single-minded focus on the economic domain, to the exclusion of the environmental and social domains, is the very thing that brought the Hunter to the mess it is now in. Reconstruction can only be effective if it is accepted that these are all interdependent and must be addressed concurrently.

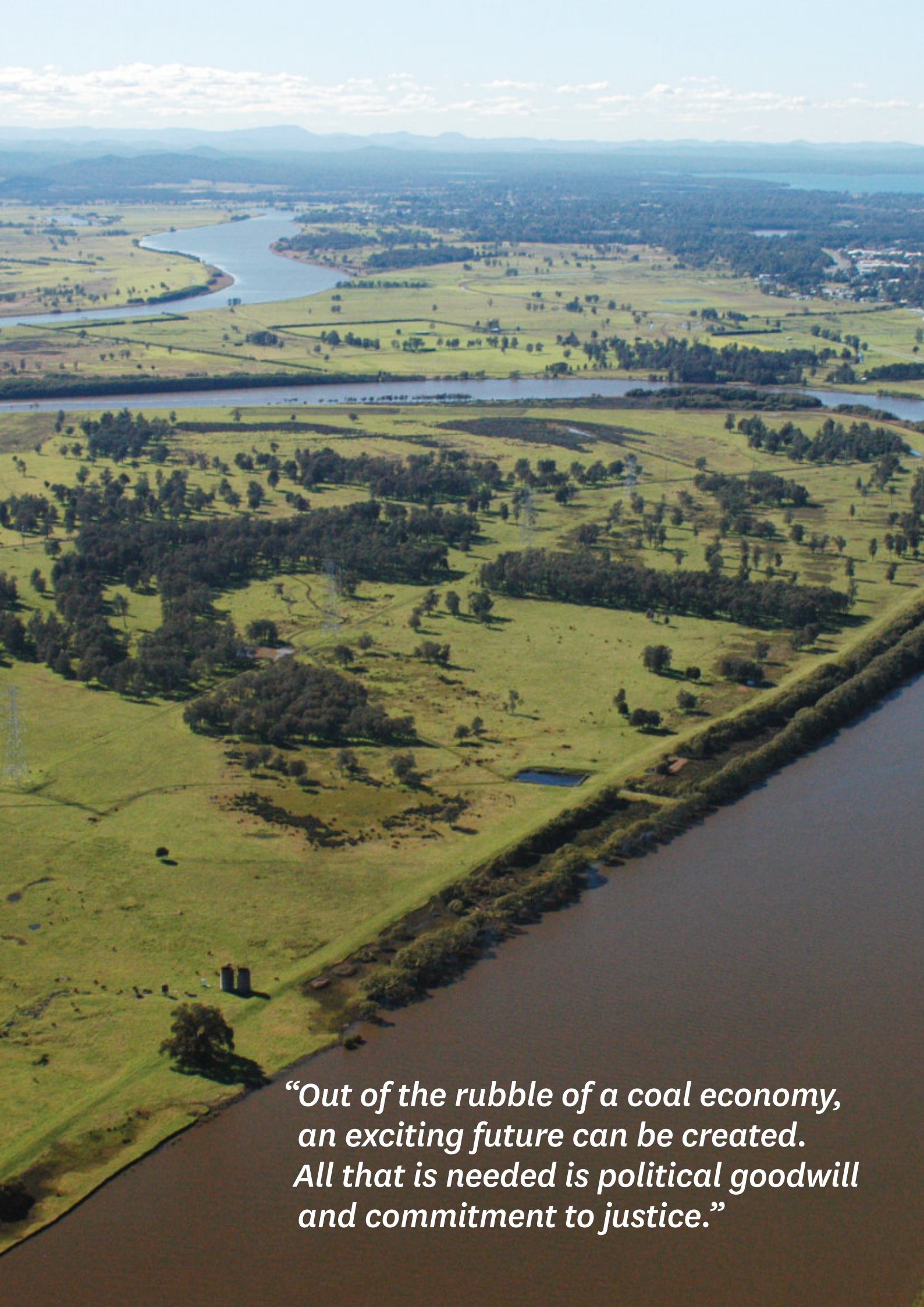
This crucial point is one of many in this excellent report by Hunter Renewal as it brings to the forefront the multiple elements of effective reconstruction of the Hunter. It reveals the enormous scale and complexity of reconstruction of this mine-ravaged region, a task never attempted before in Australia. Consequently, new legislation, new structures, and original research, development and education, and the necessary funds will be needed to effectively marshal the rich assets and capabilities already existing in the region.

Hunter Renewal argues correctly that the task must be undertaken by a locally-based, independent Hunter Rehabilitation and Restoration Commission set up under state legislation. One or more government departments are incapable of applying the necessary holistic approach. It is equally right in its demand that the Hunter community be actively involved in planning and oversight. The arrogance of government and mining meeting behind closed doors must now give way to include the people and communities affected by their decisions and who will live in the Hunter after mining has gone. Justice must now be done: for the people and communities that have lived with the downsides of mining and now face potential desolation, the workers whose jobs will disappear, the Wanaruah/Wonnorua people, and the environment. A just transition must be achieved.

As I have argued in my book, *The Sacrificial Valley,* governments of both stripes have massively failed the Hunter, but redemption is always possible. Here now is an unmissable opportunity to do something truly remarkable. If not grasped, the region's environment, communities and people will suffer much further. Out of the rubble of a coal economy, an exciting future can be created. All that is needed is political goodwill and commitment to justice, and imagination and determination to harness the opportunities and strengths in plain sight. Let's start laying the foundations as a community for building that grand new region.

~John Drinan

RIGHT: Aerial view of the Hunter river and distant mountains. Photo by Doug Beckers available under a Creative Commons Attribution-Noncommercial license from www.flickr.com/photos/dougbeckers



"Out of the rubble of a coal economy, an exciting future can be created. All that is needed is political goodwill and commitment to justice."

Introduction

The future of the Hunter Valley is in the balance: decisions made now will determine the viability of the region's communities and environments for many decades to come. The Hunter economy, people and landscape are moving towards a post-coal future. The question is, how well will we manage this change?

Managed poorly — piece by piece and in the interests of mining companies, we risk being left with a degraded landscape, depressed communities, and few opportunities. If managed well, planned structural change offers a tremendous opportunity for the region to become a more vibrant and attractive place to live, with connected communities, a diverse and resilient economy, and a thriving natural environment. To achieve this will take a new approach to planning and development in the region in partnership with local communities. It will require new laws and well-resourced public agencies capable of managing the restoration and ensuring coal companies pay their dues, and clean up after themselves.

The coal industry has dominated the physical, social, and economic landscape of the Hunter for generations, but its reign is coming to an end. While the price of coal continues its ups and downs, in the medium- to long-term the industry faces terminal decline due to global economic and policy influences beyond the control of state and federal governments. The decline of the coal industry will see more than 130,000 hectares of mine-owned land in the Hunter become available in the next two decades for reuse. The restoration of this land could contribute an estimated $200 million to the Hunter economy, create hundreds of new full-time jobs, and position the Hunter as a world leader in regenerative industries.[1] But to unlock the opportunities of the future, we must clean up the legacy of the past.

In its recently released *Hunter Regional Plan 2041* the NSW Government acknowledges that the region's post-mining transition is underway and commits to diversifying its industrial and employment base.[2] The government's laudable objective is to reposition the Hunter to focus on renewable energy and the circular economy, but to achieve this will require a new approach that cannot be accomplished in closed-door meetings with mining companies. Decisions that reshape the future of the Hunter must be made publicly, with community, and in the public interest.

Crucial to success is local empowerment and self-determination. This *Community Blueprint* was designed to bring local voices to the table so that decisions are made with them, not for them. It is about getting the right policy settings to enable new, climate-positive projects and development on post-mining lands — only then can we get moving on proposing what those new projects will be. The *Community Blueprint to Restore the Hunter* is a call to action. Let's get the right structures in place to enable a prosperous, inclusive, and sustainable future for our Valley.

Our process

Earlier and ongoing community engagement found that mine rehabilitation and the future of the Valley are of great concern to local people. For this report we began by analysing over 100 documents from government, academia, and industry about post-mining land use, planning, and related issues. From this a first draft of principles and recommendations for action was created and put to a panel of ecological, social, and technical experts from the University of Newcastle for review and amendment. The Expert Panel was chaired by Emeritus Professor Will Rifkin and included Dr Hedda Askland, Dr Alex Callen, Professor Ravi Naidu, Dr Liam Phelan, Dr Meg Sherval, Dr Caroline Veldhuizen and Professor Sarah Wright. Wanaruah/Wonnorua Elders also advised on the content of this first draft.

The second draft was then reviewed and further amended by Hunter community members through a series of workshops, interviews and an online survey. This was supported through extensive research by Hunter Renewal's research team. The principles and recommendations in this report are the outcome of that phased, collective community-based process.

Our approach demonstrates the value of including a wide range of perspectives in planning for a post-coal future, as well as the importance of ongoing and meaningful community engagement. In all, 130 Hunter residents took part, including eight people who identify as Aboriginal and/or Torres Strait Islander. These residents are land holders, students, business owners, economists, coordinators for Landcare, mine rehabilitation experts, former United Nations

ABOVE: Aerial view of the Wambo open cut coal mine near Singleton. Photo from Lock the Gate Alliance.

officials, Indigenous knowledge holders, renewable energy workers, and biodiversity mapping specialists. Many of these people live in mine-affected areas and approached the review of the principles and recommendations through the lens of lived experience. Their voices are featured throughout this report.

How this report is structured

Principles and recommendations for post-mining land use in the Hunter are presented in this report in five categories: (1) Rehabilitation and Landscape Restoration, (2) Regional Planning and Governance, (3) Community, (4) First Nations, and (5) Climate and Environment. Within these categories, each recommendation represents what is necessary to bring its principle to life, and all recommendations are interdependent. Spread throughout the report are case studies, key statistics, and deeper analysis of key issues to help draw attention to what is at stake, what needs to be done, and how it can be done.

For a summary of all principles and recommendations, please turn to the *The Hunter Restoration Blueprint* in the centre spread, pages 16 and 17.

Community priorities

We asked Hunter residents through our engagement to prioritise the recommendations. Their priorities spanned all of the five categories, and some recommendations were clearly favoured. These were:

- Increase coal mining royalties to support the Hunter's transition and repair the landscape through long-term ecosystem restoration.
- Set stronger legal obligations so that companies cannot leave voids that will become a perpetual hazard to human and environmental health.
- Mandate greater community involvement in post-mining land use planning, and ensure new developments will benefit Hunter communities for the long-term.
- Support the return of mine-owned land to Traditional Owners (especially unmined buffer lands), and engage First Nations people in decision-making for new projects from the outset.
- Create an independent Hunter Rehabilitation and Restoration Commission to plan, coordinate and deliver a restored Hunter Valley.

01 Rehabilitation & Landscape Restoration

PRINCIPLE

Mine-owned lands will be restored to support biodiversity and regenerative industries

In the next 20 years over 130,000 hectares of mine-owned land in the Hunter will become available for new uses as 17 mines close.[3] That includes over 50,000 hectares of buffer-lands and more than 25 massive final voids cratered across the Valley.[4] Mines are obliged to rehabilitate towards the 'final landform' approved in their development consents.[5] NSW law, however, currently lacks any cohesive framework for the managed closure of a mine at the end of its life; nor for the restoration of the land and its release for new purposes. This means we are failing to meet international standards and even our own government (and industry) leading practice guidelines.[6] The NSW Resource Regulator is responsible for certifying that rehabilitation has been completed, yet only a very small proportion of land has been signed off. Some speculate this may indicate a reluctance to take on the financial liabilities that would put the government's credit rating at risk.[7]

The Hunter's lack of a proper legal framework for mine closure and slow progress on rehabilitation is a serious and urgent problem: vast swathes of the Valley landscape will need to be rehabilitated and restored in the coming years. We need robust laws to make sure this happens, and to ensure that Hunter communities and NSW taxpayers are not left responsible for the clean up after the industry disappears.

Strong, effectively enforced rehabilitation rules will not only curtail the impacts of mining but create new opportunities for economic development and wildlife conservation on restored lands. Increasing the level of rehabilitation and active land management and extending this to buffer lands could deliver 670 full time jobs to the Hunter. If renewable energy precincts are added to the scenario then the jobs figure would increase to 13,600 with a $3.7 billion boost to the local economy in the next two decades.[8]

RECOMMENDATIONS

A – Set legal obligations to prevent mine operators from leaving final voids that will become perpetual hazards to human and environmental health

Over 25 final voids have been approved to be left across the Hunter.[9] We estimate these unfilled mining holes will have a combined surface area the size of Sydney Harbour, but will be much, much deeper. Modelling predicts that each void will take hundreds, even thousands of years to reach hydrological equilibrium, with each destined to become a contaminated super-saline lake.[10]

Some suggest that these sites might become nice recreational water parks, or dirt bike tracks, or renewable energy stations, but experts and local authorities warn that the Hunter's voids will become perpetual hazards to human and environmental health, needing active management long after the mining companies have gone.[11] As Muswellbrook Council has said "Voids are not a naturally occurring element in the landscape, so planning to retain a void is planning to create an irreversible and permanent negative change to the environment."[12]

We cannot afford to entertain magical thinking about the risks posed by the Hunter's mining voids. It may not be feasible to fill every void, but nor is it fair or acceptable to let mining companies leave a landscape-scale toxic burden for Hunter residents to carry in perpetuity. The NSW Government has no plan to avoid this outcome, and it urgently needs to make one. This plan needs to be driven by research and enforced by law.

B – Increase and enforce penalties for failure to meet progressive rehabilitation commitments

Rehabilitation laws are only as good as their enforcement. The maximum fine a NSW mining company could face for breaching rehabilitation laws is now $1.1 million.[13] It must be questioned whether the penalties are adequate given that profits gained during the life of a mine (typically 15-30 years) far outweigh the maximum penalty that can be imposed.

In a 'Compliance Blitz' undertaken in June 2019 the NSW Resources Regulator found that four large mining operations in the Hunter were in breach of their rehabilitation obligations.[14] The mines were not charged or fined. In fact, no single Hunter Valley mine has ever been convicted and fined for a rehabilitation offence.[15] Where mines elsewhere in the state have been, the fine has been a fraction of the maximum penalty. This is because the NSW Government policy is to issue orders to the company requiring it to fix the problem rather than impose fines.[16]

The new progressive rehabilitation laws that came into force in 2022 are an improvement on the old regime, but the efficacy of the laws depends on the goodwill and honesty of mining companies. Mines set their own rehabilitation targets, audit their own progress towards achieving those targets, and are expected to self-report any non-compliances to the regulator.[17] For example, the legislation requires mines to rehabilitate disturbed land "as soon as practicable", but what that means in practice is largely left for the mining company to determine.[18]

To give Hunter residents more confidence that mines are complying with rehabilitation laws, the penalties for failure must be substantially hiked, and assiduously enforced. Otherwise the financial risk attached to breaching rehabilitation laws is lower than the costs of complying.

C – Establish an independent Centre of Excellence in the Upper Hunter to research, develop, and demonstrate best practice standards for mine rehabilitation

The state of NSW has a critical knowledge and skills gap in mine rehabilitation that urgently needs bridging.[19] The responsible closure, rehabilitation, and relinquishment of a single mine is a complex undertaking that has never been done here before. In the next 20 years it will need to be done on a landscape scale, but even the experts admit that there is "currently a lack of knowledge and adequate research about the likely success of ecological mine rehabilitation" for even a single Hunter mine.[20] This is a big problem, but it can be turned into a big opportunity.

The Hunter Valley is ideally placed to become a global leader in post-mining landscape restoration: solving an urgent global challenge while establishing a valuable new industry with exportable skills in the region. The NSW Government recognises that opportunities for regional development are unlocked when industry, government, and universities partner to solve regional problems and become "leaders in niche fields".[21] A Centre of Excellence could make this happen in the Hunter, driving targeted research and development into the land restoration methods that work best, and training a workforce to do the job. The Centre might utilise former mine site infrastructure that would otherwise be decommissioned, or could be based at the currently underused Muswellbrook campus of the University of Newcastle, which is already a research leader in contaminated land remediation.[22] If done well, a program like this could provide new opportunities for local people to be trained and employed in regenerative industries.

Continues over

Case studies

Germany's Ruhr Valley illustrates the transformative potential of long-term government planning and investment in the successful restoration and transition of a mining region. The federal government oversaw a $20 billion program to clean up an archipelago of abandoned mine sites while employing tens of thousands of former miners in the process.[23] This was implemented through legislation under the *Structural Strengthening Act for Coal Regions* in 2020.

The Huntley and Willowdale bauxite mines in southwest WA show what can be accomplished when mine closure is integrated into life-of-mine management. By early allocation of enough human and financial resources, these mines have been able to reestablish the full diversity of plant species that previously occupied mined areas.[24]

In contrast, the Rum Jungle uranium mine in the Northern Territory shows that when mine closure is not well planned or regulated, the consequences can linger for decades and cost taxpayers billions. The mine closed in 1971, and since then governments have had to continually fork out large sums of public money attempting to remediate the site. More than 50 years after the mine closed, it is still harming the environment, and still costing taxpayers money.[25]

D — Increase security bonds to cover the true cost of rehabilitating each mine

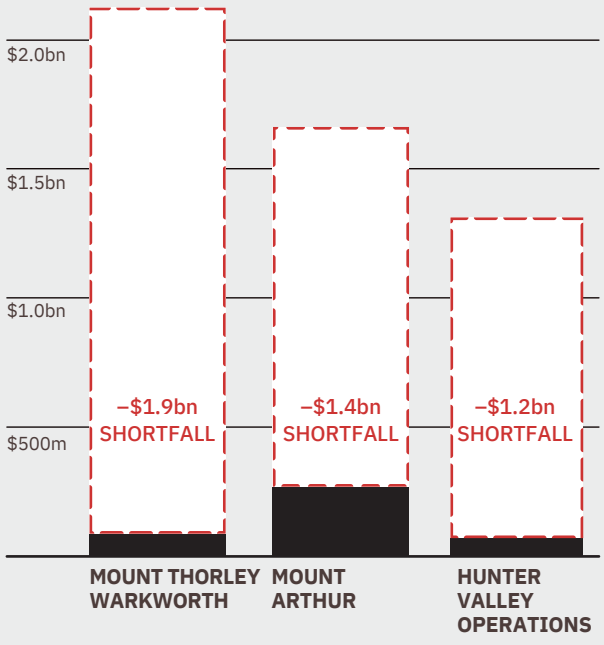
The rehabilitation security bond system, established by the *NSW Mining Act*, is supposed to ensure that mines' rehabilitation obligations will be fulfilled at the mining company's expense, even if it goes bust.[26] While the *Act* doesn't require it, government policy states that the value of the deposit must equal the estimated full cost of rehabilitation.[27] That's a good policy that should be a law, but either way it only works if the costs are accurately estimated and there's enough money secured to pay for the work that needs doing.

The Resources Regulator has overseen a significant hike in security bonds over recent years, after recognising the kitty was deficient. This is a welcome change, but the bonds are still too low in value and the system is too reliant on estimates provided by mining companies, as confirmed in a 2017 assessment by the NSW Audit Office and more recently by the Australia Institute.[28] This makes it clear that the *Mining Act* should be amended to provide a strict requirement that security bonds account for the full potential costs of rehabilitation and ongoing management.

The bond system needs to be overhauled to make sure that mining companies foot their own clean-up bills. Cost estimates must be made by independent experts, and be designed to ensure the full risk of unforeseen costs is borne by the mining company.

SECURITY BOND SHORTFALL: TOP THREE

Bonds currently secured by the government (black shading) are dwarfed by both estimated shortfalls (white outlined with dashed red lines) and required totals (whole columns).
Figures: NSW Resources Regulator[29] and The Australia Institute.[30]



WHAT THE COMMUNITY SAYS

"There needs to be regular reviews of the consent conditions that bring rehabilitation practices up to the current standards as the mines age. They can't rest on an approval that's ancient."

"The land has been completely stripped of its beauty and needs to be restored for the people and the environment, for the good of our flora and fauna, making our land safe, healthy, and beautiful again."

"$1.1 million is like a drop in the bucket to the bigger mines, so make it something that's gonna worry them if they breach anything. $1.1 million is only half a train load of coal isn't it?"

"We need a research centre to develop standard practices, and we need it to be in the centre of the mines. What's the point of having it elsewhere?"

"Mining companies have frequently walked away from repairing the damage that they cause."

"Mining companies shouldn't be allowed to have a free pass at everything, and get as much funding via subsidies as they do from the government."

A closer look at security bonds and royalties

Security deposits

The NSW Government determines how much it will cost to rehabilitate each mine based on estimates provided by coal companies. These estimates are based on figures submitted by the mining companies using a tool provided by the NSW Resources Regulator. Companies lodge a security deposit (in practice, a bank guarantee)[31] for the agreed amount which is used to pay for rehabilitation if the mining company defaults. Companies can apply for a part refund of their deposit if they complete rehabilitation in a section of their mine. Once they demonstrate rehabilitation has achieved the approved final landform to the satisfaction of the Regulator, the full security deposit will be returned.

The shortfall in rehabilitation security bonds for Hunter mines, and therefore the value of risk shouldered by the public instead of the mining companies, could be as high as $22 billion.[32] The graph on page 10 shows the mines with the three largest shortfalls in security deposits, the largest being $1.9 billion dollars.

In 2017 the NSW Auditor-General recommended security bonds be increased by 25-50 per cent to cover the estimated costs of unforeseen problems.[33] These unforeseen costs are likely to be significant given the unprecedented scale of the rehabilitation challenge in the Hunter, and one thing is certain: the existing scheme is inadequate, and the people of NSW are carrying the risk. That isn't fair or acceptable. Additionally, there are concerns that mines may sell their leases to smaller companies who cannot cover the true cost of rehabilitation.[34] In this case there is significant risk that the financial liability is transferred to the public.

Other Australian states have introduced systems to ensure mining companies finance the risk of long-term unforeseen problems on mine sites after the company has moved on. Whether they have been successful is debatable. The Queensland Government now requires companies to assess the potential cost of 'residual risks' after mine closure, and pay that cost before it is released from its obligations.[35] In Western Australia and South Australia mining companies must pay a non-recoverable annual levy into a common rehabilitation fund.[36] [37] Whilst the Western Australian fund is designed to gradually accumulate, it may take some time to cover estimated rehabilitation costs, and it has failed to encourage operators to undertake progressive rehabilitation.[38] However it is done, the NSW Government needs to ensure that mining companies finance the risk of problems on relinquished mine sites, not the public.

Mining royalties

When it's still in the ground, NSW coal is owned by the people of NSW. Royalties are the price at which we sell our coal to mining companies. Once mines are approved they pay comparatively low royalty rates for the privilege of recovering a valuable public resource. Mining royalties are calculated as a percentage of the market value of the coal, and the NSW rate is very low by international standards, and is a flat rate. This allows mining companies to collect the lion's share of profits when prices are high, leaving the people of NSW with the scraps.

As of last year, the Hunter receives a share of $25 million in annual royalties money provided under the Royalties for Rejuvenation scheme — a fund shared between four coal regions in NSW to start diversifying their economies. That's a fraction of the money necessary to fund a successful post-mining transition. The system needs redesigning to prevent coal companies enjoying windfall profits at the expense of the public. Queensland has done this with a tiered system of royalty rates as high as 40 per cent when coal prices average more than $300 a tonne, such as in 2021-22 when metallurgical coal was priced at $900 a tonne.[39] This reform is expected to bring in additional public revenue to Queensland of around $1.2 billion in the four years to July 2026.[40]

Coal royalties currently make up less than two per cent of NSW budget revenue — less than vehicle registration and taxes,[41] but it could be much higher if the public share of profits from coal were increased. Analysts have estimated, for example, that if NSW were to use Queensland's top rate of 40 per cent, NSW could have recouped an extra $23 billion in royalties last financial year.[42]

02 Regional Planning & Governance

PRINCIPLE

Planning and policy mechanisms will be coordinated to achieve landscape restoration and a just transition for Hunter communities

Mining companies in the Hunter have had a pretty easy run of it. Their mining proposals have been consistently approved by the state government despite often harmful impacts on local people and wildlife, and even entire villages and towns. Moreover, when planning laws have frustrated a project, the laws have been changed.[43] For example, when a mine is deemed a State Significant Development and approved, it is subject to planning conditions that extinguish the public's right to appeal the decision in the Land and Environment Court.[44]

This one-sided affair continues through to the governance and regulation of closure and post-mining land use, which does not adequately consider health, Indigenous affairs, labour and employment, environment, social welfare, planning, and regional infrastructure components — leaving communities vulnerable with limited resources to manage the aftermath.[45] All this must change if the Hunter's transition is to be successfully planned and executed for the benefit of the region. Managing the transition is a vast, complex, long-term challenge that can't be accomplished under current legislation. We need new laws, policies and funding streams that equip our public institutions for the challenge in front of us, and a more holistic way of looking at mine closure.

RECOMMENDATIONS

A – Increase coal mining royalties to fund the Hunter's transition and repair the landscape through long-term ecosystem restoration

Mining companies expect to pay royalties and the Australian government needs to ensure that our mining regions and the country as a whole are being fairly compensated. Governments must avoid wasted opportunities to increase much needed revenue from well-known, long-term sources. In NSW the royalty rate is just 8.2 per cent of the resale value for open-cut mined coal, and 7.2 per cent for underground.[46] That's a flat rate, and it's way too low. By contrast, Queensland has a tiered system to ensure the public gets a share of the profits when coal prices are high, without threatening the viability of mines when prices are low. In Norway, oil companies pay a 78 per cent income tax for the privilege of collecting and on-selling a valuable public resource.[47] In NSW we've been practically giving ours away, and now is the time to stop being so generous.

The Hunter's successful restoration and transition is a complex and long-term public project that needs significant funding to succeed, and it's only fair that mining companies foot the bill. Royalties must be substantially hiked to pay for the region's transition. In 2022 coal companies made record profits. Glencore, for example, more than doubled its profits to $18.9 billion in the first half of 2022.[48] By lifting royalty rates across the board, and especially when coal prices are high, the NSW Government can raise the billions that are needed to ensure the Hunter's restoration and transition is well-executed.

B – Create an independent Hunter Rehabilitation and Restoration Commission to develop a landscape vision for the region, coordinate restoration, and enforce best practice standards for mine rehabilitation and closure

It's widely accepted that the closure of large mines must be coordinated for years in advance to secure environmental, social, and economic benefits.[49] This uncontroversial principle is shared even by the NSW mining lobby.[50] The problem is that frameworks for closure in NSW are only for single mines, not an entire mining region. As 17 mines close down in the next two decades, closure must be coordinated to achieve the best results for the people of the Hunter. The direct impacts of Hunter mining occur on a regional scale,

and the Valley's restoration needs to be coordinated to a regional plan.

The NSW Government has been advised that its public servants and the mining industry lack the knowledge and coordination necessary to manage the Hunter's transition to post-mining land uses, and that the government should consider creating a public authority to oversee mine rehabilitation.[51] Vesting power in a public authority to coordinate mine closure and relinquishment and ensuring it is done to the highest standard is a practical and effective approach that has been adopted elsewhere, such as in Victoria's Latrobe Valley. It should be adopted here in the Hunter close to the mines, and could work alongside the proposed Hunter Valley Transition Authority.[52]

A Hunter Rehabilitation and Restoration Commission must be independent of politics and assured of the resources and powers it needs to do its job — this needs to be guaranteed by statute. When mine rehabilitation and closure is badly managed it costs more money and fails to achieve positive outcomes.[53] Successful mine closure requires a long-term commitment of financial and human resources far greater than has yet occurred for any mine in Australia.[54] This is too important to be left to chance.

C – Use disturbed land closest to infrastructure for new industry to limit additional impacts on communities and the environment

The NSW Government is negotiating with Hunter mines about future industrial uses for their sites, including non-mining buffer lands.[55] It is also looking at changing planning laws and regulations to facilitate new developments on mine-owned land.[56] Mining companies and other stakeholders have told the government that buffer lands might be easier and preferred locations for new development rather than mined land because of current lease restrictions.[57] If allowed, this will reduce the ability to restore biodiversity across the region. We cannot allow the Hunter's post-mining transition to be planned by the mining industry, in its own interests, behind closed doors. We need a public plan, informed by clear policy principles that limit the negative impacts of new developments on people and the environment.

A simple and effective first step is to ensure that all new developments are limited to previously-disturbed areas. Heavily impacted land on mining titles could be used for strategically located clean industrial development, for example, the Renewable Energy Precincts that were modelled by consultancy Ernst & Young for post-mining land use development.[58]

WHAT THE COMMUNITY SAYS

"The Rehabilitation Commission is a great idea to make an umbrella of coherent rehabilitation principles that all efforts can be evaluated against. The region needs more clear and specific long-term goals, and it would be great to have a planning body that organises and publicises these goals."

"We shouldn't underestimate the size of the task and true cost and effort of rehabilitation of multiple large mines over decades. This is an opportunity to repurpose the land and the physical and social infrastructure."

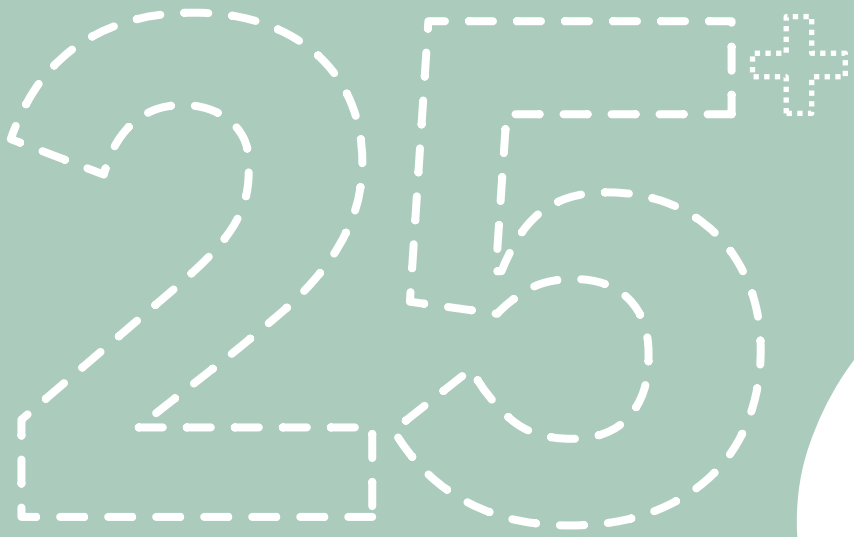
Case studies

In the 1980s, Germany's Ruhr Valley was economically depressed and heavily polluted following the downturn of the region's coal and steel industries. Under the direction of regional planning authorities, which worked closely with research bodies and local communities, the region was successfully transformed into a national centre of environmental industries, research, and development. The redevelopment project included reskilling the industrial workforce for employment on the large-scale ecological restoration of the Emscher River.[59]

In 2020 the Victorian Government established the Mined Land Rehabilitation Authority and tasked it with coordinating and implementing a regional rehabilitation strategy for the Latrobe Valley. The authority is empowered to acquire land; to audit public agencies and mining companies to ensure they are complying with the rehabilitation strategy; and to charge mining companies for the costs of cleaning up their sites. It is required to do its work transparently in consultation with local communities, and can recommend changes to laws and regulations.[60]

The Western Australian Government has committed over half a billion dollars to a just transition plan for the Collie region, which is undergoing a managed phase-out of its black coal industry. The money will be used to attract new jobs and industries to the region, as well employing local people in the clean-up and decommissioning of the town's power stations.[61]

The numbers



Number of approved voids to be left (roughly the area of Sydney Harbour).[62]

Percentage of Valley floor between Broke and Muswellbrook covered by mining leases. This is equal to 1,280 square kilometres.[63]

64%

$3.3 billion

Amount of money currently held in security bonds by the NSW Government.[64]

Shortfall between currently held security bonds and estimated actual cost of rehabilitation, including voids.[65]

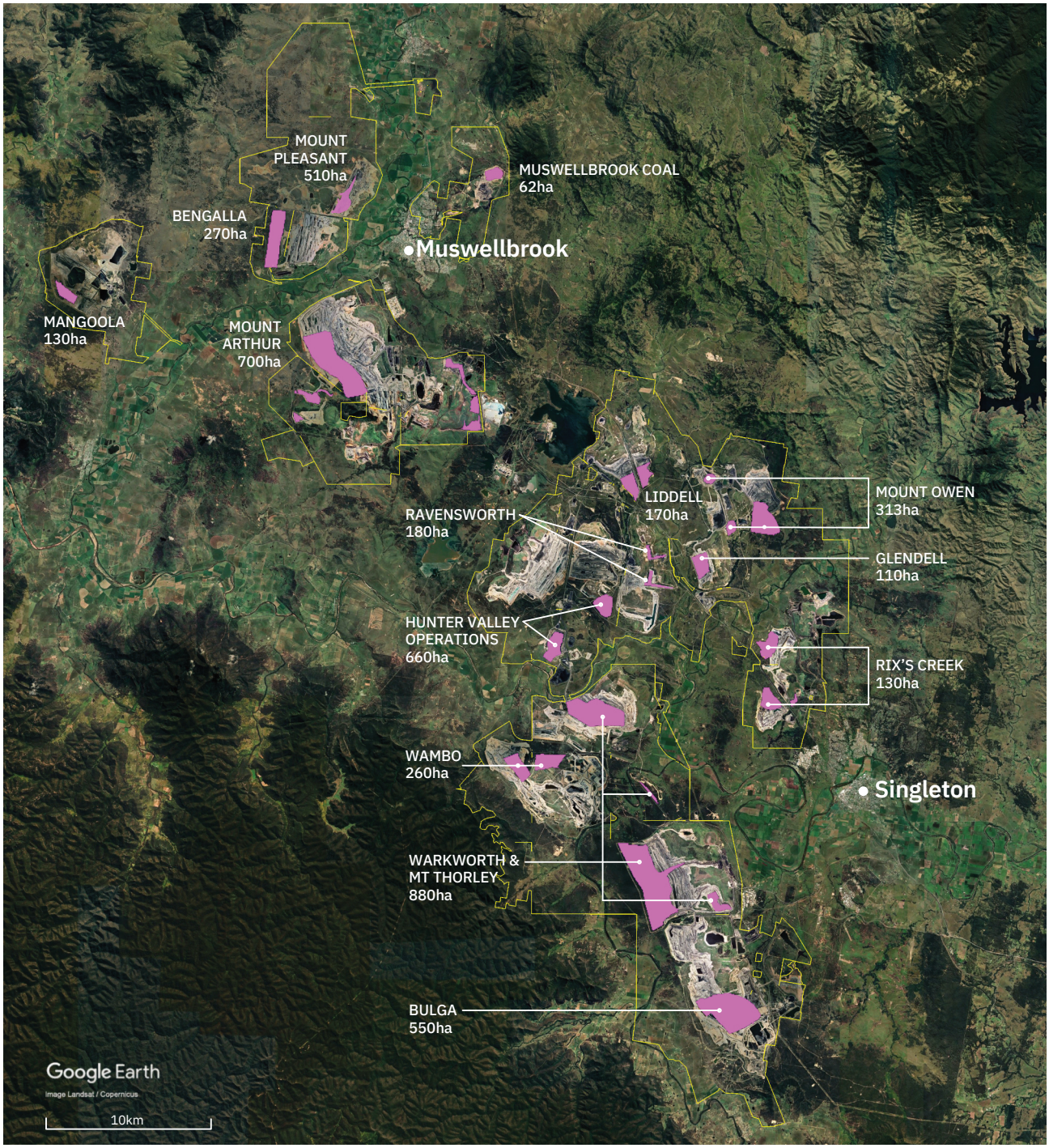
$22 billion

88.5+ billion litres

Estimate of annual water consumed by Hunter Valley coal mines.[66]

Sources for these figures are listed at the back of this report.

Hunter coal mines and final voids



This map indicates the final voids that have been approved to be left by the NSW Government (solid purple shapes). It also shows the mine leases/titles (yellow outlines).

This map was created by Lock the Gate Alliance in 2022 using Geographic Information System (GIS) mapping from data available at the time. The background satellite image is from 2020. There have been some changes to the mines since this time.

SOURCES: Void estimates in hectares all from Walters (2016)[67] excepting Wambo (Deloitte, 2020),[68] and Mount Pleasant (NSW Government, 2015).[69] Background map via Google Earth created 20/12/2022. Camera 114km 32°31'09"S 151°01'56"E.

The Hunter Restoration Blueprint

This Blueprint sets out principles and recommendations for policy and planning related to post-mining lands. These steps will provide a more stable foundation for the Hunter Valley's transformative next phase.

01

Rehabilitation & Landscape Restoration

Mine-owned lands will be restored to support biodiversity and regenerative industries

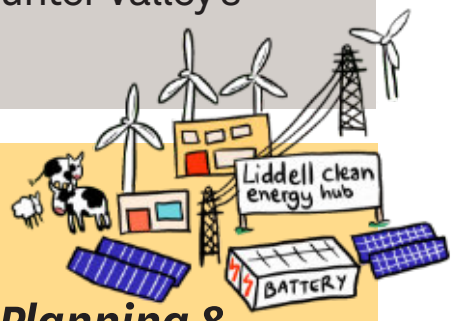
A. Set legal obligations to prevent mine operators from leaving final voids that will become perpetual hazards to human and environmental health

B. Increase and enforce penalties for failure to meet progressive rehabilitation commitments

C. Establish an independent Centre of Excellence in the Upper Hunter to research, develop, and demonstrate best practice standards for mine rehabilitation

D. Increase security bonds to cover the true cost of rehabilitating each mine

02



Regional Planning & Governance

Planning and policy mechanisms will be coordinated to achieve landscape restoration and a just transition for Hunter communities

A. Increase coal mining royalties to fund the Hunter's transition and repair the landscape through long-term ecosystem restoration

B. Create an independent Hunter Rehabilitation and Restoration Commission to develop a landscape vision for the region, coordinate restoration, and enforce best practice standards for mine rehabilitation and closure

C. Use disturbed land closest to infrastructure for new industry to limit additional impacts on communities and the environment

03

Community

The needs, expectations, and values of Hunter communities will be at the centre of post-mining land use planning

A. Mandate greater community involvement in post-mining land use planning

B. Ensure new developments benefit Hunter communities for the long-term through prioritisation of local jobs and mechanisms such as community ownership and profit sharing schemes

C. Create a public information hub showing maps and details of current rehabilitation plans and progress, closure plans, and post-mine development proposals

D. Increase funding to TAFE for new courses that train local people for jobs in regenerative industries

04

First Nations

Traditional owner responsibilities to Country and Indigenous knowledge will play a greater role in restoration of mining land and future land use planning

A. Support the return of mine-owned land, especially unmined buffer lands, where sought by Traditional Owners

B. Engage Traditional Owners in decision-making and planning for new projects on mining lands, from the outset

C. Prioritise employment for local Indigenous people in land use restoration and rehabilitation projects

05

Climate & Environment

Restoration and reuse of mining lands will be consistent with achieving a safe and stable climate

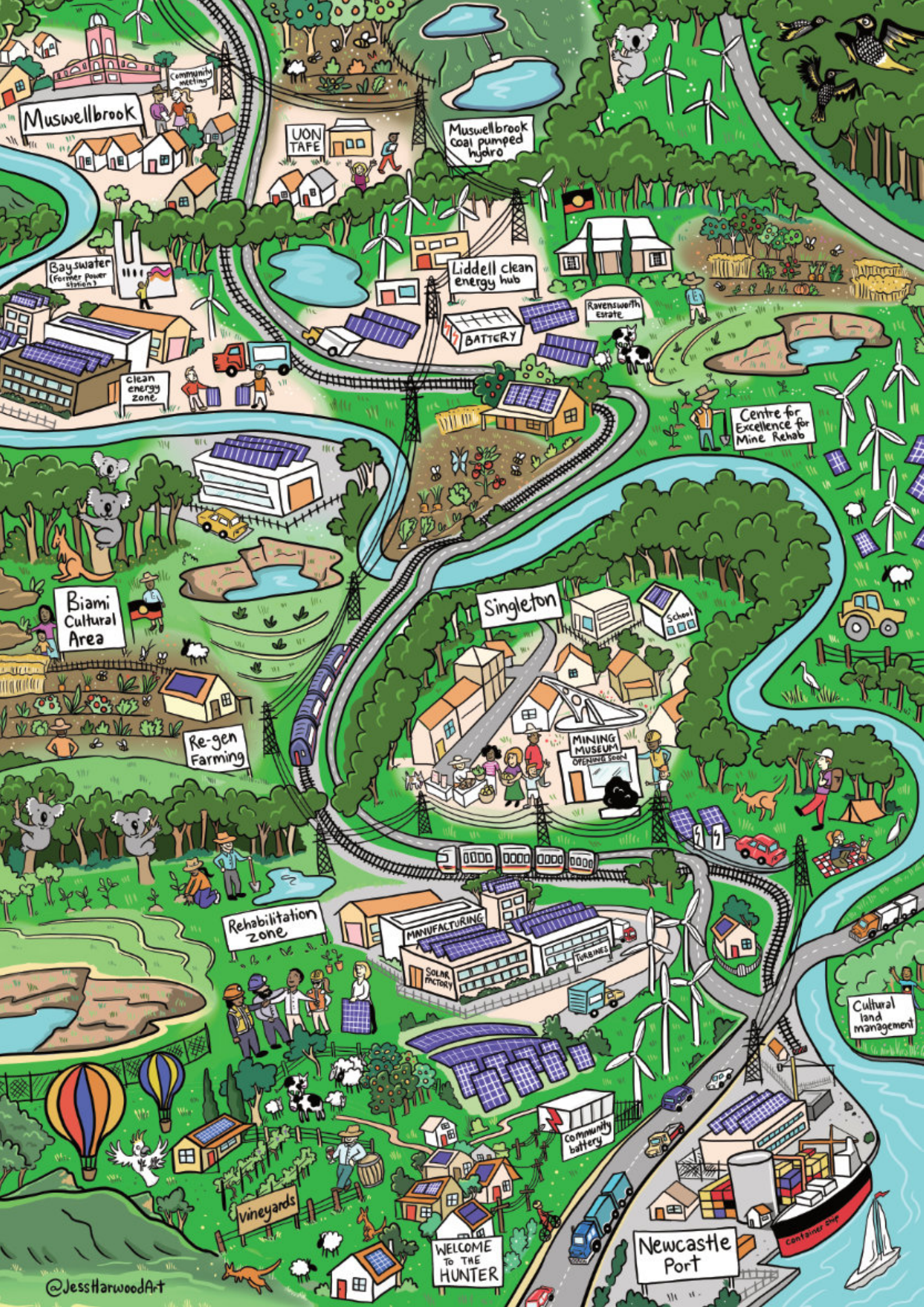
A. Set caps on carbon emissions and water use on all current mining activities and future developments on mining lands

B. Establish a region-wide biodiversity corridor system that includes rehabilitated mined lands and restored buffer lands

C. Prioritise the restoration of waterway ecosystems on post-mining land

About this Blueprint

These recommendations have been formed through community engagement and expert consultation coordinated by the Hunter Renewal Project.


Muswellbrook
Community meeting
UON TAFE
Muswellbrook coal pumped hydro
Bayswater (Former power station)
clean energy zone
Liddell clean energy hub
BATTERY
Ravensworth estate
Centre for Excellence for Mine Rehab
Biami Cultural Area
Re-gen Farming
Singleton
School
MINING MUSEUM
OPENING SOON
Rehabilitation zone
MANUFACTURING
SOLAR FACTORY
TURBINES
Cultural land management
community battery
Vineyards
WELCOME TO THE HUNTER
Container Ship
Newcastle Port
@JessHarwoodArt

03 Community

PRINCIPLE

The needs, values, and expectations of Hunter communities will be at the centre of post-mining land use planning

The communities of the Hunter have the most at stake in the restoration of the region's landscape and the transition of its economy. If the transition is to be managed fairly and its opportunities fully realised, Hunter communities will need to be effectively involved at every step of the way. Up until now, the model of planning and development applied in the Hunter has prioritised commercial interests at the expense of the needs and aspirations of local communities.[70] The post-mining transition is the Hunter's opportunity for a fresh approach — a new model of planning and development that gives local people real power in shaping the region's future.

RECOMMENDATIONS

A – Mandate greater community involvement in post-mining land use planning

The entire Hunter region is about to experience an enormous transformation. The people that will be most affected will be the populations of large towns like Muswellbrook and Singleton where almost everyone is linked in some way to the coal industry. The problem is there is no legal framework to ensure these communities are meaningfully involved in planning the closure of mines and post-mining developments. That needs to change.

Governments and mining companies around the world acknowledge that successful mine closure and relinquishment requires that affected communities and stakeholders are meaningfully involved in every stage of planning and implementation.[71] Indeed, the international standard for mine closure requires that affected stakeholders are involved in planning for post-mining transition over the whole life of a mine.[72] Our governments are failing to provide for the community's right to take part in decisions that affect them. A 2022 assessment by the Environmental Defender's Office for the Wilderness Society found that the government tends to make planning decisions in favour of proponents of large-scale developments.[73] They assessed that the community's right to be meaningfully involved in decision-making, and their right to challenge planning decisions are woefully inadequate.

Early, meaningful, and continual public engagement must be central to the transition so that local people have real power to affect outcomes.[74] Using local knowledge about local issues makes for successful development projects.[75] When expert knowledge is augmented by local knowledge, the evidence for decisions is richer and choices become less risky. In the past, development in the Hunter has been planned behind closed doors, and communities only 'consulted' on decisions that have already been made. The post-mining transition is the chance to turn this around, with new planning laws that put communities first.

B – Ensure new developments benefit Hunter communities for the long-term through prioritisation of local jobs and mechanisms such as community ownership and profit sharing schemes

For too long the Hunter has been viewed as a cash cow: a resource from which to extract wealth. This model of development has been to the great detriment of Hunter communities and their environments. It has left them dependent on an industry that benefits some more than others. Muswellbrook's unemployment, for example, is more than twice the state average,[76] indicating that mining is not benefiting everyone equally. Economic development does not need to come with such social and environmental costs. With a new model of planning, the Hunter could turn these costs into benefits, while bringing money and new jobs to the region and keeping them here.

To its credit, the NSW Government has made steps toward the development of a 'social enterprise' strategy for the region.[77] Such enterprises are

LEFT: Artist's impression of a renewed Hunter Valley. By Jess Harwood.

business models that prioritise social needs and environmental restoration over financial profits. They do not run at a loss — in fact they often outperform purely commercial enterprises — but profits are not the objective, and any surplus is reinvested in line with social and environmental goals. Social enterprises return profit to the public purse and have been shown to be a "cost-effective way for governments to co-invest in community-led social change and economic transition, with [a] return [on] investment". [78]

A social enterprise strategy is just one way to ensure that the Hunter's economic transition is used to solve social and environmental problems. Planners need to work with people in the region to develop the mechanisms that will meet local needs and desires. Strategies that have been proposed or adopted elsewhere range from simple adjustments like mandating local employment,[79] requiring developers to fund public infrastructure projects,[80] to more root-and-branch reforms such as community ownership of infrastructure and developments.[81] All options that benefit the community should be on the table.

C – Create a public information hub showing maps and details of current rehabilitation plans and progress, closure plans, and post-mine development proposals

To enable the public to have meaningful involvement in the Hunter's transition, information needs to be not only available but accessible. The current system benefits those who can navigate its complexity or pay for assistance. Open and transparent access will level the playing field.

People need to know how to access plans and proposals, be able to understand them, and know how to get involved in the planning process. Information must be available in a variety of formats to suit people with different needs, and must be updated regularly. Due to the sheer number of anticipated projects for Hunter mine closure and rehabilitation, land restoration, and post-mining development, these plans need to be collated and accessible from a single, user-friendly hub.

By maintaining a public register of these proposals, we can ensure that knowledge gained during one mine closure can be available for other projects. This will foster a collaborative approach to post-mining land use that has the support and involvement of local communities.

D – Increase funding to TAFE for new courses that train local people for jobs in regenerative industries

Although there has been a recent funding increase for the vocational education sector at the federal level,[82] the foremost skills and training institution of NSW, TAFE, has been starved of resources for decades.[83] Funding cuts have seen courses scrapped, teacher hours increased, and opportunities for new students reduced.[84] The TAFE system needs to be rescued to give workers in the Hunter the opportunity to springboard into new industries with long-term prospects.

The NSW Government knows that diversifying the Hunter economy means reskilling the region's workforce.[85] Hunter workers want these skills: they have asked for new TAFE campuses and a course program that equips local people with the industrial skills for the twenty-first century.[86] The landscape restoration and renewable energy industries are desperate for new workers.[87] There are many exciting new careers to be made as the Hunter transitions, but only if the right skills and training infrastructure is in place. The NSW Government needs to commit to revitalising the TAFE system to train the Hunter's transition workforce.

WHAT THE COMMUNITY SAYS

"The mines have privatised all the profits and socialised all the costs, and then they also want to decide what to do with the land afterwards. As a community we have to say, 'NO! We want to be involved from the beginning as equals.'"

"Information is important at this stage to educate us on a forward plan. We've had enough backward looking and we just need to have some sort of an idea on what we should expect from them."

"The most important thing to consider is engagement, particularly if it can be a different method of engagement: getting the real views of people and being collated in a way that might have some impact on the longer term future".

Bringing community into planning for the future

Whilst the NSW Government believes in principle that the community has a right to participate in planning decisions, there is little in the way of legislated conditions for how participation should proceed,[88] and successive legislative changes have actually reduced the public's ability to play a meaningful role in environmental decision-making.[89] Amendments made in 2019 to the *NSW Environmental Planning and Assessment Act 1979* were designed to increase community participation,[90] yet these include more non-binding principles than mandatory requirements. One of the few mandatory requirements is that development proposals must be exhibited for 28 days at a minimum with proponents then required to specify how community views were taken into account when amending their applications. Giving the public just 28 days to respond to complex development proposals seems hardly reasonable, particularly when the proponents have often had years to prepare their proposals.

Whilst not a comprehensive reform strategy, some have suggested that legislative instruments need to contain clearer identification of how community input should be used in decision-making, and that independent bodies are used to review procedural implementation of participation, evaluate progress, and make recommendations for improvement.[91] The Wilderness Society, for example, has recently called for the rights of the community to participate in environmental decision-making to be enshrined in law.[92] They, along with others,[93] recommend that the right for the community to say no to a project be legislated. This would go some way to ensure that the community feels they have some agency in shaping their worlds.

Social impact assessments

During the mining boom, projects were developed and approved with no formal regulatory framework or guideline for how to assess and evaluate social impacts. This had devastating effects on communities across the Hunter, with severe impacts on both individual livelihoods and community bonds. In 2017, the NSW Government released the *Social Impact Assessment Guideline for State Significant Mining, Petroleum Production and Extractive Industry Development*, updated in 2021 to cover all State significant projects.[94] Now when projects are being assessed for development, proponents must create a Social Impact Assessment (SIA) as part of the Environmental Impact Statement.

The SIA aims to place people at the centre of assessment, considering various social elements of value to people, including way of life, community, accessibility, culture, health and wellbeing, surroundings, livelihoods, and decision-making systems. This standardised approach seeks to build better relationships between proponents and community and reduce risks through early and open engagement.

Whilst the *Guideline* has offered proponents, communities and practitioners an important framework to ensure social impacts are identified, evaluated, and responded to in a comprehensive and rigorous manner, the process of SIA remains flawed and the question of mine closure and legacy is dealt with lightly from a social impact perspective. Employment and economic growth have been highlighted as social benefits that have outweighed other social components central to people's way of life.

There are gaps in the *Guideline* itself with, for example, climate change and human rights excluded as priority items for assessment. The SIA process itself is framed around a presumption of approval for individual projects, and the ongoing and cumulative impact of coal mining is often missed. Moreover, the Department remains vastly under-resourced in relation to social impact assessment, meaning that, when undergoing departmental review, SIAs are very rarely subject to the holistic and cross-sectional social scientific evaluation that best practice calls for. The *Guideline* thus fails to recognise the significant temporal impacts of mining that go hand-in-hand with the material implications and impact on environment, surroundings and sense of place.

04 First Nations

PRINCIPLE

Traditional Owner responsibilities to Country and Indigenous knowledge will play a greater role in restoration of mining land and future land use planning

The Wanaruah/Wonnorua people have sustainably managed Hunter Valley ecosystems for countless generations, but since colonisation First Nations people have been locked out of the management and development of the region. The consequences have been devastating for the landscape and the livelihoods of Traditional Owners.

Targets set as part of the *National Agreement on Closing the Gap* aim to reduce systemic inequality for Aboriginal and Torres Strait Islander people in areas such as employment, housing, education and health.[95] Whilst there have been some small improvements to these indicators, there is still much work to do. In the Muswellbrook Local Government Area for example, the median income of Aboriginal adults during the last Census period was 22% less than that of all other adults in the area.[96] Whilst this has risen since the last Census, Aboriginal people are still less likely to be in management positions than non-Aboriginal people meaning access to decision-making arenas is restricted.

The Hunter's transition from coal is an opportunity to make amends for the harm done to the land and its people. It's time for a new model that centres First Nations peoples' knowledge and aspirations in the planning and management of the Hunter landscape.

Case studies

The closure of the Argyle diamond mine in Western Australia demonstrates the benefits that can flow to Aboriginal and/or Torres Strait Islander people when mining companies work closely with First Nations groups in the planning and management of mine closure and land restoration. The Gelganyem Trust was a lead actor in all stages of planning, closure, and rehabilitation, and the project provided employment and transferable skills to First Nations people while allowing them to work on Country and care for it.[97]

Yanama Budyari Gumada Collective is a collaboration between Darug custodians, NSW National Parks and Wildlife Service as well as Macquarie and Newcastle universities. Together they are bringing together different knowledge systems aimed at healing the land and revitalising environmental stewardship processes.[98] The rejuvenation work is focused on the Yellomundee Regional Park in the Blue Mountains using cultural burns and Darug-led culture camps. Children are involved in the process as a means of transferring knowledge. The project won a 2020 National Trust Heritage Award.

RECOMMENDATIONS

A – Support the return of mine-owned land, especially unmined buffer lands, where sought by Traditional Owners

The closure of mines in the Hunter provides the opportunity for the state government to make good on its commitment to facilitate the return of ownership of land to First Nations groups.[99] Returning some mine-owned land, especially unmined buffer land, to First Nations ownership would deliver real and continuing benefits to Wanaruah/Wonnorua people and contribute to the surviving and thriving of Indigenous cultures.

Returning land would require changes to legislation as at present there are no requirements to include Indigenous people in end-of-mine planning or post-mining land use decision-making.[100] Timely processing of land claims would also assist First Nations groups to benefit economically and culturally from any mine-owned lands that are relinquished to the Crown.[101]

B – Engage Traditional Owners in decision-making and planning for new projects on mining lands, from the outset

Tokenistic 'consultation' with First Nations groups does not lead to good outcomes for Aboriginal and/or Torres Strait Islander people or their cultures, as the

recent history of mining development in the Hunter Valley has shown.[102] The region's transition from mining must mark the beginning of a new approach to planning and development built on genuine collaboration with First Nations groups.

All new developments in the region should have the free, prior, and informed consent of First Nations groups, which is a far more meaningful and continuous process than mere 'consultation'. The importance of these principles is widely acknowledged,[103] and the Hunter's transition is the time to implement them. In line with a key action item of the *National Agreement on Closing the Gap* regarding shared decision-making,[104] all affected First Nations groups should be brought into development planning early in the process, given a real say in the development and management of new land projects, and supplied with the resources to undertake these responsibilities.[105]

C – Prioritise employment for local Indigenous people in land use restoration and rehabilitation projects

The restoration and redevelopment of the Hunter Valley is an opportunity to deliver quality well-paid jobs enabling Aboriginal people to work on Country, and care for it. This is particularly important for areas where mining has happened against the wishes of Traditional Owners.[106] Increasing Aboriginal economic participation is a stated objective of the NSW Government,[107] and increasing skills in the industries of the future is a key *Closing the Gap* objective.[108] Drawing upon Indigenous ecological knowledge will enhance rehabilitation outcomes,[109] and create ongoing employment pathways for Aboriginal people.

Assured funding will create sustainability of employment and restoration programs. The work could encompass rehabilitation work and ongoing environmental monitoring after closure. For example, developing closure criteria based on cultural considerations through the employment of Traditional Owners can provide a means to direct the technical efforts of rehabilitation,[110] and would ensure that intellectual property rights contained in this traditional, ecological knowledge is retained by First Nations peoples.

Collaborations between First Nations groups could also be funded to develop land restoration programs on a regional scale rather than a mine-by-mine approach. Direct programs such as Indigenous Rangers provide environmental, cultural, and economic benefits to Aboriginal people and the wider community, but at present there is only one federally-funded program in the Hunter — the Worimi Green Team. Fee-for-service contracts can supplement this work through local-level agreements between Indigenous landowners, mine lease holders, and all levels of government, but skills need to be developed within Indigenous groups to boost this type of employment in the Hunter. The state government could, for example, fund local Indigenous people to take the new Certificate III in Mine Rehabilitation. Mine owners could also be encouraged to add clauses to their procurement guidelines that provide opportunities for Aboriginal-owned businesses from the local area.

WHAT THE COMMUNITY SAYS

"There is so much to be gained in recognising and understanding the land management practices of the local Aboriginal people, based on 60,000 years of observation and science dealing with the oldest continent on the planet."

"Involve the Traditional Owners at all stages as they have the whole-of-community in mind. Mines only have money in mind."

"Aboriginal people don't have any input. The Government and the Mining Minister have the first and last say on where these mines are. This has an impact on songlines, storylines, and areas of cultural significance. The Minister has to listen to Traditional Owners and knowledge holders and young community people as this is their future."

"Give the land back to First Nations people that was stolen from them originally."

05 Climate & Environment

PRINCIPLE

Restoration and reuse of mining lands will be consistent with achieving a safe and stable climate

The global transition from fossil fuels to renewable energy is driven by the broad recognition that climate change is happening rapidly and poses a profound threat to humans and wildlife. Mining companies and successive state governments have known for decades that selling Hunter Valley coal is changing the climate, but have downplayed the urgency of the crisis. Now climate change is closing in on the Hunter, and must be tackled immediately and head-on. New developments should aim to reposition the region as a leader in climate solutions, and prepare it for unavoidable climate disruption.

RECOMMENDATIONS

A – Set caps on carbon emissions and water use on all current mining activities and future developments on mining lands

When we speak to Hunter Valley residents they stress the importance of coal to the economic stability of the region, but also understand that the industry is bad for the climate and their health. The NSW Government has pledged to achieve net zero emissions by 2050, but this doesn't include greenhouse emissions from exported coal, which are nearly four times higher than the domestic emissions accounted for in the state's net zero target.[111] As courts in NSW and Queensland have concluded,[112] it makes no sense to reduce carbon emissions at home while fuelling them abroad. But it is not for the courts to set climate policy: the NSW Government must commit to reducing its total climate impact, including from coal exports. The industry should not be allowed to expand at a time when the Hunter has a transition to get on with, and the NSW Government has committed to taking meaningful action on climate change.

Downstream emissions from overseas power stations are the biggest climate impact of the Hunter's coal mines, but not the only one. Each mine contributes directly to greenhouse pollution through fugitive emissions from coal seams, diesel fuel use, and power consumption. NSW law does not currently require mines to comprehensively account for these emissions,[113] but by some estimates the climate impact of direct emissions from Hunter mines is equivalent to the CO_2 emissions from driving five million cars for a year.[114] An effective strategy to reach net zero emissions in NSW must also limit and reduce direct emissions from coal mining.

The serious and ongoing water impacts of Hunter mining are not limited to the direct removal of streams and aquifers, or the prospect of perpetually hazardous void lakes. As the climate becomes more extreme, water security will be increasingly unpredictable. The NSW Government acknowledges that communities need secure water supplies,[115] yet the coal industry's domination of the Hunter water market drives up prices for other users and threatens the viability of other industries. A 2014 study found that coal companies owned 55 per cent of high security water licences — up to 95 per cent on some sections of the Hunter River — and used almost 90 billion litres of water per annum.[116] Coal operations, for example, require substantial volumes of water to wash and prepare coal and to suppress dust emissions.[117] The coal industry has taken the Tiddalik's[118] share of Hunter water up till now, and that needs to stop.

B – Establish a region-wide biodiversity corridor system that includes rehabilitated mined lands and restored buffer lands

The Hunter region is home to 27 endangered ecological communities, eight endangered plant and animal populations, and there are 236 species of plants and animals in the region listed as threatened with extinction.[119] Plants and animals need connected ecosystems that allow them to move, adapt, and survive.[120] As weather patterns change and temperatures rise with climate change, we will see an even greater patchwork of isolated conservation areas, contributing to widespread extinctions.[121]

It is a widely accepted principle that biodiversity areas must be connected into a network. This has been

adopted by the NSW Government in its *Hunter Regional Plan 2041*. But the government's regional corridor plan which stretches from the Manning Valley in the north through to Morisset in the south and Merriwa in the west has a missing middle — the Central Hunter.[122] This is the heavily-cleared heart of the Hunter mining industry, where for decades mines have been permitted to destroy rare and endangered native ecosystems based on dubious promises to offset the damage elsewhere (see page 27 for more detail on biodiversity offsets).

The mining industry must not be let off the hook — it must rebuild a connected biodiversity corridor across the valley floor, lest it become more of a biological desert. This must be part of a region-wide conservation strategy, implemented by the Hunter Rehabilitation and Restoration Commission (recommendation 2B in this report). The Hunter's transition from coal is an opportunity to set up a conservation system that will give the region's native species a fighting chance in a warming world.

C – Prioritise the restoration of waterway ecosystems on post-mining land

Mining leases occupy nearly 65 per cent of the Valley floor between Broke and Muswellbrook.[123] Each mine has profound and permanent impacts on waterway ecosystems: destroying aquifers, diverting streams, and connecting deep saline water with freshwater in the Hunter River.[124] By removing aquifers and redirecting groundwater flows, each mine causes a permanent loss of base flow to the river, and the cumulative effect of this across the region has never been assessed by government or industry.[125] The more than 25 final voids approved in the Hunter are designed to become permanent groundwater sinks, drawing in saline water and concentrating salt and contaminates for hundreds of years.[126]

The effects of mining on waterways in the Hunter are severe and everlasting; it is therefore fair to insist that mining companies undo the damage. The future of the Hunter's sustainable industries and its native wildlife depends on healthy waterways. The regeneration of waterway ecosystems must be a key objective of the Hunter's transition and restoration strategy, especially if this land is ever to support new, productive and regenerative agricultural industries.

WHAT THE COMMUNITY SAYS

"There should be no new mine approvals or extensions, and we must increase royalties to fund the Hunter transition. First we have to stem the bleeding, then try to fix the problem."

"Rehabilitating the land to ensure biodiversity is restored is the most important thing to ensure the native plant species can grow back and allow the native animals to return. We need to restore the land to try and reverse the human impacts on the site as much as possible."

"Connected wildlife corridors and enhancement of ecological habitats is key to balance conservation and development. These corridors should be agreed upon and a region-wide carbon sequestration project explored to gain carbon credits that support ongoing restoration action."

Case studies

The Scottish Government has recognised that building climate resilience into regional planning is an essential component of a fair transition from fossil fuels. A goal of the Scottish Transition Commission is to develop "a detailed understanding of long-range climate and water outlooks specific to the region to better inform ... future economic development, industry planning ... [and] land use and water planning and management".[127] This is the type of entity the Hunter needs.

Coal mining in the Hunter Valley has affected groundwater in about a quarter of the region, and the approval of new or expanded coal mines will impact water resources further, including large changes in the flows of streams and rivers. The Federal Government's *Hunter Bioregional Assessment* [128] examined the expected impacts of the extra mining and found that extending mining operations could be a risk to groundwater-dependent ecosystems such as rainforests, forested wetlands, and wet and dry sclerophyll forests.

A closer look at biodiversity offsets

According to the NSW Government biodiversity offsetting is "based on the theory that biodiversity values gained at an offset site will compensate for biodiversity values lost to development." [129] In practice, however, this approach is facilitating biodiversity decline and pushing species and communities towards extinction. Almost 80 mammal and plant species have become extinct in Australia since colonisation, making us one of the world's worst countries for extinction.[130]

The Biodiversity Offsets Scheme now in force under the *Biodiversity Conservation Act 2016* is intended to be a last resort for unavoidable impacts of development,[131] yet it appears to be the more frequently used option, featuring such arrangements as: like-for-like offsetting which is too flexible; the ability to pay money instead of securing land-based offsets; and the ability for mines to use the promise of future rehabilitation as a biodiversity offset, meaning they can poorly rehabilitate in order to later gain credits for the cleaning up they should have done anyway.[132] Under this scheme, since 2014, vulnerable species and communities have been subjected repeatedly to extensive habitat loss and poorly enforced, failed and abandoned offsetting proposals.[133]

In August 2022 the NSW Auditor-General released a damning report into the design of the NSW Biodiversity Offsets Scheme.[134] At the time of the review it said the scheme failed because:

- There was not sufficient supply to meet demand of land suitable for credits.
- There was no complete register of biodiversity offsets in NSW nor readily available information to check whether developers are complying.
- It failed to anticipate a situation where biodiversity gains were not sufficient to offset the losses that result from the impacts of development.

There is now a more complete register of credits and transfers but this does not include property owned and controlled by mining companies to offset mining operations.[135] There is too little investment in vegetation mapping, threatened species monitoring, and reporting on biodiversity loss and trends at the local and regional level to allow for any confidence in the system as it stands. It has now become routine for mines to be approved without evidence that extant areas of mature vegetation exist and are available to be secured to offset that mine's impact.[136] In fact, a significant proportion of mines with offset obligations fail to ever meet deadlines to properly secure offset properties, instead promising to re-establish complex ecosystems up to a decade in the future after mining ceases.[137] Moreover, the estimates of habitat loss from mining companies can be vastly less than when measured by independent scientists.[138]

If mining companies do propose areas for offsetting, they often use the same areas for more than one mining activity or return years later with proposals to clear their offsets and replace them with others. For example, two offsets for Peabody and Glencore's joint venture United Wambo mine, are the Highfields and Mangrove offset sites, which are also now deemed as offset sites for Glencore's Mangoola Continuation Project.[139] This proposition is absurd. Offsetting began as an option of last resort, but has now become the assumed approach for biodiversity impact mitigation.

At the time of publication, world governments had recently concluded their latest meeting on biodiversity, COP15. At this meeting it was stressed that governments must take the lead and create policies to protect biodiversity, and that these policies need to broaden beyond protection of individual species to whole ecosystems. Four targets of the framework are relevant here:

- Restore at least 30 per cent of degraded land and waters by 2030 (target 2).
- Integrate biodiversity values in environmental impact assessments (target 14).
- Implement legislation requiring companies to disclose how their operations impact biodiversity (target 15).
- Eliminate or phase out incentives such as subsidies that are harmful for biodiversity (target 18).[140]

LEFT: Coal wash sediment in saltmarsh on Kooragang Island. Photo by Doug Beckers available under a Creative Commons Attribution-Noncommercial license from www.flickr.com/photos/dougbeckers

What we heard

"The consultation hasn't been there to really be able to know what everybody wants, but certainly there is a concern that every mining company will start galloping down the rezoning path to get out of their rehabilitation commitments."

"How do we go about turning the land into being usable again when it's been turned upside down, blown apart, and then put somewhere else?"

"I would like to get out of a reactive role for the community, so they're involved before a proposal goes up, because it really doesn't go out for consultation, it goes out for comment, which they may or may not consider."

"The incorporation of Indigenous knowledge and environmental ideologies will engage a greater proportion of the community into rehabilitation processes; ultimately aiding in the resolution of multiple current problems surrounding the closure of mines in the Hunter region."

"Having already gone through 40 years of impact and looking at another 10 years means we've been hammered for half a century by the dust smells and vibrations. It would be disappointing if whatever the replacement is has an equivalent impact on residents".

"Certainly water use is essential to consider because it impacts on groundwater, which impacts on all the farms and everyone else in the area."

"We must involve the whole community, including First Nations people, in the move towards a future for industry and settlement that respects all living beings and all humans dependent upon the environment."

"Climate change is the number one risk to the environment, human health and our ongoing existence on this planet. We should be doing more and renewing the Hunter in a green and climate-responsible way."

"Change is often only successful in the long-term if it has the support of the people it is going to impact. If there is not a sense of local ownership over the future direction of the area, plans will ultimately fail."

"We know for sure that the coal industry is going to decline with the global energy transition. Right now is the time to hit mining companies in their hip pocket and get some money back to the Hunter to help us fund this transition".

"Bonds cannot realistically cover the cost of restoring the biodiversity and ecosystems that existed prior to mining development."

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HUNTER Renewal

Future-proofing the Hunter

Voices from our community

A REPORT PREPARED BY HUNTER RENEWAL & HUNTER JOBS ALLIANCE

“

We have to understand the pace of change that will occur in the makeup of industry in the Hunter Valley over at least the next ten years, and plan for, and reposition ourselves to take advantage of these changes.

I’m excited that with our highly skilled, innovative and diverse labour force, we can attract new business to our region – business types perhaps we haven’t even thought of yet, and so make the Hunter Region a place known for things other than just coal mining.

We have done this before – compare us now to how the region was when it was reliant on the BHP operation. We already have the experience and expertise to transition to a new and exciting future.

Lake Macquarie resident (survey)

HUNTER JOBS ALLIANCE

HUNTER Renewal

Contents

Executive summary

In May 2021 then-Deputy Premier John Barilaro announced that New South Wales would establish a Royalties for Rejuvenation Fund and statutory Hunter Expert Panel to fund and oversee diversification and assist the region's adjustment to changing coal markets. This is a welcome development for the Hunter.

Between August and October 2021, Hunter Renewal and the Hunter Jobs Alliance convened five workshops complemented by an online survey to gather community input, ideas and priorities for this new body and funds. This report collates and distills the priorities and concerns of ordinary people and workers around the Hunter region.

Our engagement with people of the region shows that, overwhelmingly, people understand and accept that change is coming and that leadership by government, informed and directed by local knowledge, is necessary to weather that change.

Participants in the workshops and survey reflect the range of interests and perspectives of locals, including workers in sectors that will be affected by structural change in the coal industry, people working in social services, education and health, people invested in community organisations and from a range of socio-economic backgrounds and a variety of life experiences. What they had in common was a willingness to engage in the work of making a positive future for the people and communities of the Hunter region.

"I worked in mining for 15 years so I know what's happening. Many of the services companies have been planning for years. They have already started to do the work."
Muswellbrook workshop participant

The most common issues of concern were job security, protection of the environment and climate change, and the urgency of transition planning. More broadly, participants in our workshops highlighted existing challenges and fears: housing affordability and homelessness, the importance of public and accessible vocational education, existing inequality, and environmental problems such as air pollution and land degradation.

We asked participants to discuss and rank 22 ideas and recommendations from work already undertaken to consider the challenge of diversification in the region. Of these ideas, ten priorities emerged. The top three were:

1. A local authority to coordinate and fund job creation and community support
2. Fund flagship projects that create jobs
3. Expand TAFE and vocational education.

These top three priorities reflect overriding community needs and concerns: locally-driven coordination and community support, job-creation, education and skill-building. The remaining seven priorities focus on practical skills and initiatives to sustain local economies, business and people's adaptability:

4. Market the Hunter to attract investment
5. Start community-owned energy networks
6. Build pilot projects for new industries
7. Create rules for mining and power companies to protect workers
8. Free training for mine and power station workers moving into new roles
9. A long term fund for land and water management after mine rehabilitation
10. Grants and training for local businesses to diversify.

The process found people understand the challenges facing the Hunter region and want planning and action to address these challenges that are equitable and community-driven. They are ready and willing to take part in the work of the Hunter Expert Panel and Royalties for Rejuvenation program.

The feedback is abundantly clear. This process and report demonstrate people's desire to have a seat at the table to collaboratively plan for the region's future.

> We have great engineering, ports, power, and logistics all available in the Hunter. It's just about how to transition the workforce across. There are big opportunities and I'm impressed with the momentum.

Muswellbrook workshop participant

Introduction

In late 2021, Hunter Renewal and the Hunter Jobs Alliance convened five workshops and an online survey to gather input and ideas from the community about the priorities for the soon to be established Hunter Expert Panel and Royalties for Rejuvenation Fund.

Participants joined from Wonnarua, Awabakal, Darkinjung and Worimi country, in Cessnock, Singleton, Muswellbrook, Maitland, and Lake Macquarie LGAs, and the survey allowed input from Hunter residents more broadly. In all 314 people from across the region have contributed to this report.

Background to the workshops and survey

Hunter Renewal is a community outreach project established in 2017 to speak with people in the region about economic diversification and their priorities for the future. The Hunter Jobs Alliance is a coalition of thirteen local and statewide unions and environmental advocacy groups in the Hunter working together for new sustainable economic opportunity for workers and the broader community.

The Voices of the Hunter Valley workshops were conceived to give ordinary Hunter people a chance to have a say. The purpose of the workshops was two-fold:

- Gather community priorities and perspectives to inform decisions about Royalties for Rejuvenation Fund and the Hunter Expert Panel;
- Ensure the community has access to information and opportunities to be involved in transition planning.

Due to COVID the workshops were conducted online, targeted to communities in the region most impacted by changes to traditional industries: Cessnock, Singleton, Muswellbrook, Maitland, and Lake Macquarie. Invitations were sent to supporters of Hunter Renewal, to members of Hunter Jobs Alliance affiliates, and to community organisations and small businesses in the local areas of focus. Registration was open to all, and the events were also promoted on Hunter Renewal and Hunter Jobs Alliance websites and Facebook. The online survey mirrored the workshop activities and was promoted more widely in the Hunter region.

Participants

Of the 314 unique participants 111 took part in one of the five workshop and 203 completed the survey. Participants included people involved in local organisations like Rotary, PCYC and the CWA, church and charity groups, business owners and business and investment advocates, people who work in social services, housing services, drug rehabilitation or caring support, workers from power stations and mines, health and education, manufacturing and mining services, young people, retirees, professionals, government representatives and rural landholders.

Process

To design the workshops and survey, facilitators considered 30 reports and plans addressing the Hunter's future planning and diversification. From these reports, 155 separate ideas were drawn, and then distilled into 22 key proposals in four broad categories:

- Planning and coordination;
- Growing and diversifying the economy;
- Supporting the community through change;
- Supporting workers through change.

Workshop and survey participants chose their top priorities for transition initiatives from this set of proposals. A table showing the full list is on page 27. Background information was provided to help respondents make informed decisions. They were also given the opportunity to add their own ideas.

WHAT WE HEARD

"Keeping the community informed regularly as to what is happening is key. If the community is not behind it and they haven't heard about it then it will fail."

Singleton workshop participant

"I was born and bred in Singleton and worked in the power station for the last 40 years. I have kids and grandkids in the Hunter area. The coal is going to stop flowing, thermal coal power is going to stop being generated so I want to set the future up for my future generations. There's a lot going on in the power industry at the moment, and people are pretty scared about what the future holds for them."

Cessnock workshop participant

"It is important to have this talk about transition as one about opportunity rather than what is stopping us, because people are worried about losing their jobs and their whole culture. For so many in the Valley it is about what they do, what their grandparents did, and it's about putting food on the table. It's culture. We need to change with respect and dignity."

Maitland workshop participant

Thank you!

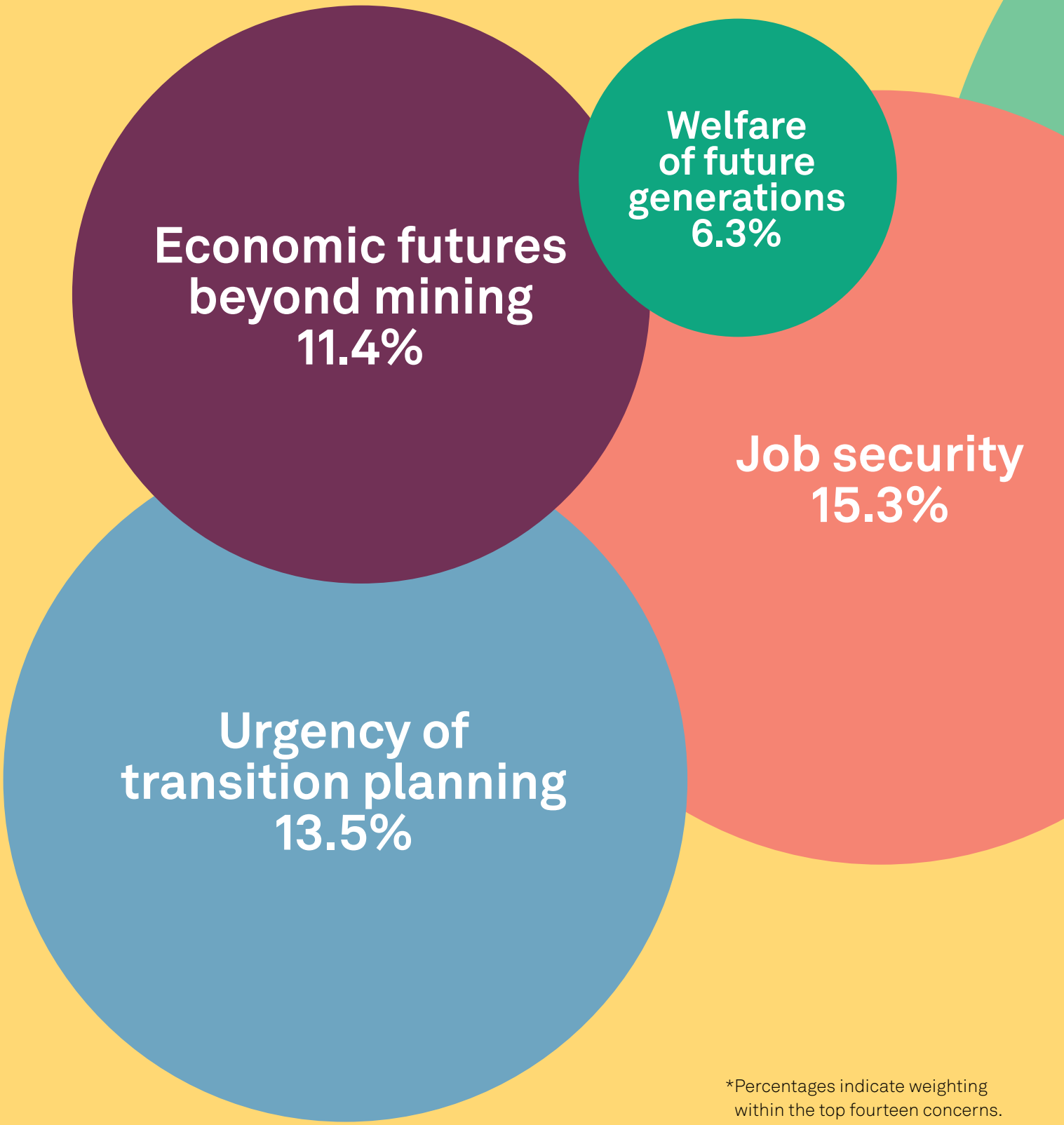
There are a great number of people who have contributed to this report, most importantly the participants of the workshops and those who took the time to fill out the survey. Thank you for your time, candour and dedication. We would like to especially thank Kimberley Crofts, PhD candidate at UTS, for help in designing and running the process; our volunteer facilitators from each of the workshops: Jai Allison, Janet Murray, Allan Evans, Pete Coughlan, Jo Lynch, Courtney Eckert, Jo McNeil, Callan Lawrence and Steve O'Brien; and our volunteer callers, data analysts, scribes and writers Rod Anderson, Martin Scurrah, Joy Nason, and Lucas Kennedy.

Next steps

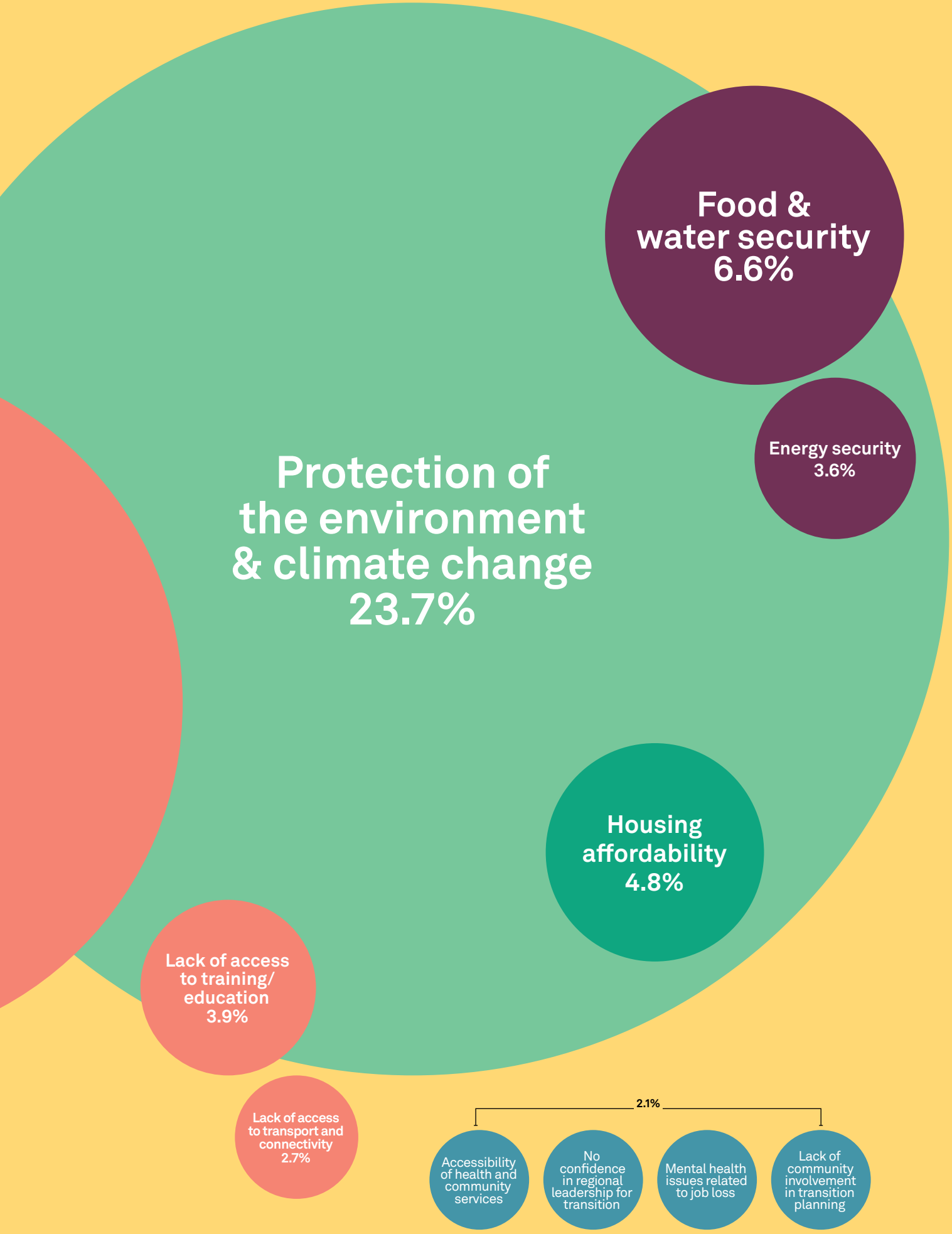
Hunter Renewal and the Hunter Jobs Alliance will provide this report to the NSW Government to provide insight into the community's views about the priorities of the Hunter Expert Panel and Royalties for Rejuvenation Fund. We intend to engage proactively in these processes, and continue engaging with our members and supporters and the broader community to ensure ordinary people have a seat at the table.

Top concerns

We asked people to tell us what concerned them about the region's future. Here's what they told us*.



*Percentages indicate weighting within the top fourteen concerns.

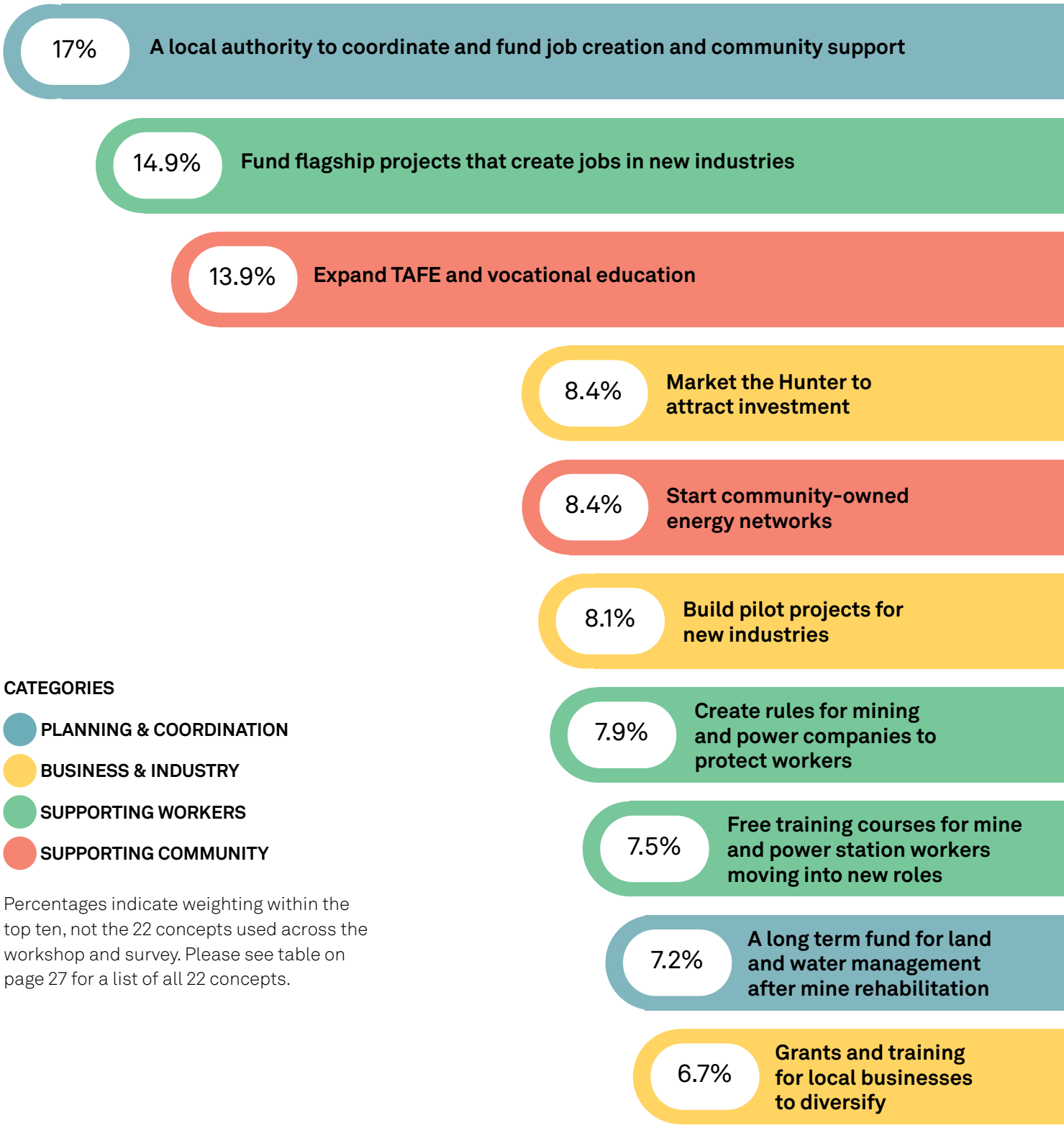

Food & water security 6.6%
Energy security 3.6%
Protection of the environment & climate change 23.7%
Housing affordability 4.8%
Lack of access to training/ education 3.9%
Lack of access to transport and connectivity 2.7%
2.1%
Accessibility of health and community services
No confidence in regional leadership for transition
Mental health issues related to job loss
Lack of community involvement in transition planning

> A local authority is urgent in my mind... Coordination is key, there is an appetite and support for it from a majority of stakeholders.

Cessnock workshop participant

Top priorities

The following emerged as the top priorities among the 314 people who took part in the workshops and the survey.



CATEGORIES

- PLANNING & COORDINATION
- BUSINESS & INDUSTRY
- SUPPORTING WORKERS
- SUPPORTING COMMUNITY

Percentages indicate weighting within the top ten, not the 22 concepts used across the workshop and survey. Please see table on page 27 for a list of all 22 concepts.

PRIORITY #1

A local authority to coordinate and fund job creation and community support

There is wide support for a Hunter Valley Authority to set out a clear roadmap for how we will deal with change.

A local coordinating authority is essential

Along with some concern about losing out in transition, there is excitement around the opportunities that change brings. If the process is thoughtfully planned, it will allow the community to feel secure, involved and optimistic.

Participants recognised that someone needs to coordinate the many moving parts of our economy, to ensure the Hunter can take best advantage of opportunities that arise. For example when new industries open their gates, we need to ensure local people are ready to step into these jobs. A transition authority could coordinate with training organisations to develop and deliver relevant training programs to prepare the local workforce in the right timeframe.

Input from all sectors of local communities will be essential to guide the transition process. This will generate a wide range of ideas and facilitate excitement about the region's future. The survey and workshops themselves have demonstrated that people want to be involved.

In June 2021, the Hunter Jobs Alliance proposed a model for a statutory Hunter Valley Authority. The authority should be tasked with delivering a defined set of functions in collaboration with other agencies, programs and stakeholders. More information can be found on the Hunter Jobs Alliance website.

Scepticism about effective, efficient, and equitable transition

People made it clear that a transition done right means nobody is left behind. Optimistic participants noted that these changes are an opportunity to create an inclusive and sustainable regional economy and society.

There is doubt that $25 million per year is sufficient to undertake the task at hand. In the Maitland workshop one person said *"$25 million is not a lot of money. How are they going to fund all the things that need to be done in the Hunter community?".* Numerous participants suggested the initial funds be used to develop a plan and get things going, but a substantial commitment of more funding is needed.

While government leadership is essential, there is wariness of corruption, bureaucracy and waste. Transparency, genuine and diverse community involvement, and accountability mechanisms will offset these concerns.

Coordination among stakeholders is essential

Coordination by a transition authority should aim to ensure diverse interests and aspirations are included, not just local elites. As a workshop participant from Muswellbrook said: "You need local participation, and a government body to coordinate. Everything then can flow from this".

A clear process for community engagement with the authority should be established. Participants felt that transition initiatives depend on community involvement. The region's interdependencies can only be properly understood with representatives from a diverse range of groups.

For example we found some Hunter residents are impatient and feel we may be missing opportunities to diversify the region's economy and move towards renewable energy. One workshop participant said: *"We should be starting on planning for decarbonising industry. We have the overlay of climate change and we have to do something about it everywhere, we have to start thinking about it now".*

Others, have concerns about what switching to renewables will mean for heavy industry: *"I am an electrician at Tomago Aluminium and wonder if there is going to be enough base load power to keep the smelter running when the coal powered power stations shutdown."*

A local authority needs to be immersed in the community to understand and properly balance different perspectives. Participants could see that the process is complex, and an authority needs to be grounded in the needs and concerns of community to best match real opportunities with the resources and reality on the ground.

WHAT WE HEARD

"If we don't have adequate planning as we transition out of fossil fuels there is a very real prospect that some people will be left high and dry, not just people who work in the fossil fuel industry, it'll be entire communities."
Cessnock workshop participant

"The most important thing is involving the local community in designing the transition. Unless you take the locals with you on the journey, so that they own the changes, it will not be successful."
Lake Macquarie workshop participant

"Collaboration is important...people who work in industries that pollute need to know that we care about them. We need to include them."
Singleton workshop participant

"We have to step out of our way to make sure that First Nations people are more involved in [transition planning]."
Singleton workshop participant

IN THE SPOTLIGHT

The Latrobe Valley Authority

In 2017, the Hazelwood power station in the Latrobe Valley Victoria closed, and hundreds of workers lost their jobs. The Latrobe Valley Authority (LVA) was established with an immediate focus on support for workers, incentives for businesses to employ more people, and investments in community facilities and events.

As the LVA was established in reaction to the closure of Hazelwood, the opportunity to plan ahead of time was missed. The LVA has since been working to increase workers and employers' skill base in growth sectors. Along with initiatives to build business capability, maximise local procurement, competitive advantage, and improve the sustainability of community organisations, the LVA is focused on leveraging infrastructure investment to create employment in the region's growth industries of the future.

PRIORITY #2

Fund flagship projects that create jobs

People strongly support public funding of flagship projects, to provide jobs for local people and demonstrate opportunities in new industries.

Job creation with tangible projects needs to be a priority

With the scheduled closure of four power stations over the next 14 years and a projected contraction of jobs in mining over time, workshop participants were eager to talk about how people in the Hunter will make a living in the future.

There is a fear that leaving the future to the market will create uncertainty and instability in the economy and people's lives. In Lake Macquarie, we heard: *"The decline in the thermal coal sector could happen much more quickly than imagined due to investors and financiers seeking green investments. This risks seeing a gap between the loss of resources-related jobs and those from emergent industries".*

Putting public funds towards new industries was a very popular idea. People saw a need to be proactive, to fund projects that will stabilise employment, the economy and demonstrate the region is open for business.

Excited for the possibilities, but need to find the best fit

People are excited to shape the Hunter economy in a new direction. Widespread support for renewable energy comes with the hope it can bring local manufacturing jobs in industries such as electric vehicles, batteries and wind turbines. Other growth opportunities consistently identified included adventure tourism, wine and agriculture, retirement communities and environmental conservation and mine rehabilitation.

Whatever the possible projects that may exist, people saw the importance of choosing carefully. Projects to fund would make best use of the existing workforce skills. Hence, a skills audit and workforce development planning is seen as necessary to effectively assess potential projects.

A strong preference for local, sustainable businesses

People preferred that funding for business or industry go to home-grown, local ventures, rather than outside companies. This is because locally-owned businesses are seen to be more attuned to the needs of the community. With all the opportunities in clean technology, people also had a strong preference that the industry be focused on sustainability.

WHAT WE HEARD

"A flagship project is very important to fund because it lifts morale, but it has to be carefully chosen: a project that other industries can cluster around, one that uses and further develops the skills of the existing workforce, and one that engages with existing local businesses, small and large."
Maitland workshop participant

"We could do much better than having companies from overseas reaping the benefits. Instead we could have locally-owned and innovative industries that could really provide a renaissance [for the Hunter]."
Cessnock workshop participant

"There could be jobs in manufacturing related to fly ash for people who work in or live near power stations, and ideally people would be re-trained if they wanted to accept a job in the coal ash manufacturing reuse plant — they wouldn't have to move away."
Cessnock workshop participant

ABOVE: Drayton coal mine, coal ash dams, and Bayswater power station in the background.

IN THE SPOTLIGHT

Manufacturing structural lightweight aggregate from legacy coal ash

Reusing the coal ash held in dumps at the four Hunter coal-fired power stations opens new possibilities. The ash dredged out of these dams can be manufactured into structural lightweight aggregate (man-made sand and gravel) for use in the production of lightweight structural-grade concrete. The mechanical and chemical processes of 'cleaning' the ash allows for the cost-effective manufacturing of a range of other specialised products for road construction.

This product mix allows the manufacturers to empty the Hunter ash dams over two decades, enough time to develop the manufacturing processes further. Subsequently, other waste products like glass, tyres or plastics can take the place of coal ash.

Economic modelling based on an existing business case has shown that manufacturing structural lightweight aggregate at the five operating ash dams in NSW (four of which are in the Hunter) can create some 3,000 permanent full-time jobs. The manufacturing processes involve technologies and equipment that are common in mining, which means that the workforce to operate these new factories is readily available in the Hunter, including the many small and large businesses in the supply chain and the maintenance structure for the equipment.

In addition, structural lightweight aggregate can give the cluster of factories that produce precast concrete products in the Lower Hunter a competitive edge, because they can offer lightweight products of equal strength.

PRIORITY #3

Expand TAFE and vocational education

To prepare us for a new economic future, participants strongly supported expanding TAFE and vocational education. As a beloved public institution, TAFE is the favoured body for delivery. Planning is necessary to ensure people have access to the courses they'll need as the economy changes.

Increase funding and courses

At every workshop around the region, TAFE was seen as the key institution for preparing workers and the community as a whole for the challenges ahead. There is great concern about TAFE budget cuts and the closing of Scone TAFE, and what this means for our ability to adapt to a new economic environment. People felt that resources should be restored to TAFE to expand opportunities more generally and to develop trained persons for a more diversified economy. In addition to preparing workers for roles in new industries, a strong TAFE could help address skills and workforce shortages in certain sectors such as the care economy.

Public education to address disadvantage

One reason TAFE was so strongly supported is that it is seen as a key way to address disadvantage in the region. There is a sentiment that moving towards private training institutions results in a greater user-pays culture in education and unequal opportunity.

Planning so that the courses meet our changing needs

There was an acknowledgement that if we want local people employed in new industries, training will need to begin before new industries and economic activities are in place. This requires advanced planning and coordination between high schools, TAFE, regional authorities, business and others. TAFE and training institutions need to know in advance what the likely new jobs will be so that it can design courses, recruit teachers, and prepare resources to develop the skills that will contribute to new opportunities.

WHAT WE HEARD

"Training is something that is fundamental to this process. Training and TAFE is the backbone to help people get into a new industry. The whole training, and retraining aspect is essential to the success of a transition. It is problematic when funding keeps getting cut. They are doing the best they can with a shrinking budget."
Lake Macquarie workshop participant

"We have a slight problem in expanding TAFE in the next three years if we don't know where employment is heading."
Singleton workshop participant

"With Scone TAFE shut down, our young people have to travel to Muswellbrook to do courses and, with few public transport options, this is an equity issue… If you don't have a car you can't get to TAFE. People with disabilities are even more disadvantaged."
Singleton workshop participant

"If we don't provide this type of facility for people to become educated in new skills it means employers may bring new people into the area and our existing workforce will be on the scrap heap because we haven't provided for their future."
Lake Macquarie workshop participant

IN THE SPOTLIGHT

The challenge of finding skilled staff

A key finding from the 2020 *Clean Energy at Work* report from the Clean Energy Council was that renewable energy developers and installers are facing difficulties in recruiting skilled and experienced staff.

"*There is a high demand for electrical and grid engineers, and construction managers across wind and large solar projects, with developers finding recruitment for these roles challenging. In the last 12 months, two thirds of renewable energy companies that tried to recruit a construction manager had medium to high difficulty (it took more than five weeks to find a suitable candidate).*

In the wind sector, there are certain unique occupations that are only occasionally needed but are nevertheless critical to the construction phase. Examples are crane drivers and specialised truck drivers for wind turbines. It can take two years to train in wind farm transportation and the driver may then seek ongoing work in another industry. As operation and maintenance of wind farms becomes an increasingly important role there will also be heightened demand for blade technicians, yet these are already hard to source.

The study also confirmed anecdotal evidence that most small-scale solar businesses face difficulties in recruiting accredited solar designers, electricians, electrical trade assistants and roofers, especially in regional areas, yet these are in high demand. Under some scenarios this demand will see a steady increase" (Clean Energy Council, 2020).

PRIORITY #4

Market the Hunter to attract investment

People supported the idea of a marketing program for potential investors in the region. It could provide information on available incentives, land availability, demonstration projects, workforce skills and advice on navigating the planning system.

Attracting investment to the Hunter

People agreed that if we are to build a new economic future, we will need to attract new investment in the Hunter. To take best advantage of interest in the region, people saw the value in a one-stop-shop, where potential investors can be welcomed, get the full picture on the many advantages of establishing themselves in the Hunter, have their questions answered, and obtain practical advice on liaising with local and state government processes.

Local collaboration is crucial

Participants were clear on the need to not waste public money on merely advertising the region. Further, marketing the Hunter should not mean offering the region, its people and resources for exploitation by outsiders but rather highlighting the region's development potential in cooperation with locals.

WHAT WE HEARD

"If this is about marketing the resources we have here, and what the Hunter has above other regions, then it's good. If it's just 'come to the Hunter' then not so good."
Muswellbrook workshop participant

"We need funding to encourage and entice new enterprises to come to town."
Muswellbrook workshop participant

"This would shift emphasis from what Singleton has been to what it could be."
Singleton workshop participant

PRIORITY #5

Start community-owned energy networks

People supported the idea of community-owned energy initiatives as a way to lessen the risks of increasing electricity prices and to keep the economic benefits of energy production in local communities.

Enthusiasm for renewable energy

There is enthusiasm in the community for producing renewable energy, demonstrated by the popularity of solar panels. However, the ability of some people to participate in this energy revolution is limited by inequality: not everyone owns a roof that they can put a solar panel on. Grants and training to establish community-owned energy networks allows everyone in the community to support renewable energy and reap its cost savings.

Community cohesion and morale building

People noted that the benefits of community-owned energy networks reach beyond the benefits to the environment or the hip pocket. In taking initiative and control over their own energy needs and production, people feel empowered. People in the workshops noted that process of working together to establish a project would build community cohesion and morale. For those reasons, it can help make communities more resilient in the face of changing and uncertain economic times.

WHAT WE HEARD

"Community-owned energy networks are a really exciting initiative and I would love to see something like this in Maitland and put my spare cash to it, and to get involved."
Maitland workshop participant

"The community can get together and decide where it goes, and get the benefit from it, not like an outside company coming in."
Singleton workshop participant

"Community-owned energy networks allow people to work together in community groups to solve their own green energy solutions."
Lake Macquarie workshop participant

ABOVE: Solar farm and sheep (GabeIglesia, Creative Commons).

IN THE SPOTLIGHT

Goulburn Community Energy Co-operative

In Goulburn, locals have established the Goulburn Community Energy Co-operative. The project was kickstarted with $2 million from local investors, matched by a grant from the NSW State Government. Capital raising continues and they are opening up investing to outside parties. The co-op is building a solar farm on 2.2 hectares of industrial land.

The solar farm will consist of 4,000 panels generating 1.8Mw which is sufficient to generate power to around 450 homes, and backed up by a 400 kW battery to store energy and sell when the price is right.

Electricity from the solar farm will be sold back to the grid, with profits split three ways: into dividends, a sinking fund for panel repairs and maintenance, and a fund to pay for electricity bills for Goulburn's disadvantaged people. Construction of the solar farm by Komo Energy commenced in early 2021 and its anticipated completion date will be late 2021.

PRIORITY #6

Build pilot projects for new industries

Provide the means for local businesses to partner with innovation experts so that they can test their ideas.

Supporting new industries is essential to diversify the Hunter economy

People are nervous about where new jobs are going to come from in the Hunter, and see the benefit of government support to test new industries. If successful, these industries could be a part of a new diversified economy, and provide much needed employment to local people.

Support for a system of innovation and research across the Hunter

There was strong support for ensuring that locals have access to the best research institutions and innovation experts such as CSIRO and the University of Newcastle should they wish to start a pilot project. People also stressed the importance of supporting linkages between different research institutions, businesses, and local people with ideas.

WHAT WE HEARD

"You have to be able to test the waters to see what works. This is one way to incentivise new industries. What are the opportunities for local businesses that may not have been able to start something yet as they don't have the funding?"
Singleton workshop participant

"My son has a start-up business which will thrive if this region starts investing in the industries of the future. I look forward to my grandchildren having exciting jobs in the new economy."
Newcastle resident (survey)

"The industry and business community should work closely with university and CSIRO researchers to get local breakthroughs commercialised and manufactured in the Hunter. An industry hub where related businesses can collaborate and share resources could help." Cessnock resident (survey)

PRIORITY #7

Create rules for mining and power companies to protect workers

People agreed on the necessity to set clear expectations of companies undertaking large scale closures in the Hunter. These would include things like minimum notice, comprehensive redundancy packages, counselling, and a duty to assist with retraining.

Can't let companies 'cut and run'

People in the Hunter have a high awareness that large-scale closures can be disastrous for workers and communities, especially if poorly-planned. Workers deserve their entitlements and decent notice so they can make the right choices in their interests. Strict and clear rules to which companies must adhere would reduce anxiety for affected workers. Additionally when these expectations are set, companies can also plan for them.

Funding redundancies is a mining company responsibility

While people were enthusiastic about the availability of coal royalty money to spend on the region they were adamant that it should not be used to fund basic entitlements. Further, it was felt that companies undergoing closures should also fund retraining, and other worker support such as financial and career advice and counselling.

Distrust of government

While agreeing that it was a good idea in theory to set clear expectations of big companies, some participants were deeply sceptical that government would enforce any rules on private business, especially such a big and powerful business as mining.

WHAT WE HEARD

"As long as business knows what the tariffs are they can plan for it, trouble is in Australia companies get away with murder. In other countries it's not a problem - these are the rules, this is what you have to do. They factor it into their plans, end of story. Here the community has to demand it forcefully."
Lake Macquarie workshop participant

"The companies aren't offering redundancies but just telling workers to take a job interstate. I don't think many will move, they've already got their lives set up."
Muswellbrook workshop participant

"As a community we can demand this. And they should provide new training for people before their jobs end."
Lake Macquarie workshop participant

PRIORITY #8

Free training for mine and power station workers moving into new roles

To support mine and power station workers through change, participants agreed they should be provided with free courses to help bridge their skills to new roles.

Retraining and re-skilling the Hunter workforce is crucial

Anticipated job losses in mining and energy means some workers will have to find a new way to make a living. It is important these workers are supported through this change. Some, such as electricians, will be able to walk out of jobs in the mines to jobs in other industries. There are others who need substantial retraining to be able to adapt. Courses offered and available to workers needing new jobs should be directly relevant to future employment.

Companies have a responsibility to the region and their employees

Companies have made a lot of money from the Hunter and its people: if closures are planned, funding for retraining should be part of redundancy packages. To assist worker transition, retraining can start before workers are made redundant. Companies should be flexible in allowing workers to attend courses while still employed.

Relevant and high quality training/courses need to be available

Planning and coordination is required to ensure that the right courses are available to the right people at the right time. Workers need to trust that if they take the time to retrain, they will have all the skills required to qualify for new roles in emerging industries.

WHAT WE HEARD

"There is a lack of understanding of how transferable the skills of mining are. I work in the mines and I can only move to central Queensland. If everyone moves then this whole transition is null and void. There will be no one here. We need support for identifying transferable skills."
Singleton workshop participant

"I'm a miner. Change is coming. Mining companies and unions need to do more to re-educate and reskill. Employees have the time and money if given appropriate avenues."
Lake Macquarie resident (survey)

IN THE SPOTLIGHT

HCB Solar

In 1948, Michael Haggerston's grandfather started an electrical business that is still trading in Boolaroo. Michael has taken up the mantle along with his son, Logan, in creating HCB Solar. Michael had this to say about the opportunities for the solar industry in the Hunter region:

"We've seen the solar industry grow and grow since 2008. Being at the forefront of the solar sector in the Hunter and working nationally we recognise the opportunities that exist in the Hunter to embrace renewables.

HCB Solar, under the company name WS Farm, is developing a solar education facility in the Williamtown area close to Newcastle Airport. We see this as a positive start to educate companies that are in the renewable sector to learn in a controlled environment on how to install products before they enter the field. We have had a positive approach from six international companies.

We are committed to seeing this succeed and with government assistance this could grow to be the hub of solar training on the east coast. HCB Solar is well aware of the public's positive attitude towards renewables and believes up and coming generations will be even stronger.

The Hunter is well positioned to take advantage of the rapid growth of solar and batteries within our region. The future is very positive and we are looking forward to bringing new companies to the Hunter Valley."

ABOVE: Wambo 3 coal mine near Singleton.

PRIORITY #9

A long term fund for land and water management after mine rehabilitation

Participants saw restoring and protecting environmental resources as highly important and essential to maximise resilience and productivity. People supported putting money aside for environmental monitoring and management, including towards new uses for our natural resources.

Rehabilitation is the mining companies' responsibility

People felt strongly that mine site rehabilitation should not come from public funds. Damaged areas should be restored to the level where it's possible to use the land for new cultural and/or economic activities.

Indigenous-led initiatives to look after natural resources

Managing land and water long term means employing people to look after those natural resources. There was a recognition that First Nations' knowledge would assist greatly with safeguarding the local environment, and support for relevant Indigenous-led initiatives that would look after resources while providing employment for local people.

Many potential uses of former mining lands

Participants wanted to see the imaginative transformation of old mine sites for uses that create and add value while conserving the environment. They suggested sites be used for wildlife restoration, wetlands, botanical gardens, recreation and tourism, or agriculture.

WHAT WE HEARD

"It is important that we support Aboriginal-led business and make sure they are included in this sort of planning, we are on their country and so that should underpin everything that we do." Cessnock workshop participant

"The only issue with funding land and water rehabilitation is that I don't want there to be a perception by the coal mines that rehabilitating the land is not their job. It is a great idea that just needs to be implemented carefully." Newcastle resident (survey)

"We should aim for clever rehabilitation of mining damage and pollution; so many jobs can be based around protecting and caring for the place we live in." Lake Macquarie resident (survey)

PRIORITY #10

Grants and training for local businesses to diversify

The future of many small and medium enterprises in the Hunter is tied up with the future of coal mining. To protect existing jobs and to create new ones, participants saw the need for local businesses to develop a diversified business model, supported by grants and training.

Education and training for businesses to help with diversification

Existing businesses need to be resilient if they are to survive an uncertain economic future. Many do not have the knowledge of how to do this. Education and training for these businesses is an important part of the picture, to ensure they succeed and are able to continue to employ Hunter people.

Create the conditions for small businesses to grow

Small business is seen as an important part of the employment puzzle in the Hunter, and there is support for grants to help existing small businesses and startups. There was support for a boost for Aboriginal-led business, and developing entrepreneurial abilities in local people.

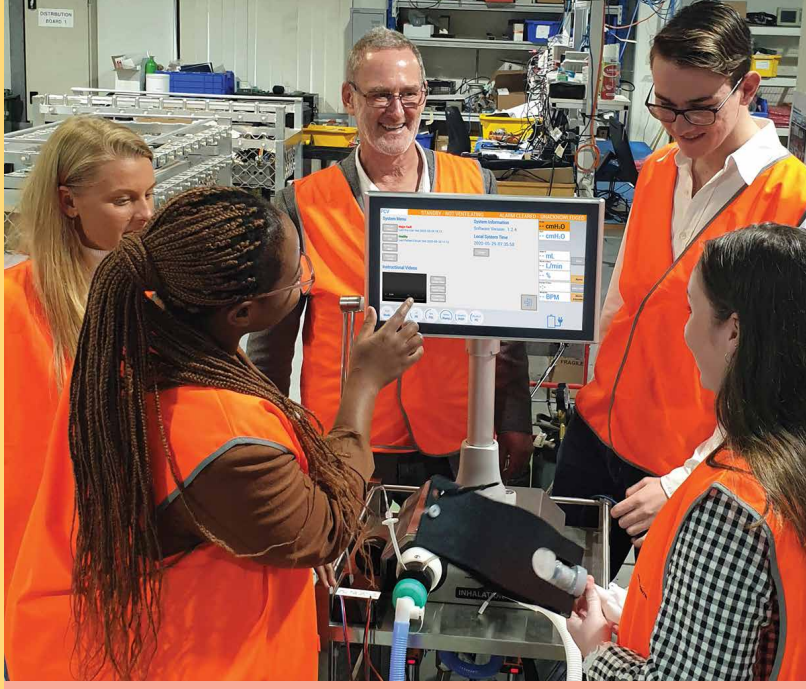
WHAT WE HEARD

"You are better to spend money on the businesses already here rather than trying to get new businesses to come here."
Muswellbrook workshop participant

"It's not going to be one great big thing that comes to our rescue. With the right amount of government support we can stimulate job creation through small businesses."
Muswellbrook workshop participant

"I was born in Muswellbrook. Before the coal mines there were little industries everywhere, maybe we have to get back to that."
Muswellbrook workshop participant

"80% of business headquarters are located where the founders live ... it's about creating the environment that makes people want to create a business, if they live in Cessnock they will create that business in Cessnock."
Cessnock workshop participant



IN THE SPOTLIGHT

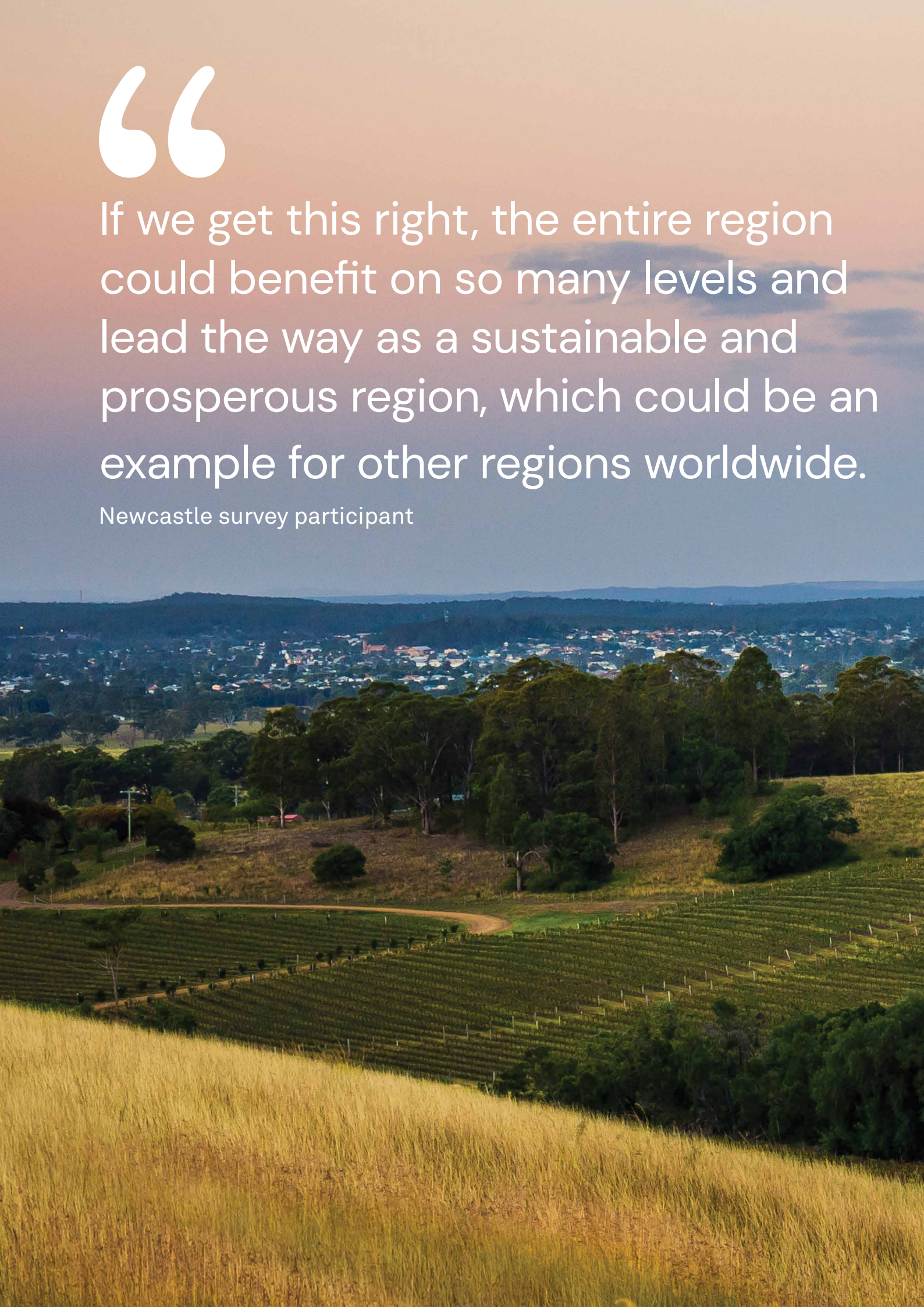
Ampcontrol

"Ampcontrol is Australia's largest privately-owned electrical engineering company leading advanced global manufacturing of award-winning innovations, products, solutions and services to the resources, infrastructure and energy sectors. Ampcontrol works with its customers, employees and community in the evolving industrial landscape to make a meaningful and sustainable improvement to people's lives around the world.

As the world adjusts to the global pandemic with a renewed focus on sovereign manufacturing and a carbon reduced future, our new strategic plan aims to strengthen our position as one of Australia's leading advanced manufacturers of renewable energy solutions. Ampcontrol's modelling of the power generation sector several years ago identified the need to diversify our revenue sources. Interestingly our move to expand from a substantially coal-based revenue base has opened opportunities in areas we had not previously considered. As a result, thermal coal will be less than 20% of our revenue.

Ampcontrol is investing heavily in research and development in the renewable energy space with over 25 dedicated R&D engineers employed through a collaborative partnership with The University of Newcastle. There is an immense benefit of industry and government bodies uniting, bringing great minds, capabilities and ingenuity together for the benefit and sustainability of our community and economy, and all done right here in Australia. The immense skill and expertise that we have in the Hunter Region form a platform for a sustainable large employment sector that can be a long term powerhouse for New South Wales."

Rod Henderson, Managing Director & CEO, Ampcontrol



“If we get this right, the entire region could benefit on so many levels and lead the way as a sustainable and prosperous region, which could be an example for other regions worldwide.

Newcastle survey participant

Other issues people raised

We collated over 1,200 comments from Hunter region people in the workshops and survey about what is important to them. These comments didn't solely focus on the nominated priorities. Below is a snapshot of other regional priorities.

Environment & Climate

"We want to see a thriving future for our future generations. We are all concerned about what we will be leaving for them. We talk about this a lot [among friends]." Cessnock workshop participant

Change is needed to avoid the worst of climate change. This includes rising temperatures, biodiversity loss, water restrictions. Any transition process will need to take into account the likely impacts of climate change and include measures to strengthen resilience.

Air quality and pollution from mining and its impact on the health of humans and livestock. There is an expectation that as the mines and power plants close air quality will improve and there will be less danger from pollution of Lake Macquarie.

Concern for habitat destruction due to housing development. Some people are excited at the prospect of a growing Hunter. Others feel there is a need to regulate housing developments to avoid suburban sprawl, habitat destruction and loss, by promoting affordable and sustainable, high-density housing.

Health, Care & Community Services

People are concerned about inadequate health services. Given the uncertainties associated with transition and change, plus the disruption from lost jobs, changes in demand for businesses and the impacts of climate change will all generate stress and anxiety and generate mental health issues.

Energy justice. Allowing wide access for people to be able to take advantage of new renewable energy alternatives like solar power will mean green alternatives are not confined to the wealthy.

Concern that job losses related to an unplanned transition will put pressure on under-funded community groups. Unplanned transition will make problems like homelessness worse, putting more pressure on community organisations and non-profits. These organisations need increased funding to support a fair transition and to ensure that nobody is left behind.

Housing Affordability

Access to affordable housing is an issue, especially in areas where high wages have driven up rents. Building more affordable and sustainable housing is essential, but must not create further problems through poor insulation and inability to access renewable energy.

Homelessness. There is already widespread homelessness in some communities in the region. This has been exacerbated by treechangers and people with good mining jobs pushing up housing prices. This creates a steep gap between the haves and have-nots in the community. Unless something is done in advance to address this situation, the closure of coal mines and power plants will increase the homelessness problem.

Transport and Connectivity

Improving infrastructure to attract and grow new industries. While the existing rail, road and port infrastructure provide a good basis for developing the region, especially for manufacturing, it needs to be upgraded. This should be funded out of existing or expanded government budgets, not from the royalties fund.

Transport infrastructure to increase equity and access to employment and training opportunities. An upgraded public transport system to connect the towns of the Hunter is needed, in combination with facilities for active transport (e.g. cycling and walking) to access jobs and services.

Arts & Culture

Engage artists to tell the story of change. There is interest in supporting artistic activities and arts projects that tell the story of the Hunter's history and future, and portray who we are and what we represent. This is a way to support the arts industry that has suffered greatly under COVID.

IDEAS PRESENTED IN THE WORKSHOPS & SURVEY

Energy-Intensive Industries

A range of views exist on the energy transition path for existing heavy industry. Whilst some feel excited about sectors like aluminium smelting switching to renewable energy, workers in the industry are concerned about whether this is even practicable or might result in job losses. In any case participants recognised it would require large investment, and therefore had reservations about such funding coming from the $25 million Royalties for Rejuvenation fund.

Support for development of new, decarbonised industries. New jobs should be "clean and green", providing healthy and sustainable livelihoods across the region.

Other Industries

There's general support for the development of manufacturing businesses in the Hunter that can be sustainable and competitive.

Tourism should be supported because the region has a rich history ideal for Indigenous and heritage tourism, and beautiful natural resources ideal for ecotourism and the wine industry. This requires investment, but also training and advice about how to develop sustainable tourism initiatives.

Agriculture. There is a strong interest in diversifying agricultural and livestock activities through innovative and competitive activities that preserve biodiversity, sustainability and resilience, and contribute to regional food security.

Local priorities

Cessnock

In Cessnock, there is stress and concern about social, environmental and economic pressures already present in the community, and about vulnerable or disadvantaged groups. Participants shared a sense of the inevitability of change and anxiety about the future.

"There's so much fear about losing jobs."

"My main concern is that people slip through the cracks. Even though the Hunter Valley is the most beautiful place to live in the world, we have people who are hungry, homeless and without a lot of hope."

"Getting counselling, advice, and support makes a huge difference because people can start to re-envision their lives."

"The Hunter is more than just coal mining—tourism is a major industry—but there is a lot of infrastructure that is still needed to support that, for example transport."

Singleton

In Singleton, there is profound concern about how the community and economy will manage coming change. Yet, there is also enthusiasm to get going, and a strong desire for enabling the community to collaborate with government at the state and local level on this work. There was a strong focus on skills. Both the need for free and expanded vocational education, and for research into and recognition of the skills base already present in the mining industry. The mining workforce needs targeted programs centred on transferable skills and the practicalities of job-shift.

"There needs to be better coordination, but it should come from the community, through council, and then up to government for support."

"We want to drag the wages and conditions up to what is paid in the mining industry. People say that it is great that we are looking after people in the care sector, but we won't attract people from mining into the care sector without investment."

"If we're making grants to community organisations, vulnerable groups should be prioritised and Aboriginal groups especially."

Muswellbrook

In Muswellbrook there was concern about the real challenge of wages and how people working in mining would be assisted to maintain their levels of income. People are confused about transition—wary of the terminology—and uncertain about what jobs may be coming and how much they will pay. Reskilling and vocational education were a top priority and participants reflected on the importance of using the skills already strongly present in the region.

Supporting existing businesses should take priority over attracting new business from outside, and small local business over large multinationals. Grants or incentives for business attraction won't work unless there is the physical and social infrastructure present to support new opportunities, particularly internet, transport, education and health.

"You want to give what is already in your community a leg-up first and then see what else is out there."

"To create compelling and enticing activities for developing new land uses or enterprise to town you have to have good infrastructure — internet, transport, training, health."

"The mining workforce will need to have wages that are equal to what they have now or they will leave [the region]."

"[We need] some type of priority for those who are looking for jobs, prioritising people who have lost jobs in the local mines to get the jobs that are around."

Maitland

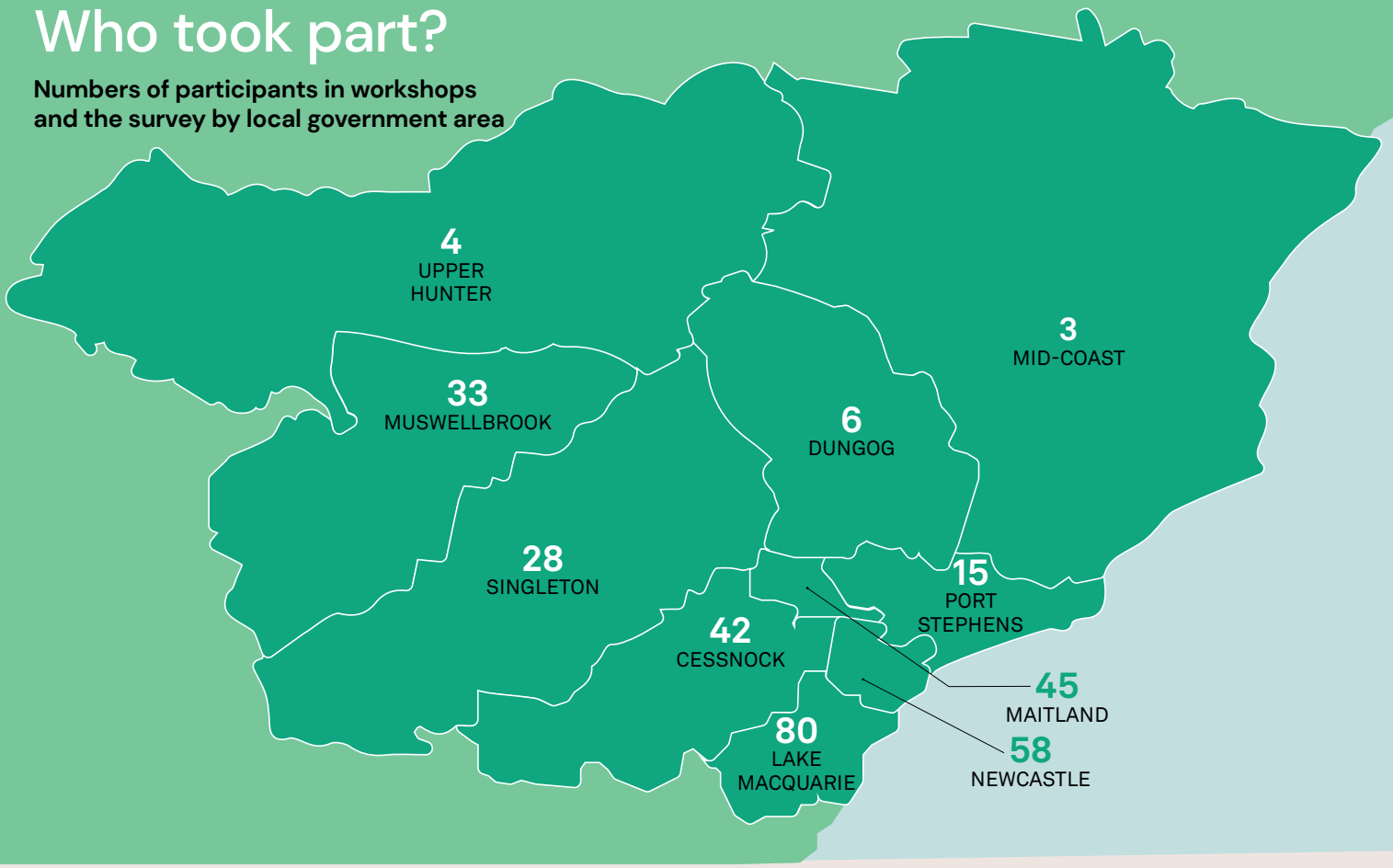
In Maitland, problems with housing affordability and homelessness were raised again, as was the underfunding of TAFE and the need for public transport. Regarding the region's future, there was a shared sense that it was possible to manage change positively, but scepticism that this would happen.

Maitland people felt workers facing redundancy need support not just with training and job opportunities, but socially, financially and personally. The first thing people working in mining needed to see was job creation, and there was no reason why diversification should be seen as undermining the mining industry.

"I am worried about the political aspects of transition and how we can make it less about conflict and more about ideas."

Who took part?

Numbers of participants in workshops and the survey by local government area



"My recall from BHP closure was that those who took up counselling benefited from it. This assists people through the path of moving from one employer to another, or to take up the opportunity to retire."

"First there needs to be jobs. There cannot be advice if there are no jobs to go to. Governments are very happy to create another advisory industry and then there is nothing left for the workers. It needs to come later in the process."

"I get to see some of the adults who have lost their jobs and we often can't meet their health needs because we don't have the staff."

"Yes, the mines are wrecking our land but I get to benefit from the resources that they provide us every day."

Lake Macquarie

In Lake Macquarie, participants expressed a sense that the area was lagging, with housing, vocational education and the arts already under-funded. There was sentiment, too, that the region is behind in transition planning and preparation, and there was a passionate desire to get to work on this. Many participants were aware of the "shovel-ready" potential of re-using coal ash from the dumps where it is stored at Eraring and Vales Point power stations. People with experience of the "boom and bust" of the resources sector, closure of the steel works, and restructuring in electricity generation had clear ideas about the need for coordination, planning and support to help individual workers and the broader community prepare and respond to changes.

"There's been a lot of dishonesty pointed toward the coal miners, they need honesty … I'm worried that coal companies will walk away and leave us with bloody great holes to deal with."

"I worked for TAFE for 27 years. Driving between Newcastle, Muswellbrook and Scone and over those years I saw a lot changes in the coal industry and how that affected all the other business and the kinds of people that could live in Muswellbrook because of the changes in air quality, and the cost of rents."

"I come from a family that has strong mining connections but I now work for a domestic violence charity and I see how inequality of opportunity through all different regions and how it impacts families for generations."

"We don't have to have boom and bust: it can be handled differently if there are rules for companies that they have to form pools of employment, perhaps with other companies, so that people can be moved to different jobs within the region."

What else we heard

"The poor state of the environment in the Hunter, in view of the climate crisis, leaves the region vulnerable to the huge economic costs that will be incurred by natural disaster. Improving the quality of biodiversity in hand with renewable technologies is a major priority."

Maitland resident (survey)

"In terms of what is the most immediate and urgent issue, it's workers being put off and not even getting their entitlements. Everything else comes behind that. Yes it's nice to have financial counselling, but it doesn't help a hell of a lot if you haven't been given redundancy pay. You're scrambling to put food on the table, pay your mortgage or rent."

Lake Macquarie workshop participant

"Women must be equally represented in all planning groups."

Cessnock resident (survey)

"Planning for a fair transition to a better society. This should always be the objective."

Lake Macquarie resident (survey)

"We need access and equity, community at all levels, government and non-government involvement, as well as input from community groups."

Lake Macquarie workshop participant

"Free vocational training for displaced workers removes the threat of no job and gives people opportunities to embrace change."

Lake Macquarie resident (survey)

"It starts from where we are. Building on what we have is important."

Singleton workshop participant

"If all the local authority is doing is reacting to government-led priorities then it is a little bit limiting. The government also needs to listen to the local authority and act on that. It needs to be a two-way flow."

Muswellbrook workshop participant

"We need a co-ordinated approach to industrial development and skills requirements to ensure we can attract and foster the new industries which will prosper as we move towards net zero emissions."

Lake Macquarie resident (survey)

"I'm worried if we do as we have always done, we are signing our grandchildren into a world of heat, food scarcity and terrible air, and a greater division between the wealthy and the poor."
Lake Macquarie resident (survey)

"We need to economically and socially leverage our unique advantages – proximity to existing large power infrastructure for new battery manufacturing and battery power stations, huge potential renewable energy sources, a port, potentially sustainable farming and forestry in carbon capture and organic food." Newcastle resident (survey)

"My daughter owns a business in both Scone and Muswellbrook and I am concerned that there will not be industries/ population for her business to be viable."
Muswellbrook resident (survey)

"I hope there can be funding for renewable and other projects so that workers can re-skill and participate. Keep local people working towards something for their own, and their community's future." Maitland resident (survey)

"If workers can commence vocational education now they would be supported psychologically because they could see the pathway to future prospects."
Maitland workshop participant

"As a young person, I personally have great concerns about the trajectory of climate change and the lack of reasonable action taken by those who could make the biggest difference ... the Hunter absolutely has the potential to pioneer in the energy sector with a green perspective. Australia, as it lends the keys to young people, is going to live or die from how it deals with the real, physical problems of climate change."
Maitland resident (survey)

"There is a lot here about opening up land for new enterprises and industries. A lot of the land surrounding the mines is natural habitat and we need to assess and consider the habitat avenues. We have ignored these things for so long. We need to consider the long-term effects on the environment from opening up all this land." Lake Macquarie workshop participant

"Analysis is clear that what works is when companies, the community, and the government come together to plan and that this plan is executed."
Maitland workshop participant

"With a boom in the landcare industry I could find better opportunities for better paying jobs to support myself and my future family."
Newcastle resident (survey)

Diversification and growth

Transforming mining land in the Hunter Valley

Lock the Gate Alliance

26 May 2022

Building a better working world

Release notice

Ernst & Young ("EY" or "we") was engaged on the instructions of Lock the Gate Alliance ("Client") to examine how the Hunter could repurpose mining land as coal mines in the region close over the next 20 years ("Project"), in accordance with the engagement agreement dated 15 November 2021 including the General Terms and Conditions ("the Engagement Agreement").

The results of EY's work, including the assumptions and qualifications made in preparing the report, are set out in EY's report dated 26 May 2022 ("Report"). The Report should be read in its entirety including the applicable scope of the work and any limitations or disclaimers. A reference to the Report includes any part of the Report. No further work has been undertaken by EY since the date of the Report to update it.

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In preparing this Report we have considered and relied upon information from a range of sources believed to be reliable and accurate. We have not been informed that any information supplied to us, or obtained from public sources, was false or that any material information has been withheld from us.

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We highlight that our analysis and Report do not constitute investment advice or a recommendation to you on a future course of action. We provide no assurance that the scenarios we have modelled will be accepted by any relevant authority or third party.

Our conclusions are based, in part, on the assumptions stated and on information provided by the Client and other information sources used during the course of the engagement. The modelled outcomes are contingent on the collection of assumptions as agreed with the Client and no consideration of other market events, announcements or other changing circumstances are reflected in this Report. Neither EY nor any member or employee thereof undertakes responsibility in any way whatsoever to any person in respect of errors in this Report arising from incorrect information provided by the Client or other information sources used.

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Table of contents

Executive summary

The Hunter is Australia's largest regional economy, with strong foundations in mining, agriculture, defence and broad-based services. While the region has undergone significant structural change over the past three decades, it now faces another major adjustment as economies lower emissions and reduce their requirements for coal.

Across the Hunter, 17 mines are due to close over the next 20 years. These closures are likely to involve major economic challenges, with new industry developments and employment needing to be found.

This analysis examines the economic opportunities for the Hunter to reuse and revitalise the region's decommissioned coal mine sites as they become available, repurposing more than 130,000 hectares in total. In consultation with Lock the Gate Alliance (LTG), the following three development scenarios are assessed, each of which seek to leverage the region's strategic advantages and provide different economic restoration pathways for former mine sites.

1 Core transition pathway

The minimum legal standard mine owners must rehabilitate their mine owned land to.

2 Maximum conservation pathway

Increased conservation requirements on mine owners by extending rehabilitation requirements to the land surrounding the mine.

3 Renewable energy precincts

Repurposing existing mining infrastructure and utility connections for new renewable energy precincts.

The potential economic gains to the Hunter

Economic indicator	1 Core transition pathway	2 Maximum conservation pathway	3 Renewable energy precincts
New investment (Capital expenditure)	$12 million	$24 million	$1.3 billion
Industry output	$240 million	$500 million	$7.0 billion
Economic output (Gross regional product)	$95 million	$200 million	$3.7 billion
Average annual employment (FTE)	320	670	13,600

A high level assessment indicates the potential for concerted industry development and conservation (scenarios 2 and 3) to generate major economic gains for the Hunter. Under scenarios 2 and 3, regional economic activity could increase by around $105 million or $3.6 billion respectively on top of the current trajectory of the Hunter.

Both development scenarios also generate substantial job growth. Scenario 3, which involves investment into renewable industries, could increase annual employment by an additional 13,300 full time jobs.

Key areas for new industry growth are likely to involve:

- Forestry
- Livestock
- Manufacturing
- Construction
- Trade
- Transport
- Electricity
- Processed foods
- Services
- Green hydrogen

The values on this slide represent the Net Present Value (NPV) of the economic output over 25 years, using a 7% discount rate. Gross regional product, is the aggregate economic output for the Hunter region.


1
The context

New economic opportunities can emerge as Hunter coal mines close

Globally, there is a major transition from fossil fuels to renewable energy. Not only are governments facing increasing scrutiny to reduce carbon emissions, but businesses and capital markets are sharply focused on Environmental, Social and Governance (ESG) based investing to generate returns and lower their carbon footprint.

This global transition presents both opportunities and challenges for regions heavily reliant on fossil fuel industries for employment and growth. The Hunter is now confronting this change with 17 mines closing over the next 20 years, freeing up more than 130,000 hectares of land for repurposing.

For the Hunter, the phasing down of fossil fuel based industries creates several key vulnerabilities, especially managing the transition of its large industrial employment base. Crucially, new investment into alternative low emission industries has the potential to provide sustainable opportunities for employment. Key economic opportunities include:

- Energy production – investment into clean and renewable industries
- Agriculture – expanding the capacity of existing agriculture in the region
- Manufacturing – develop manufacturing capacity in high growth industries
- Conservation – land rehabilitation and ecological management to restore and foster the natural Hunter ecosystem

Origin Energy closes Eraring coal-fired power station

Origin Energy announces the closure of Eraring coal-fired power station seven years early. Shutting the Eraring coal-fired plant comes one week after AGL announced it was shutting down Bayswater and Loy Yang A coal power stations early.

Purpose of engagement

Lock the Gate Alliance (LTG) commissioned EY to examine how the Hunter could repurpose mining land as coal mines in the region close over the next 20 years, and the economic value of doing so.

This report forms part of the LTG's work within the Hunter Renewal Roadmap to support the transition to a low emission economy and demonstrate how this transition can benefit workers, develop local industry and continue to protect the environment. This report is structured in the following chapters:

- **Chapter 2** provides an overview of the Hunter region, including the regions economic and strategic priorities that will shape potential uses of released mine title land
- **Chapter 3** assesses three economic scenarios for mine land redevelopment, including:
  - A baseline scenario for the region, including planned mine closures and current requirements for rehabilitation and release, and two additional pro-investment and conservation scenarios
  - The amount of land used for repurposing, and the potential industry outcomes from different land uses and investment policies
  - An explanation of the possible uses in renewable energy precincts
- **Chapter 4** highlights the economic output of the three scenarios, including:
  - Key insights and potential actions to improve the transition to a low carbon future
  - How economic prospects can be harnessed going forward

Source: Power Technology

2 The Hunter region

The Hunter region is resource reliant

The Hunter region is Australia's largest regional economy, supporting nearly 322,000 jobs and generating economic output of around $43 billion. The Hunter has a population base covering the large metropolitan area of Newcastle, regional towns and remote farmland, accounting for 9% of NSW's population.

Geographically, the Hunter is diverse, home to Australia's oldest wine country, rich natural resources, and fertile farming lands. The Hunter is also in close proximity to the major population centre of Sydney and the Port of Newcastle.

Combining these natural advantages and its strategic location, employment within the Hunter covers mining, agriculture, business, tourism and other economic activities. By 2036, population in the Hunter region is set to grow to around 862,000 and create 61,500 new jobs. Supporting this economic growth are key strengths and emerging sectors:

Supply linkages

World class supply linkages enabled by an extensive rail system, highways, and the Port of Newcastle.

Wine making

The oldest wine making region in the country, with growing tourism and hospitality sectors.

Agribusiness

Agricultural industry accounts for over $460 million in output, including cattle, milk, poultry, eggs, hay and wool.

Mining in the Hunter

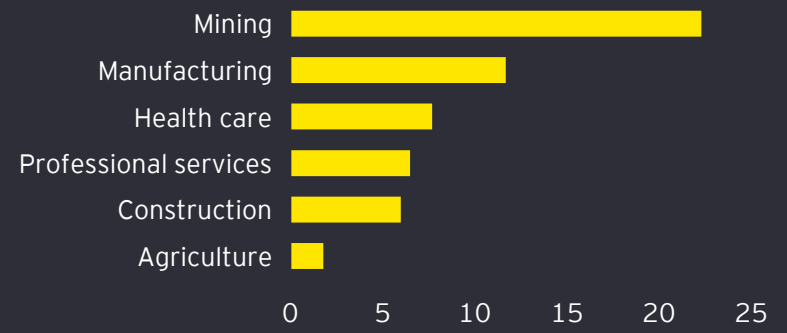
Mining has been a major source of economic activity and export revenue over the past century, reflecting the Hunter's coal resources. The Hunter holds nearly 40% of NSW coal deposits and the mining sector's influence continues to support a wide range of allied industries across the region.

Historically, the coal industry has provided significant opportunity for local employment, with 95% of Australia's thermal coal exports in 2009 coming from Hunter mines. While coal activity is set to continue for many years, the industry is commencing a global transition into renewable energy.

Other important aspects include its strategic position on the east coast, access to major ports and its established infrastructure and trade routes. This existing ecosystem, which historically has been focused on the mining industry, can be repurposed and reused for future businesses generating new employment opportunities.

Other industries within the Hunter

The economy is far more reliant on primary industries, for example mining, than it is on services. The Hunter region's economic contributions include a distribution of predominantly mining, manufacturing, and agriculture.



Source: EY analysis of ABS data

Source: NSW Department of Planning and Environment and NSW Department of Primary Resources

Repurposing coal mining sites provides new growth prospects

Closure and rehabilitation of mine land

The release of land as mines are scheduled to close, and the global shift from coal provides the Hunter with new opportunities to pivot its economic base, while leveraging its major workforce, industry and supply chain strengths. Transitioning into renewable energy, conservation, and other agricultural products can diversify the Hunter's economy, helping generate long term jobs.

With more than 130,000 hectares of mining land scheduled for release over the next 20 years, repurposing the land to new industries can ease the transition away from fossil fuel. Mining land is assumed to be available for restoration and active management five years after operations cease. Appendix A provides the schedule of mines set to close in the Hunter.

Under legal and licensing conditions, mining companies must rehabilitate mining land to a safe and stable condition. Statutory rehabilitation requirements include extensive woodland restoration across active mine land. Further improvement and ecological management on other mine owned land has the potential to significantly improve environmental outcomes. Rehabilitation is a continuous process and is essential for the land's future economic potential.

The Hunter is in a strategic position to take advantage of new sustainable industries, and should take proactive steps to capitalise on emerging opportunities and improve economic outcomes.

BHP ends domestic thermal coal sales

Thermal coal mined by BHP will no longer be burned to make electricity in Australia. BHP has started dismantling the 10 kilometre conveyor belt that fed coal from its Mt Arthur mine to AGL's Bayswater and Liddell power stations.

Possible future development scenarios

In consultation with LTG, this report looks at three future development scenarios, progressing from current rehabilitation requirements to increased conservation and finally renewable energy precincts.

The scenario assessment has adopted the following process:

- First, the report examines the mandatory restoration requirements of mine owners, providing the current economic trajectory of the Hunter over the next 25 years
- Next, the report looks at maximising conservation, where the Hunter would increase the area required to be rehabilitated to facilitate future agricultural and environmental industries
- Lastly, the report looks at a scenario which keeps the increased area used for rehabilitation, but focuses on additional development of renewable energy precincts on existing mining infrastructure sites, that cannot be rehabilitated into agriculture uses

Each scenario identifies future industries where potential economic prospects could be seen. The industries include:

- Forestry
- Livestock
- Manufacturing
- Construction
- Trade
- Transport
- Electricity
- Processed foods
- Services
- Green hydrogen

Source: Australian Financial Review and Lock the Gate Alliance

3 Economic development pathways

Three proposed land use scenarios to support the region's economy

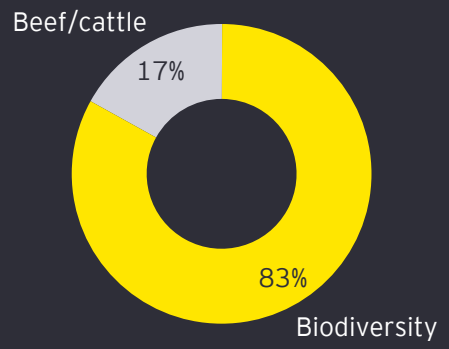
In consultation with LTG, three discrete scenarios of future land use and investment in the Hunter were developed and examined. The scenarios are additive, with each scenario building on the previous one to showcase the future economic potential of the region. Scenario 1 covers mine owner's current restoration requirements. Scenarios 2 and 3 are new policy initiatives which increase the level of land restoration and active management, extend the land conservation footprint, and make new capital investments.

1 Core transition pathway

This scenario is the current trajectory of the Hunter. It represents the minimum legal standard mine owners must rehabilitate the land to and repurposes the smallest amount of land.

With a total of $12 million of capital expenditure, industry output is expected to increase by

$240 million comprising:

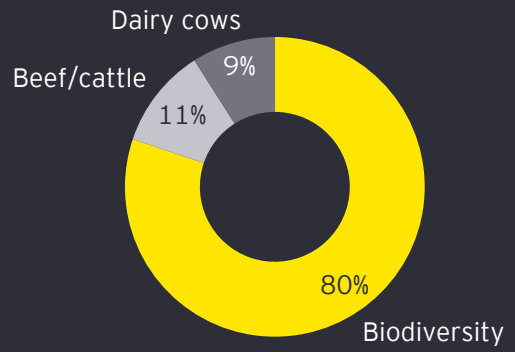


2 Maximum conservation pathway

This scenario increases conservation requirements on mine owners, and extends restoration and land management to the land surrounding the mine which is owned by the mine owners.

With a total of $24 million of capital expenditure, industry output is expected to increase by

$500 million comprising:

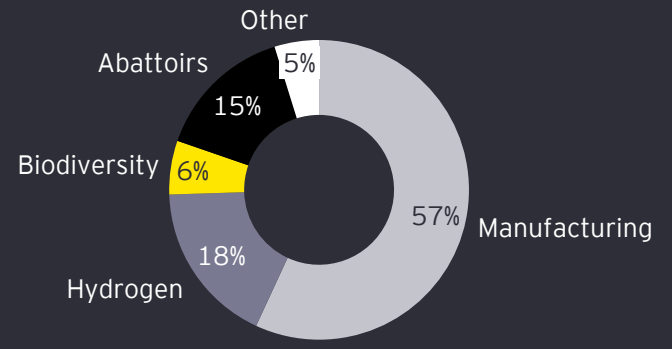


3 Renewable energy precincts

Building on the increased conservation requirements of scenario 2, scenario 3 involves repurposing existing mining infrastructure and utility connections for renewable energy precincts.

With a total of $1.3 billion of capital expenditure, industry output is expected to increase by

$7 billion comprising:



The values on this slide represent the Net Present Value (NPV) of the capital expenditure and the industry output over 25 years, using a 7% discount rate.

Each development scenario drives different industry growth and activity

Each scenario involves different forms and levels of capital investment. The table on the right provides a snapshot of the inputs for each scenario and compares their capital expenditure, economic output, and the land used for rehabilitation. Scenarios 2 and 3 involve a greater land size in comparison to scenario 1, essentially widening rehabilitation requirements on mine owners beyond their mine title land to surrounding mine owned land.

Industry sector outputs expand across scenarios

Scaling up capital expenditure and conservation on mining land expands the economic base of the region. For example, the core pathway increases output in the biodiversity and beef/cattle industries, but by increasing capital expenditure and rehabilitation requirements, the maximum conservation pathway sees the addition of the sheep and dairy cow industry to the employment base. Similarly, renewable energy precincts increases and focuses capital expenditure into renewable energy, increasing manufacturing, green hydrogen, abattoirs and solar energy.

Certain investments generate higher levels of income

Rebuilding and replenishing woodland forms part of a wider investment into conservation and land management activities. Conservation and land management investment generates increased levels of income which flow into the Hunter comparatively to market based outputs.

Other investments similar to woodland replenishment include dairy processing, manufacturing, green hydrogen and solar. On the other hand, investments into abattoirs and sheep produce more economic output to the industry then it costs to establish.

Total value	1 Core transition pathway	2 Maximum conservative pathway	3 Renewable energy precincts
Capital expenditure	$12.2 million	$24.0 million	$1,333.1 million
Where is the capital expenditure going?	56% woodland 30% beef/cattle 14% biodiversity	47% woodland 20% beef/cattle 18% dairy cows 14% biodiversity <1% sheep	50% manufacturing and renewables 25% green hydrogen 18% solar energy 5% abattoir 1% dairy processor <1% woodland <1% beef/cattle <1% biodiversity <1% dairy cows
Industry output	$239.7 million	$500.4 million	$6,968.5 million
Industry output by industry	83% biodiversity 17% beef/cattle	80% biodiversity 11% beef/cattle 9% dairy cows <1% sheep	57% manufacturing and renewables 18% green hydrogen 15% abattoir 6% biodiversity 2% dairy processor 2% solar energy <1% beef/cattle <1% dairy cows
Total area repurposed	79,716 hectares	130,609 hectares	132,239 hectares

The values on this slide represent the Net Present Value (NPV) of the capital expenditure and the industry output over 25 years, using a 7% discount rate.

Land release and investment profiles under the three development scenarios

As mines in the Hunter close, land becomes available to be repurposed. The three alternative land release investment profiles which have been developed based on public information, assumes mining land becomes available for redevelopment five years after the mine is scheduled to close. Capital expenditure levels reflect a similar pathway to the land released over the forecasting period.

The core transition pathway repurposes less land and at the lowest cost

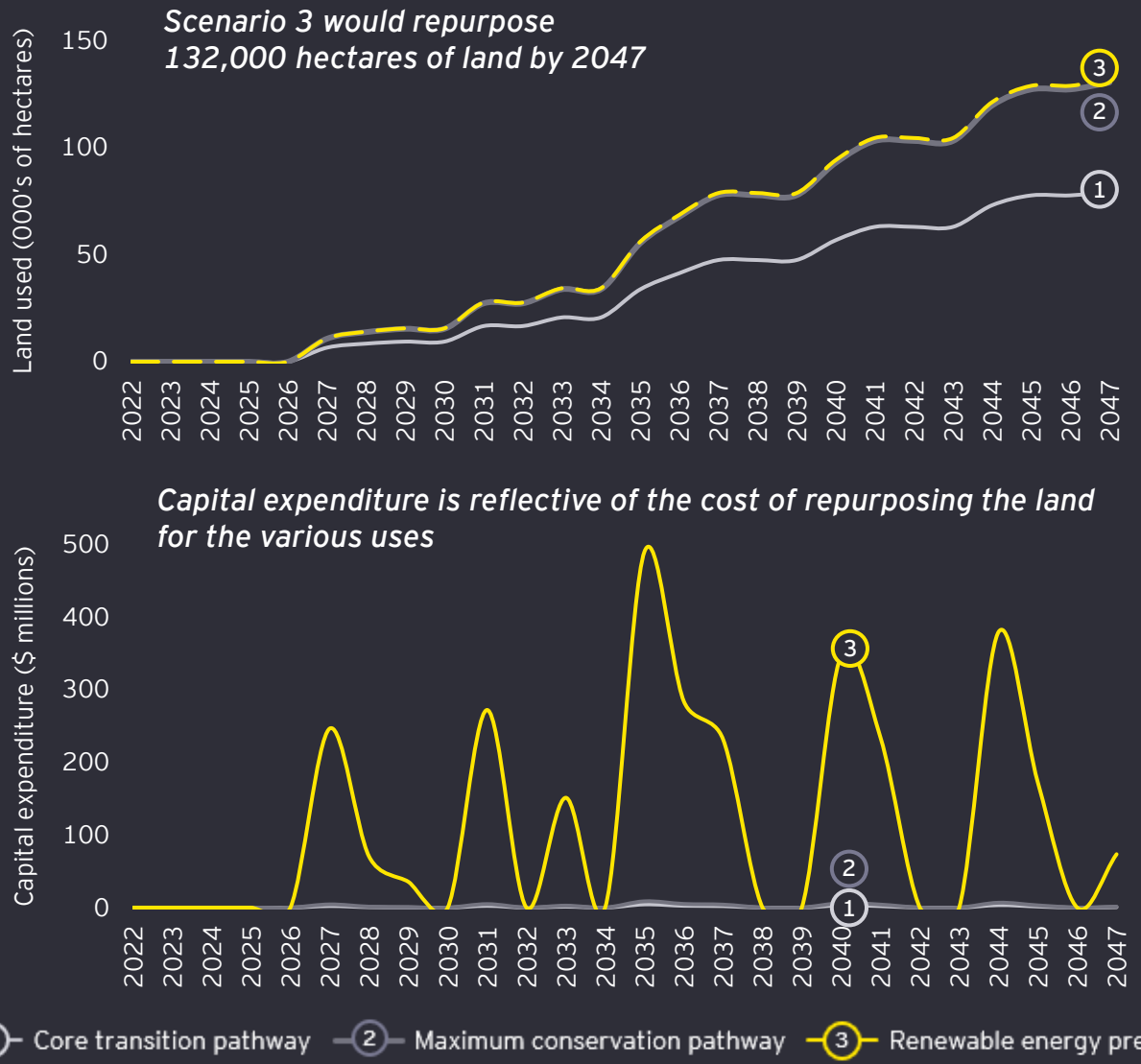
The core transition pathway only considers the rehabilitation of current mining titles, therefore repurposing less land and requiring less capital expenditure than scenarios 2 and 3.

The maximum conservation pathway repurposes more land

The maximum conservation pathway requires mine owners to rehabilitate the mining title and restore surrounding mine owned land. Widening rehabilitation requirements increases land available for future use by over 50,000 hectares. Here, land is predominantly repurposed for agricultural industries, including grazing land, woodlands and biodiversity corridors. Agricultural industries require similar levels of capital expenditure to the core transition pathway.

The renewable energy precincts requires greater capital expenditure

Scenario 3 proposes to use an additional 1,630 hectares of land already confined to mining infrastructure areas, for the development of new renewable energy precincts. Despite only using a small amount of land, renewable energy precincts require higher levels of capital expenditure, relating to construction and purchasing equipment.



Source: Information provided by Lock the Gate Alliance.

1 Mine owners are legally required to rehabilitate their mine land

The core transition pathway follows current rehabilitation requirements for mine owners within the Hunter. Mine owners in NSW are obligated to conduct rehabilitation and environmental management activities on their mine owned land under the Mining Act including undergoing assessment, audits and site inspections.

The NSW government has oversight of mine rehabilitation

Prior to the commencement of any mining operation, mining companies work with multiple state government authorities to develop comprehensive rehabilitation plans. The following state authorities play a role in regulating mine rehabilitation for NSW:

- The Department of Planning and Environment
- The Resources Regulator
- Mining Exploration and Geosciences NSW

State government consent or approval in NSW requires mining companies to provide an annual progress report against their agreed rehabilitation plan.

The required activities aim to return the land to a safe condition

Land disturbed by mining activity is progressively rehabilitated throughout operation, with the objective of returning mining land to a safe and stable condition consistent with the surrounding landscape. Rehabilitation activities include:

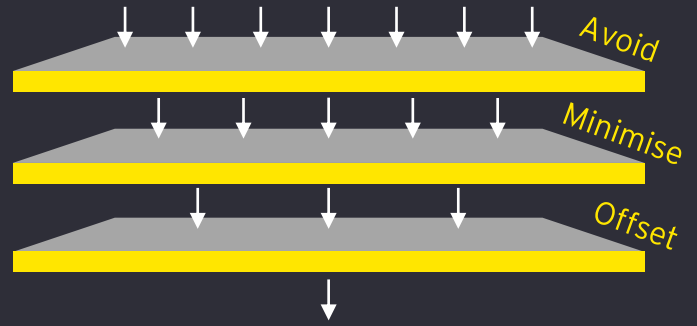
Revegetation

Water management

Hydrogeology

Rehabilitation Management Plans

A Rehabilitation Management Plan (RMP) outlines a mine's rehabilitation objectives, strategies and actions required over the cycle of the mine. RMPs have the objective of leaving a stable and functioning landscape after mining activity has ceased, along with outlining activities to avoid and minimise environmental harms.



Most Hunter mines have extensive woodland and other restoration requirements in their RMP. Some of this restoration is completed on nearby areas of land to offset the loss of biodiversity caused by the mine.

What if the mine owner does not meet the rehabilitation requirements?

State government authorities require mine owners to provide financial security to cover the costs of rehabilitating land if, for whatever reason, the mining company does not meet rehabilitation commitments and obligations.

While the size of the security is proportionate to the estimated cost of rehabilitating land to a minimum standard, the actual cost of rehabilitation in the case of non-compliance can exceed the security's value (sometimes by orders of magnitude). As such, taxpayers can still face substantial risks mitigating the costs from non-compliance.

Source: NSW Mining

2 The maximum conservation pathway restores more land and to a greater level of rehabilitation

The maximum conservation pathway builds on scenario 1 by increasing the level of rehabilitation and active management of the land, and extends these measures to the mine-owned 'buffer lands' surrounding the mine titles. Increasing conservation to surrounding land builds new opportunities for the Hunter and ensures more land is available for future use.

Under the core scenario, the rehabilitated mining land is used for cattle, biodiversity and woodland. Under the maximum conservation pathway, the land will additionally be used for dairy cows and sheep.

What is conservation and land management?

The Conservation and Land Management sector includes businesses and organisations that operate national parks, nature reserves, council reserves, indigenous protected areas, commonwealth lands, private land and botanical gardens, to preserve flora and fauna in their natural environment.

Organisations in this sector also provide support to farmers and fishers across Australia on best-practice sustainable agriculture. They are focused on expert management of natural assets such as soil, water and native vegetation. Caring for the land includes a range of activities, including:

- Sustainable farm practices
- Restoring native habitats and revegetation
- Controlling weeds and pests
- Developing and sharing local natural resource management skills and knowledge
- Threatened species management
- Sharing of cultural and management information

The principles of land conservation

- **Preservation** – lands and their natural resources should not be consumed by humans and should instead be maintained and transmitted to future generations
- **Restoration** – the process of returning ecosystems and communities to their original natural conditions
- **Remediation** – the process of improving the ecological function of an ecosystem in bush land through activities such as weeding, pest-management and erosion control
- **Mitigation** – the process of removing the damage done by contaminants and pollutants in waterways, soil and ecosystems through sustainable practices which do not cause further harm

What is forestry?

Australia's forests provide a range of benefits through wood, other forest products, and ecosystem services including water protection and supply, soil protection, carbon storage and sequestration, habitat for flora and fauna species, tourism and recreation, and cultural value for both non-Indigenous and Aboriginal and Torres Strait Islander peoples.

To meet the growing demand for wood and wood products, the Australian Government released the National Forest Industries Plan in 2018. The plan provides a vision supporting the forest industries' aspirational goal of planting a billion new trees over the period to 2030.

Reflecting that forestry is largely an environmental asset, the economic benefits from forestry development largely accrue through the investment process rather than market returns.

Source: Renew Method

Source: Department of Agriculture, Water and the Environment

3 The renewable energy precincts scenario increases economic opportunities

Scenario 3 incorporates slightly more land then scenario 2 and repurposes this additional 1,630 hectares for renewable energy precincts and industrial purposes. Renewable energy precincts include solar and battery manufacturers, food processing and green hydrogen factories, and other renewable energy industries. More details about these industries is discussed over the next three pages.

Solar

- Solar farms use large scale photovoltaic (PV) panels or other means of collecting solar energy to harvest solar power. They operate as power plants to generate energy on a commercial or utility scale.
- A solar farm requires around two to three hectares of relatively flat land per megawatt of power generated.
- Solar farms require a range of infrastructure, including inverters, energy and battery storage, substation or transmission for connecting to the grid, and access tracks for construction and maintenance.

Solar milestone as Australia passes 25GW mark

Australia has reached 25GW of installed capacity, resulting in Australia having the most PV per capita in the world. 2021 was a record breaking year for solar in Australia, with a total of 5.2GW of PV installed.

Employment in solar farms

There are four major sectors for solar jobs: manufacturing, system design, project development and installation/operations. Within these areas, there are a range of jobs, including:

- Engineers, manufacturers, technicians, installers, maintenance workers, trade and construction workers.

Battery

- Battery farms store renewable energy and are able to provide an alternate energy source to households in the event of a power outage.
- Batteries enable higher levels of renewable energy integration through energy arbitrage and replace the need for fossil fuel plants to substitute the grid at peak times of demand.

Tesla battery farms signals key change in Australia's green energy

Tesla's battery farm, located in South Australia, officially called the Hornsdale Power Reserve, was connected to the grid in December 2017. The farm was installed to improve the electrical grid after a storm disrupted stable power supply. The Hornsdale Power Reserve is used as an alternative power source to reduce the load from traditional power grids. The construction cost was $161 million, providing 100 megawatts of energy initially to thousands of South Australian properties.

Employment powered through battery farms

The Hornsdale Power Reserve provided 158 on site jobs and 898 indirect jobs while being built, and 6 on site jobs and 59 indirect jobs now that it is operating.

This employed people from a variety of backgrounds in the local area including battery technicians, energy storage engineers and battery installers.

Source: RenewEconomy

Source: Hornsdale Power Reserve

3 Repurposing land for renewable energy precincts brings opportunity for the Hunter region to host green hydrogen hubs

Green hydrogen

The Hunter region has access to existing energy infrastructure, sustainable water sources, ports and logistics capabilities as well as a future supply of cheap and reliable renewable energy, making it a good location for a green hydrogen hub.

- Green hydrogen is on the rise and is produced with renewable energy, emitting no greenhouse gasses
- Green hydrogen is a clean and renewable fuel that can be used in power supply, heating, transport and a range of industrial processes while producing no greenhouse gas emissions
- Green hydrogen can be transported and subsequently exported overseas, making it a tradable energy commodity

The Hunter region has access to renewable energy such as solar and wind, making the region a good location for a green hydrogen hub. A green hydrogen hub in the Hunter region will provide opportunities to innovate and diversify its industry.

The world needs clean, flexible, storable and safe fuels to support its future energy needs. Green hydrogen has all of these characteristics. As a fuel it produces no carbon emissions, only water. Green hydrogen can be used:

- To blend with, or replace, natural gas for homes, industry and cooking
- For fuel cells to generate electricity to power cars, trucks, buses and trains
- To store energy and generate electricity for remote communities
- As an industrial chemical feedstock for products such as ammonia, fertiliser and steel

The Hunter region will become home to one of NSW's first green hydrogen hubs

The new Hunter Valley green hydrogen hub will use and distribute green hydrogen, driving low carbon jobs and creating new infrastructure. Green hydrogen hubs align with the NSW Renewable Energy Zones planned under the Electricity Infrastructure Roadmap.

Employment growth through hydrogen

Using hydrogen requires new technologies and infrastructure. HyResearch, an Australian Hydrogen R&D Portal run by the CSIRO and the Australian Hydrogen Research Network (AHRN), was created to help focus research and innovation to solve the challenges to accelerate the development of Australia's domestic and export hydrogen industries.

The growth of the hydrogen industry could create new jobs, skills, education and training requirements that do not currently exist. Jobs that would be needed in the hydrogen industry which do currently exist include:

- Researchers, industrial equipment mechanics, electricians, technicians, engineers, trade and construction workers and transportation workers

The potential for jobs growth in the hydrogen industry has been highlighted in studies. For example, a 100 megawatt facility in the Tasmanian Renewable Hydrogen Action Plan is estimated to support around 200 megawatts of renewable energy investment and create an estimated 100 to 120 jobs during operations.

Source: Department of Industry, Science, Energy and Resources and Ammonia Energy Association

Source: NSW Government and Tasmanian Department of State Growth

3 Food processing is constantly growing and evolving

Further uses of the additional 1,630 hectares of land in scenario 3 include food processing activities.

Food Processing

- Food processing is any method of transforming food from its original form to food products sold at grocery stores
- The industry specialises in two main areas: food preparation and food packaging
- The industry is constantly growing, evolving and adapting as lifestyles and priorities change around the world

Abattoirs

- Abattoirs process animals into commercial meat products before distribution to butchers
- Some abattoirs have internal butcher facilities, while others sell their products to local butcheries
- There are currently 50 abattoirs operating in NSW with a total of 236 in Australia

Dairy Processing

- Dairy processing produces milk, cream, cheese, butter and other dairy products from dairy produce
- Dairy is a reliable consumer category with certain products increasing in popularity over the pandemic
- Australia exports 35% of its total milk production with exports valued at $3.2 billion in 2019

Employment in the food processing industry

Areas of work in food, dairy processing, and abattoirs include harvesting, cleaning, packaging and transport. More specifically, the industry employs:

- Chefs, production workers, maintenance staff, electricians, cleaners, food safety officers, machine operators, technicians, installers, truck drivers, livestock drivers, processing specialists, meat quality specialists and butchers

Dairy in Australia directly employs 46,200 people and is the fourth largest rural industry generating $4.4 billion in farm gate value.

Ferrero invested in finding a sustainable option for their packaging

Ferrero is collaborating with Milliken to find the right sustainable material for the Ferrero Rocher boxes. They landed on the right material - polypropylene (PP) – after testing over 20 different formulations. This has resulted in performance improvement through lower resource consumption and reduced greenhouse gas emissions.

The food processing market is likely to boom

With increasingly busy lifestyles, there is high demand for packaged food and food products, resulting in a high demand for innovative food processing techniques. Health and functional food is in high demand as well as meat, poultry, dairy, bakery and confectionery products. A rise in disposable income due to the pandemic has led many Australians to lean on convenience.

Source: Department of Agriculture, Water and the Environment

Source: Milliken and Refrigerated & Frozen Foods

4 Potential economic impacts

Economic returns are largest when land is used for renewable energy precincts

Through targeted repurposing of mine owned land, there is potential to stimulate considerable economic activity. Policy initiatives which increase and widen the level of rehabilitation on mine owners, requiring them to do more than the minimum legal standard, generates significant returns to the Hunter over the next 25 years.

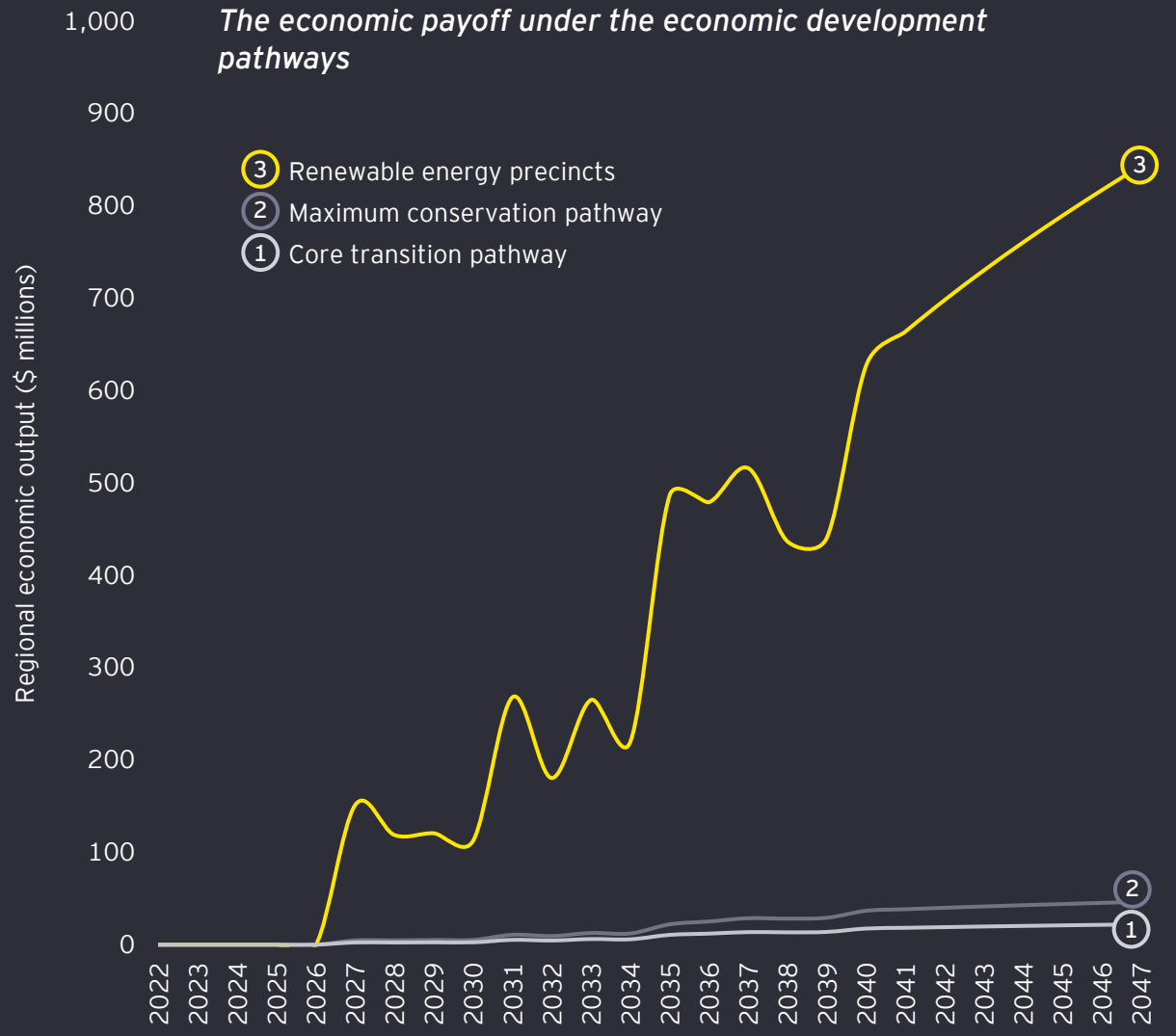
Increasing rehabilitation requirements increases economic growth

- The maximum conservation pathway, which repurposes mining land and surrounding mine owned land to conservation and land management activities, nearly doubles the economic output potential of the Hunter moving forward.
- The economic payoff in the Hunter region from repurposing previous mining land for renewable energy precincts could be over $520 million over the next decade.
- Both policies significantly increase the economic potential of the Hunter over the short and long term. Increasing conservation and capital investment could generate significant economic return for the Hunter.

The 25-year economic payoffs could be...

1	Core transition pathway	**$95 million**
2	Maximum conservation pathway	**$200 million**
3	Renewable energy precincts	**$3,700 million**

The economic payoff under the economic development pathways



The values on this slide represent the Net Present Value (NPV) of the economic output over 25 years, using a 7% discount rate.

The maximum conservation pathway increases incomes in the Hunter

The development pathways each involve significant levels of conservation and land management activities, in particular under scenarios 2 and 3. These activities can often involve income streams associated with carbon offsets and biodiversity payments. These income flows typically arise from outside the region including through federal and state environmental programs.

Increasing rehabilitation and capital expenditure significantly lifts income levels within the Hunter

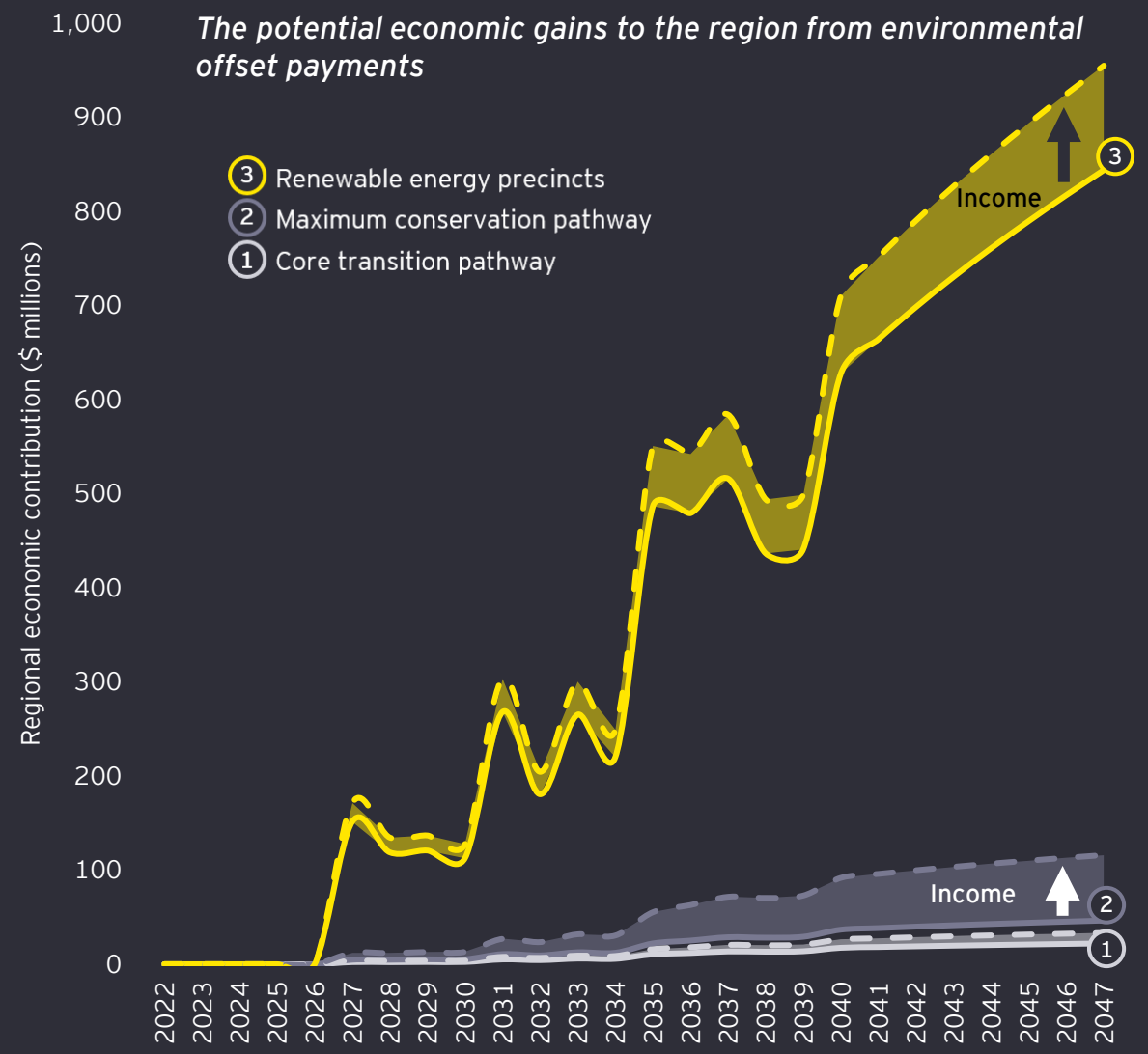
The shaded region on the graph represents the value of what conservation and land management activities could yield to the Hunter economy over the next 25 years through environmental based incomes.

- Both the maximum conservation and renewable energy precincts pathways could contribute an additional $10 million to Hunter incomes by the end of the decade.
- Over the next 25 years, increasing capital investment to repurpose mining land may contribute an additional $300 million to incomes in the Hunter.

Increased incomes from engaging in land management and conservation activities flow to small, medium and large businesses across the Hunter.

Increases to income reflect the high proportion of woodland and biodiversity inputs in the conservation pathways

- Woodland and biodiversity industries provide important environmental assets with benefits flowing throughout the economy.
- Government investment into environmental assets flow to the region's income rather than through direct economic output.



The values on this slide represent the Net Present Value (NPV) of the economic output over 25 years, using a 7% discount rate.

Economic gains flow throughout a variety of industries

Repurposing mining land has the potential to increase economic growth across 10 different industries. Supporting industries such as trade, transport and construction all grow in line with increased economic activity across both scenario 2 and 3.

Conservation and land management activities increase the economic potential of new agricultural industries

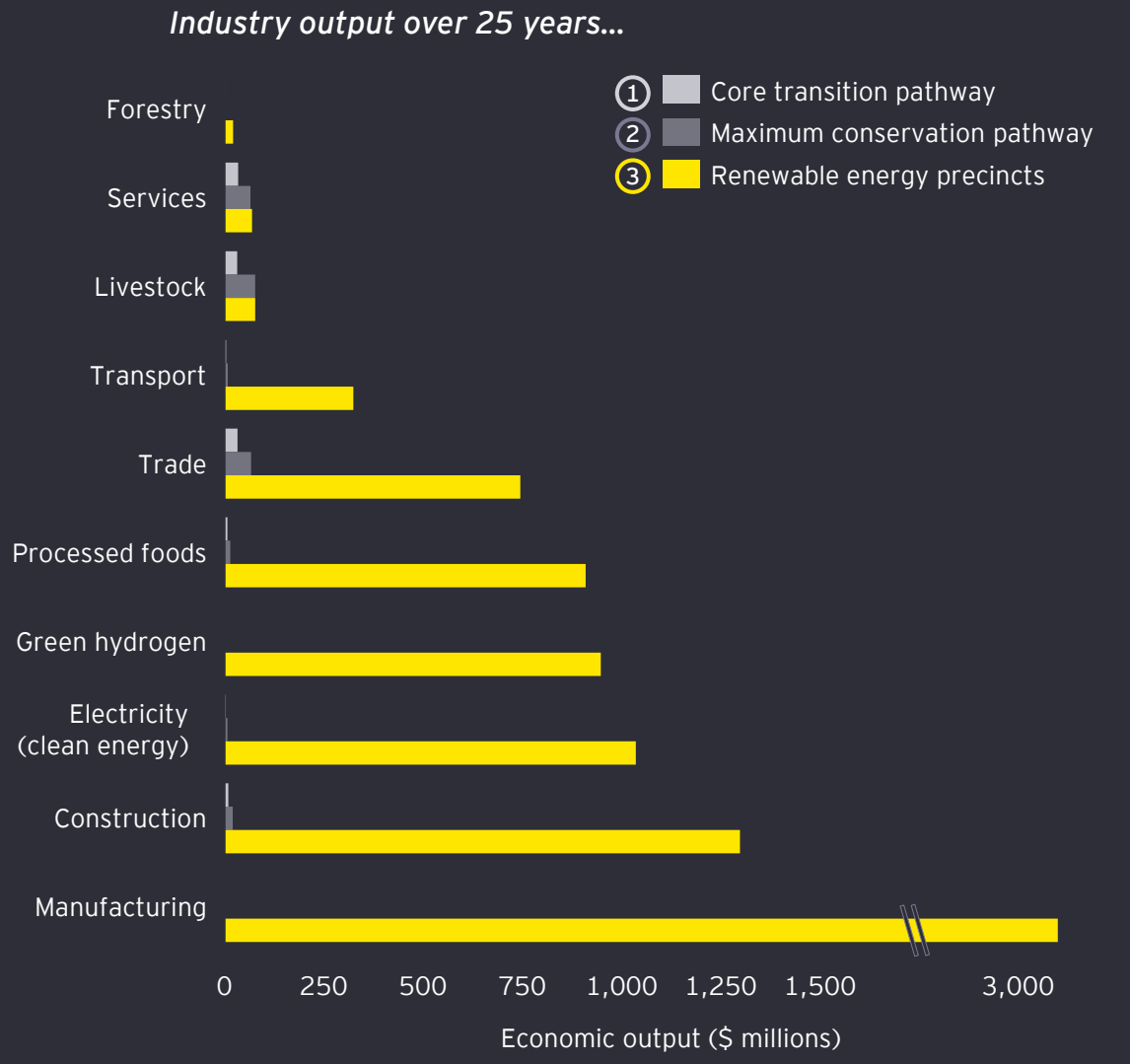
- The livestock industry could contribute approximately $77 million to the Hunter economy over the next 25 years.
- Increased economic output in the livestock industry will likely have flow on effects to the trade and the transport industry, which, under scenario 2, could generate approximately $67 million and $8 million in economic output respectively.

Capital investment into renewable energy precincts significantly bolsters clean energy production in the Hunter

- Manufacturing, which supports the renewable energy sectors, could grow by over $3 billion over the next 25 years.
- Clean energy and green hydrogen production from building new renewable energy precincts could collectively contribute nearly $2 billion in the Hunter region.

Services represents the investment into environmental assets and biodiversity offsets

- Under scenario 3, government investment into biodiversity offsets and environmental assets in combination with supporting professional services could generate approximately $70 million in economic output over 25 years.



The values on this slide represent the Net Present Value (NPV) of the economic output over 25 years, using a 7% discount rate.

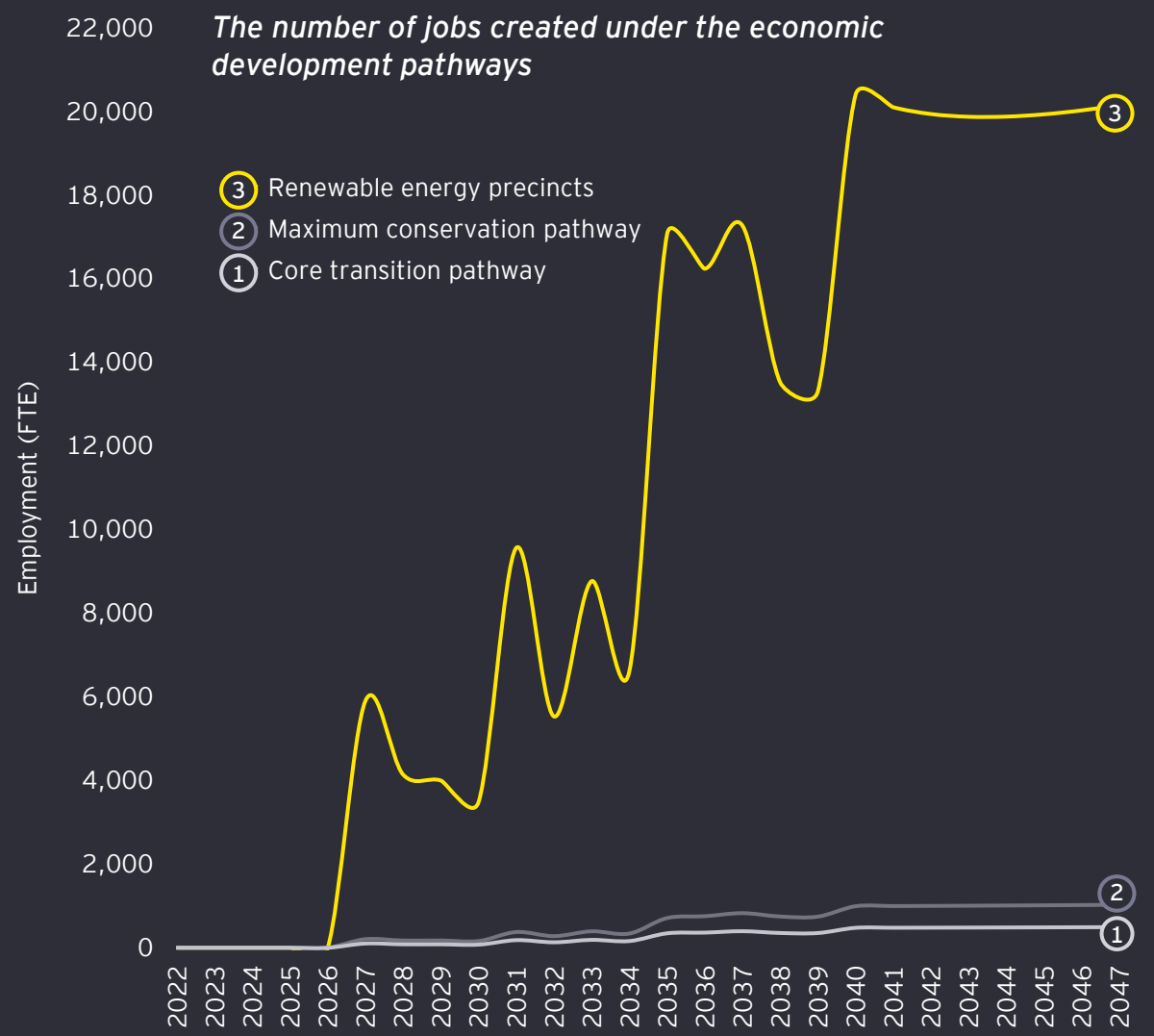
Employment in the Hunter has the potential to thrive when land is repurposed for renewable energy precincts

Industry activity takes up a relatively small part of the region's overall development footprint. As such, any new industrial activity is unlikely to displace any scaled up conservation and land management activities. It also has the potential to significantly increase jobs in the region.

Conservation and industry investment drives employment opportunities over the long term

- Increasing conservation and land management activities could provide significant levels of sustainable employment over the next 25 years.
- Industrial activity could increase employment within the Hunter, potentially adding on average of 13,600 jobs per year.
- Peak employment over the entire period could reach as high as 20,000 people employed as a result of implementing the renewable energy precincts scenario.
- The renewable energy precincts scenario provides the highest average level of employment due to the labour intensive nature of projects specific to this scenario during both construction and operations.

Annual employment over 25 years could		average...	peak at...
1	Core transition pathway	320	500
2	Maximum conservation pathway	670	1,000
3	Renewable energy precincts	13,600	20,000



Farmers, foresters and conservation scientists could be in high demand

Increasing the level of rehabilitation and the size of the conservation area provides additional employment opportunities within the Hunter. The graph to the right reflects the number of workers who could be employed in each industry across the three scenarios.

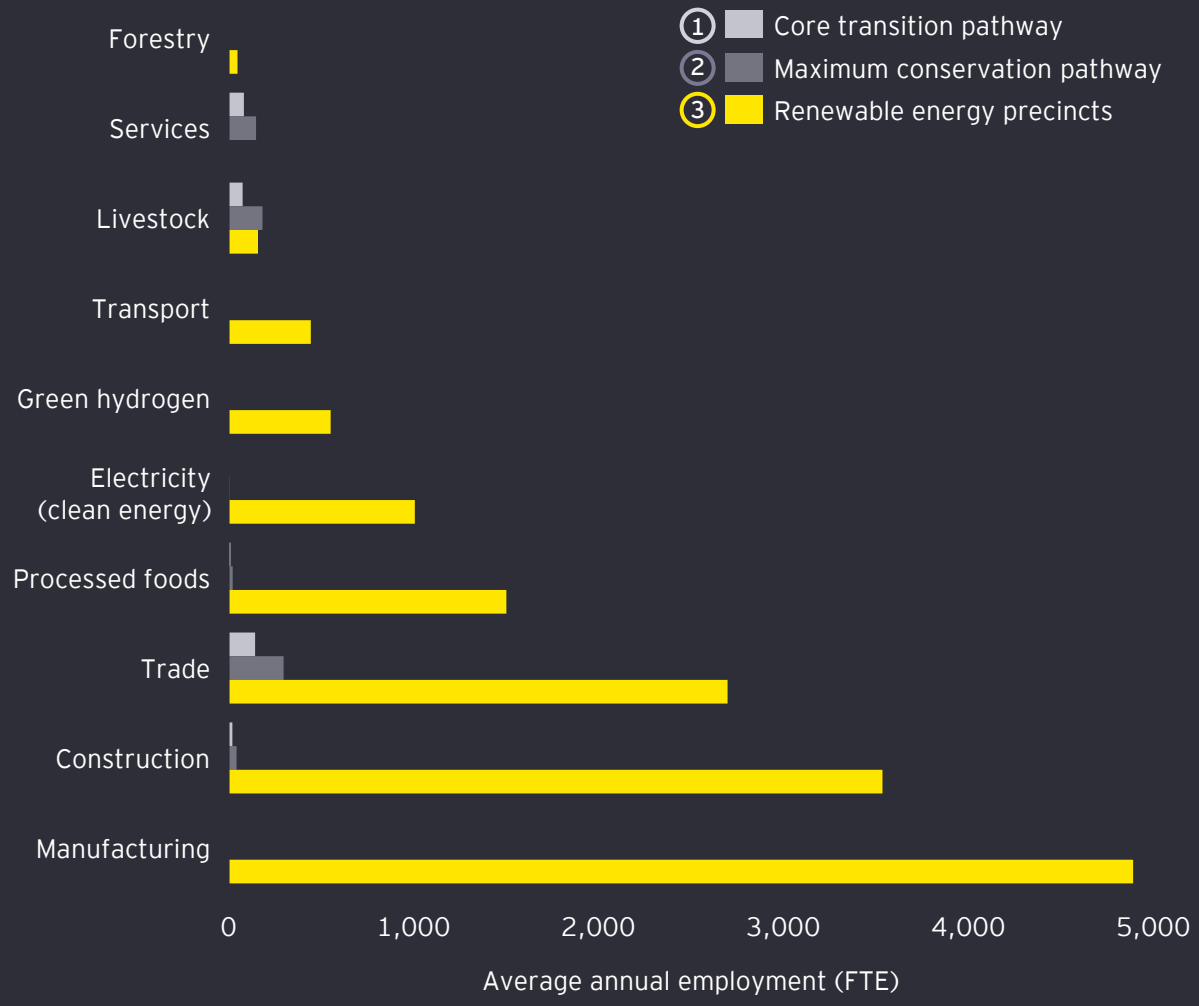
The renewable energy precincts scenario generates the greatest spread of employment across industries, with employment opportunities in 10 different industries. Building and operating new renewable energy precincts requires a number of trade-related roles leading to a jump in employment in these areas.

Both the core transition and maximum conservation pathways are agriculturally focused, with trade stemming from livestock products. Moreover, we see increased employment levels from services, forestry, and processed foods.

Specific jobs in each of these industries, as outlined in Chapter 3, include:

- Farmer
- Forest and Conservation Technician
- Conservation Scientist
- Forester
- Fabricator
- Warden
- Ranger
- Systems Engineer
- Estate Worker
- Chemical Engineer
- Electrician
- Carpenter
- Builder
- Boilermaker
- Mechanic

Average jobs created by industry over 25 years...



Harvesting the region's strategic advantages is expected to improve economic prospects

The Hunter region is currently heavily reliant on resource production. As mines begin to close, as they are scheduled to do, and global trends drive activity away from fossil fuel production, the region will need to further diversify its industrial base. The Hunter is a large and growing area and is strategically located being in close proximity to Sydney and the Port of Newcastle.

Our analysis shows the policy initiatives, which increase the level of rehabilitation and conservation on mine owners, generates higher levels of future economic output across both scenarios compared to what is currently being asked from mine owners. Increasing rehabilitation enables conservation industries to thrive, producing environmental assets and lifting household income across the Hunter. Alternatively, focusing new industries towards renewable energy requires a higher level of initial capital expenditure, however, offers significantly higher levels of employment through labour intensive industries.

Both conservation and renewable energy industries offer a green future for the Hunter. Ultimately, the choice between both policy initiatives must align with the strategic growth plan of the Hunter.

A strong renewable future for NSW

Renew Economy – 16 Feb 2022

The NSW Government has received over $100 billion dollars worth of proposals for new wind, solar and storage projects for the Hunter and the Central Coast of NSW. Applicants are wishing to participate in the next Renewable Energy Zone (REZ), with a combined generation capacity of 40GW across 80 projects.

Amongst the projects are 24 solar projects, 13 onshore and 7 offshore wind projects, 8 pumped hydro energy storage projects, and proposals for 35 big batteries. Electricity generation across all projects combines to deliver the equivalent of 10 coal-fired power stations.

Interest in the NSW REZ is similar to the projects being established by the Queensland government, which attracted 60GW worth of proposed projects.

> "These results show that energy investors see the Hunter and Central Coast as some of the best investment destinations anywhere in the country, which will translate into jobs and prosperity for the region. Renewable Energy Zones are vital to ensuring the future reliability and affordability of electricity in NSW as traditional coal-fired power stations close down over the coming decades."
>
> Matt Kean, NSW treasurer and energy minister

Appendix A

Mine closure schedule

Mine closure schedule

This slide provides an overview of the mines considered in this study, the closure period, the land which can be repurposed and the total area of the mine owned land as provided by Lock the Gate Alliance.

Mine closure dates are as listed on development consent as of August 2021.

The repurposed land is the amount of mine owned land which can be repurposed for future economic development.

Mine title	Closure period	Repurposed land (hectares)	Total area (hectares)
Ashton	2024	1,568	1,829
Bengalla	2039	3,026	3,530
Bulga	2035	9,805	11,439
Dartbrook	2022	4,654	5,429
Drayton	Already closed	2,505	2,922
Hunter Valley Operations	2030	16,569	19,329
Integra Underground	2023	3,108	3,625
Liddell	2028	6,694	7,809
Mangoola	2030	5,128	5,982
Mount Arthur	2026	12,044	14,051
Mount Owen	2031	12,573	14,668
Mount Pleasant	2035	5,573	6,501
Mount Thorley-Warkworth	2036	10,356	12,081
Muswellbrook	2022	3,754	4,380
Ravensworth	2039	13,773	16,067
Rix's Creek	2040	7,615	8,883
United Wambo	2042	3,252	3,794
Wambo Underground	2032	10,244	11,950
Total		**132,239**	**154,267**

Source: Lock the Gate Alliance

Appendix B

Modelling approach

Determining the future uses of the land

Lock the Gate undertook Geographic Information System (GIS) mapping of the Hunter region to determine the potential future uses of the land. This includes both land owned under the current mining titles, as well as additional mine owned land outside of the title. LTG provided the rehabilitation outcome maps and scheduled mine closures for all major mines in the region.

Potential future uses have been thematically presented as rehabilitation, revegetation and reuse. EY has performed desktop research to understand the potential capital expenditure and economic output of these potential uses.

EY has undertaken scenario development including different trajectories and compositions, with varied scope and timing. The scenarios explore the discrete themes of a core transition pathway, a maximum conservation pathway and a renewable energy precincts scenario.

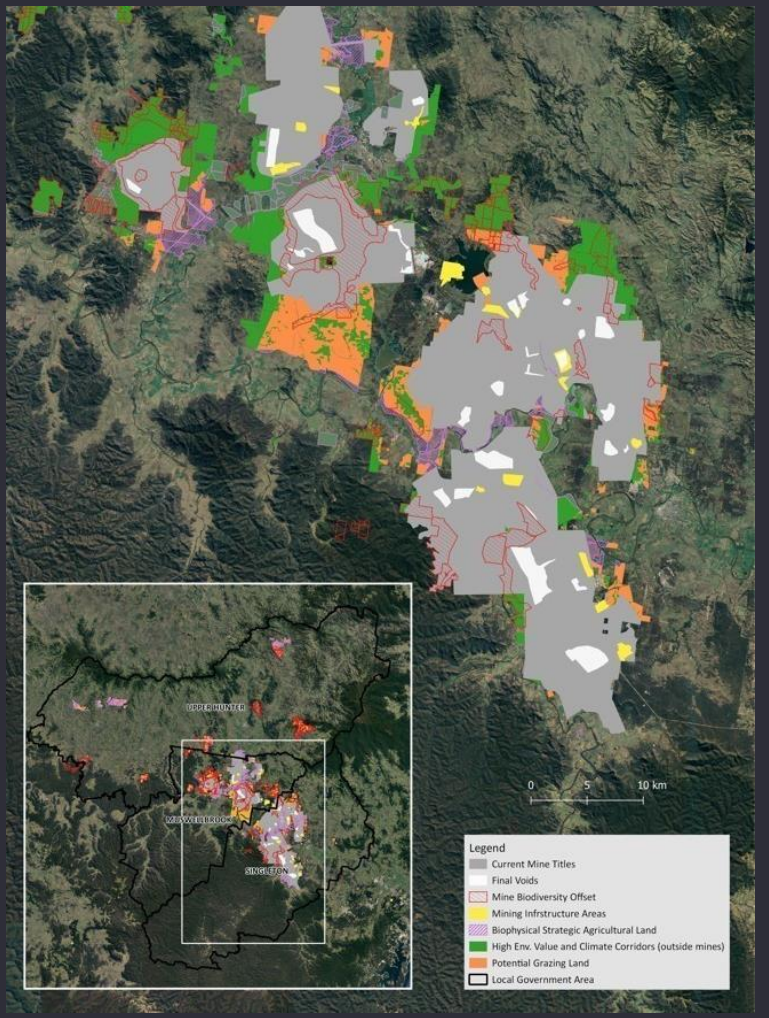
The research and scenario development formed the basis of the inputs for our economic modelling, using a Computable General Equilibrium (CGE) framework – see Appendix C for more details.
The mine rehabilitation plans were reviewed to estimate potential final land use, categorised by the following:

- Woodland
- Pasture
- Biodiversity offset area
- Final void
- Water management

All mining land must be repurposed when the mine closes. However, final voids and water management could not be modelled.

After determining the future uses of the land, the capital expenditure and the industry output for each industry that could be used on the repurposed land was calculated.

Vision for the Hunter region



Source: Lock the Gate Alliance

Calculating the economic impact of rehabilitating mines

This report utilises both qualitative and quantitative analysis to examine the potential economic impacts of different land use scenarios for future available mine land. This report draws its insights from a variety of data sets and economic modelling. A summary of our approach is outlined below:

1 Mapping and profiling

- Land currently affected by mining, and earmarked for rehabilitation
- Conservation and biodiversity lands
- Agricultural lands
- Potential industrial land

2 New land use opportunities

- Rehabilitation
- Revegetation
- Re-use

- Compliance with Rehabilitation Management Plans
- Capital holding costs
- Productivity and innovation losses
- Barriers to entry

- Profile the scale and scope of potential new land activities
- Potential rehabilitation and revegetation investments
- New industrial and energy opportunities
- Timing and development conditions for different land reuses
- Global and technology developments

3 Development scenarios

- Core transition pathway
- Maximum conservation pathway
- Renewable energy precincts

- Alternative development paths for the Hunter mine sites
- Examine land use options based on different technology and investment outcomes
- Short and long term impacts

4 Economic impact

- Economic output
- Jobs
- Sectoral performance
- Investment

- Explore transition issues and risks in a robust economic framework
- Industry uncertainties
- Structural outcomes for the Hunter region
- Broader economic and conservation impacts

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Appendix C

Computable General Equilibrium modelling framework

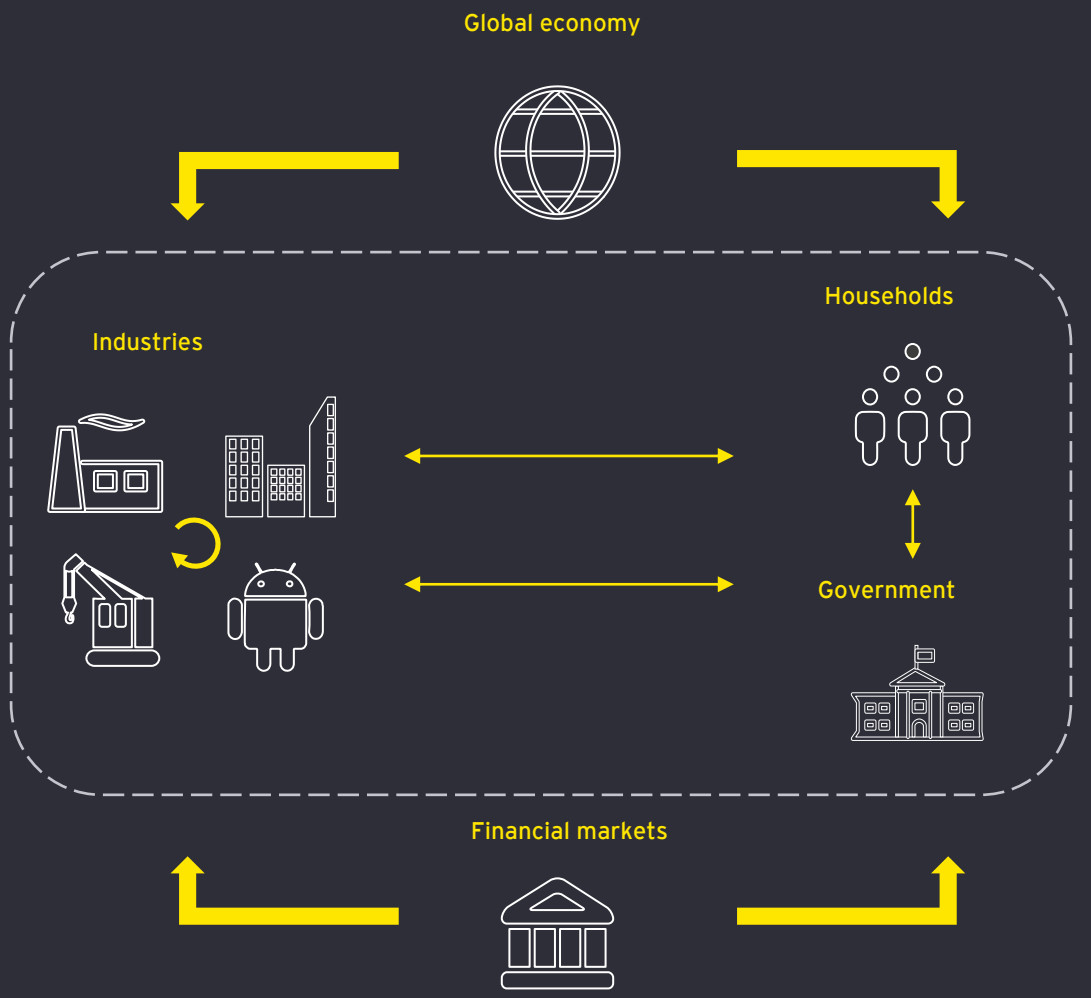
Our CGE model

EYGEM is EY's in-house, state of the art Computable General Equilibrium (CGE) model. It is a large scale, dynamic, multi-region, multi-commodity model of the global economy, with an explicit representation of the national and NSW and sub-state economies. This detail allows us to consider varying economic impacts across the construction and operational phases of the Project. EYGEM is based on a substantial body of accepted microeconomic theory.

The model provides a rich and realistic representation of how changes in one part of the economy flow through to other parts.

- **Comprehensive regional analysis** – The model contains 141 distinct regions, with the ability to disaggregate these into sub-national regions for highly granular economic analysis.
- **Rich sectoral detail** – All sectors of the economy are integrated into the model, with 65 discrete sectors. These can be further refined for specific industries.
- **Time dynamics** – Solving year-on-year over a flexible periods, the model can assess short term policy initiatives and decades-long reforms or investments.
- **Market tested and strong academic foundations** – A model has a lineage that has been applied globally across the public and private sector.

EYGEM is dynamic and is solved on a year-by-year basis over a prescribed period of time. This will allow us to consider the forward-looking nature of investments in the Project as well as test a range of different scenarios related to the Project. In practical terms, the modelling is based on defining a counterfactual, or baseline scenario, which is then compared with a scenario under which the Project goes ahead. The difference between the two scenarios provides us with a measure of the economic net benefits of the Project.



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